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**A CASE STUDY OF THE
EFFECTIVENESS OF THE DELIVERY
OF WORK BASED LEARNING FROM
THE PERSPECTIVE OF
STAKEHOLDERS IN COMPUTING,
ENGINEERING AND INFORMATION
SCIENCES AT NORTHUMBRIA
UNIVERSITY**

LALITH LIYANAGE

PhD

2013

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UNIVERSITY**

LALITH LIYANAGE

A thesis submitted in partial fulfillment
of the requirements of the
University of Northumbria at Newcastle
for the degree of
Doctor of Philosophy

Research undertaken in
Faculty of Engineering and Environment

April 2013

Declaration

I declare that the work contained in this thesis has not been submitted for any other award and that it is all my own work. I also confirm that this work fully acknowledges opinions, ideas and contributions from the work of others.

Any ethical clearance for the research presented in this thesis has been approved. Approval has been sought and granted by the University Ethics Committee on 11/11/2010.

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List of Abbreviations

ACILIP	Associate Member of CILIP
ADB	Asian Development Bank
APCL	Accreditation of Prior Certified Learning
APEL	Accreditation of Prior Experiential Learning
APL	Accreditation of Prior Learning
ARA	Archives and Records Association
BAMA	British Aerosol Manufacturers' Association
BB LMS	Blackboard Learner Management System
BCS	British Computer Society
BSc	Bachelor of Science
CAA	Computer Assisted Assessment
CAD	Computer Aided Design
CAL	Computer Assisted Learning
CART	Classification And Regression Tree Analysis
CDU	Content Development Unit
CEng	Chartered Engineer
CILIP	Chartered Institute of Library and Information Professionals
CMC	Computer Mediated Communications
CML	Computer Mediated Learning
CPD	Continuous Professional Development
DB	Discussion Board
DE	Distance Education
DEOSNEWS	Distance Education Online Symposium's monthly electronic journal
DIUS	Department of Innovation, Universities and Skills
DL	Distance Learning
DTA	desktopANYWHERE (Thin client application for university's remote access server)
eLP	Electronic Learning Platform of the university
EngCUK	The Engineering Council of UK
FEE	Faculty of Engineering and Environment
FB	Facebook
FBE	Faculty of Business and Enterprise
FE	Further Education
FL	Further Learning
FT	Full time
GTP	Graduate Teacher Programme
GVA	Gross Value Added
HEFCE	Higher Education Funding Council for England
HE	Higher Education
HEA	Higher Education Academy
HEI	Higher Education Institution
HEQC	Higher Education Quality Council
HND	Higher National Diploma
ICM	Information and Communication Management
ICT	Information and Communication Technology
ID	Instructional Designer
IET	Institute of Engineering Technology
ILM	Information and Library Management
ILPs	Individual Learning Plans

IMechE	Institute of Mechanical Engineers
IMM	Interactive Multi Media
IPA	Initial Proposal Approval
IRMS	Information and Records Management Society
IT	Information Technology
IS	Information Systems
ISRC	Iowa Social Science Research Center
JANET	Joint Academic Network
JISC	Joint Information Systems Committee
LLL	Life Long Learning
LLS	Library and Learning Services
LMS	Learning Management System
LSC	Learning and Skills Council
LSIS	Learning and Skills Improvement Service
LTech	Central unit to support online multi-media content development for faculties
MA ILM	Master of Arts ILM
MBA	Master of Business Administration
MCILIP	Member of CILIP
MCQs	Multiple Choice Questions
MEng	Master of Engineering
MIT	Massachusetts Institute of Technology
MM	Multi-Media
MOOCs	Massive Open Online Courses
MSc	Master of Science
NA	'Not applicable'
NBF	Northumbria Business Faculty
NCRVE	National Center for Research in Vocational Education
NCIHE	National Committee of Inquiry into Higher Education
NE	North East of England
NHS	National Health Service
NODES	National Online Distance Education Service
NSU	Northumbria Students' Union
NUS	National Union of Students
NVQs	National Vocational Qualifications
ODFs	Online Discussion Forums
OL	Online Learning
OS	Operating System
OUUK	Open University of UK
PARN	Professional Associations Research Network
P&G	Proctor & Gamble
PB	Professional Body
PC	Personal Computer
PDA	Personal Digital Assistant
p/g	Post Graduate
PgC	Post Graduate Certificate
PGCE	Post Graduate Certificate in Education
PIs	Partner Institutions
PL	Programme Leader
PPA	Professional Practice Awards
PT	Part time

QA	Quality Assurance
QoS	Quality of Service
RDI	Resource Development International
RM	Records Management
RoI	Return on Investment
SCITT	School-Centred Initial Teacher Training
SE	Subject Expert
SPSS	Statistical Package for Social Sciences
STEM	Science, Technology, Engineering, Mathematics
TEL	Technology Enabled Learning
TLRP	Teaching and Learning Research Programme
u/g	Under Graduate
UK	United Kingdom
URBIS	Urbis Social Planning and Social Research team
URL	Universal Resource Locator
VC	Video Conferencing
VLE	Virtual Learning Environment
VoIP	Voice Over Internet Protocol
WBEC	Web-based Education Commission
WBL	Work-based Learning
WBLF	Work-based Learning Framework
WCS	World Class Skills programme
WRLS	Work-related Learning Services

Acknowledgement

This thesis is the outcome of the PhD research conducted at the Faculty of Engineering and Environment of Northumbria University, UK. First and foremost, a very special note of thanks should go to my Principal supervisor Dr. Rebecca Strachan, and co-supervisors Dr Roger Penlington and Ms. Biddy Casselden of Northumbria University whose untiring support, dedication, commitment, patience, and expertise without any doubt paved way for completion of this thesis. I enjoyed the sincere, friendly and helpful relationship all of them had with me from the very first interview until now and I am very much grateful to them for everything.

Secondly, I take this opportunity to thank Prof Lalith Gamage, CEO/MD of Sri Lanka Institute of Information Technology for approving the split PhD arrangement and Dr. Mahesha Kapurubandara for being the local supervisor during the split duration of my PhD.

I would also like to mention Dr. Alison Pickard who has been very helpful throughout the three years of study with her expertise in the area of research methodologies. A big thank should go to all the programme leaders of five case studies (Ms Biddy Casselden, Prof Julie McLeod, Dr Noel Perera, Mr Colin Damm, Ms Susana Hanlon) together with my supervisors who made arrangements for me to contact students, tutors, employers, representatives of Professional Bodies and University support services' staff for interviews and online survey of students. programme leaders themselves participated for interviews by sharing their experience and expertise knowledge in Work-based learning which was a key contributing factor in this research. The Vice Chancellor, Dean/FEE, Associate Deans, and all the academic/non-academic staff of the University who extended their support in various ways are very respectfully remembered too.

I must mention here the kind assistance given by Dr. S. Somaratne of the Open University of Sri Lanka in terms of statistical analysis using SPSS package. Also, a special thank should go to Mr. Greg McCarthy who kindly released a digital voice recorder during the entire period of interviews on Dr Strachan's request without which the entire transcribing process could have been unmanageable.

This PhD would not have been a success if not the sacrifice made and support extended to me during the three years by my beloved wife Chamila, daughter Yesini, and my mother who were always been pillars of strength in my life. A special remembering note should go as a tribute to my late father who would have been the happiest father if he lived today.

It would be an injustice if I forget to acknowledge the kind assistance given to me by Mr Jayantha Wickramasinghe (my current CEO), Kapila, Pathum, Major Buddika, Lasantha, Sahan, Rasith, Chaluka, Nadeesha, Lakshika, Nilaksha and Kasun, the IT team of my present office who shared some of my pressures of time.

PhD students are not only learning from their own research but also helping and sharing with each others' knowledge and experience. In this light, last but not least, I must be grateful to all my colleagues in the Ellison and Pandon building PhD offices for the wonderful research experience shared with me.

Dedication

This thesis is dedicated to my parents for bringing me up and guiding me to be where I am today, my wife Chamila for all her help and encouragement, and my lovely daughter Yesini for their years of patience, sacrifice and support during my PhD.

Abstract

Work-Based Learning (WBL) has increasingly become an area of interest for the higher education sector. It can be defined as an approach to education where learning towards accredited qualifications is relevant to and draws on the student's workplace role and situation. This education can take place via a range of delivery methods. For this study, this definition has been further narrowed down to concentrate on WBL that is delivered by the university to those in the workplace and results in accredited higher education qualifications, where the learning contract is rooted in the discipline and draws on the student's workplace role and situation.

Northumbria University is considered one of the leaders in WBL delivery in the UK. All the faculties in the university deliver WBL programmes across a number of different disciplines. These programmes encompass a wide range of delivery formats including face-to-face, correspondence distance and online delivery.

The aim of this research study is to contribute to the research in this area by conducting an in depth study of the effectiveness of the delivery of WBL from the perspective of a range of stakeholders including students, programme leaders, tutors, university support services, employers and representatives of professional bodies. There is a wealth of literature that concentrates on the learner and education provider and occasionally the employer but little that has attempted to directly investigate the wider stakeholder environment in which WBL takes place and how this contributes to the effectiveness of the WBL experience. To gain the deep insights needed for such a study, the research approach adopted a case study methodology which included mixed method research techniques for data capture and analysis combining both qualitative and quantitative approaches.

The study examined the perspective of stakeholders drawn from five WBL programmes across the disciplines of Engineering, Computing, and Information Sciences delivered by the Faculty of Engineering and Environment at Northumbria University. These programmes primarily use online learning delivery format with some blended learning components and comprise four postgraduate programmes and one undergraduate programme. An online survey was administered among all the students whilst in depth interviews were conducted among all the stakeholders including students. The case study explored the students' demographic characteristics, experience of WBL and characteristics of their learning experience. Data from the other stakeholders was analysed to both cross validate the students' feedback and to learn about their own contribution to the

effectiveness of the WBL process. The analysis was performed in relation to the three main factors identified to be most influential: quality, access and support.

The original contribution to knowledge and the significance of this study can be seen in three different areas. Firstly, eight main themes and three subthemes have emerged from the data analysis of this case study. These themes and sub themes were consolidated through triangulation of the qualitative and quantitative outcomes. They illustrate the key drivers and factors underpinning the effectiveness of WBL in the selected case study and have been used to classify the main strengths and issues of WBL that have emerged from the data and develop a set of recommendations to address the main key issues. For example, 'Accreditation of Prior Learning' and 'Tailoring of Learning Contracts' emerged as key attractions for students to embark on WBL programmes. The need for the use of technology in learning was highlighted by students to support the distance delivery of content, communications and assessments, whilst academics came out with the issues and challenges which prevented them from being able to use technology effectively. Thus one of the key recommendations arising from this study is the need to provide assistance and support to academics to engage with technology in learning to support WBL. 'Student isolation' was found to be an issue in some disciplines where mentor and peer support cannot be facilitated and thus developing approaches that reduce student isolation is another key recommendation. One final example is that a majority of students prefer 'blended learning' where distance online learning is combined with some face to face components compared to purely distance online learning. This is a challenge particularly where students are dispersed over a large geographical area.

Secondly this research study has considered the range of key stakeholder groups: student, employer, academic and professional body, and their contribution to the effectiveness of WBL programmes. This consideration has highlighted the specific impact they have on the effectiveness of WBL. For example employers' support was found to be particularly useful for the development of learning contracts and for onsite mentoring support during the lifetime of the students' studies. Professional bodies contribute through the process of accreditation of WBL programmes/qualifications for students' professional registration. In this study this proved to be a key motivational factor for the students to embark on WBL. A four pillar model has been constructed to illustrate consideration of the range of stakeholders and this has been applied to two existing WBL frameworks to show how such consideration might be applied in practice. In the first example, the researcher has taken an existing approach to online WBL course design, development and delivery practice and adapted it to include consideration of the range of stakeholders at appropriate

times in the process to strengthen the WBL experience. In a second example, the researcher has taken an existing WBL maturity toolkit and shown how it could be adapted to include consideration and input from the full range of stakeholders on the readiness to engage in WBL. The study provides key recommendations to each of the stakeholders separately which should enhance the effectiveness of the WBL provision.

The final contribution to knowledge that emerges from this work is focused on each of the embedded units within the case study. Each of these embedded units represents a separate WBL programme and an analysis was performed to highlight the key strengths of each of these programmes and their main deficiencies. For example, the MSc Professional Engineering programme uses 100% tailoring of workplace projects in student learning contracts which benefit the employers. The academics' role is primarily centered on guiding those students to document the learning outcomes from those workplace projects against their individualised programme learning outcomes. In order to support them better, students felt that academics should upload online content for the more generic topics such as research methodologies which could be new to them and quite challenging to understand. In contrast, the MSc Information and Library Management programme takes a more generic approach to its learning content and has minimal tailoring. The students and employers benefit from application of this learning content to their own environment through assignments and the final MSc project. One approach to further tailor the programme to the needs of the organisation and employee would be to offer more focused module options. This analysis of the individual programmes has helped pinpoint areas for further development.

This study has conducted an in depth case study of the effectiveness of the delivery of WBL across three discipline areas at one university. This has not only provided a number of key findings from the case itself but it has also demonstrated the benefits of considering the wider stakeholder contexts in such a study. It also provides exemplars of how others can build on this work to embed these wider stakeholder contexts in WBL toolkits and associated practices to provide enhanced provision.

1. Introduction

1.1 Work-based Learning (WBL)

‘Work-based learning (WBL) is the term used to describe a class of programmes that bring together educational institutions and work organisations to create new learning opportunities in workplaces. Such programmes meet the needs of learners, contribute to the longer-term development of the organisation and provide formally accredited learning’ (Boud and Solomon, 2001).

WBL has increasingly become an area of interest for the higher education (HE) sector. *‘It is seen as a means by which to support the personal and professional development of students who are already in work, and the focus of the learning and development tends to be on the student’s workplace activities’* (Brennan and Little, 2006). According to Durrant, Rhodes et al. (2009, 1) *‘WBL focuses on learning in and from the workplace where work, rather than a set curriculum, provides the focus for the learning programme’*.

This study is firmly centered on WBL and thus it is appropriate to first define WBL and its associated terms and set them within the context of this study. A further definition of WBL which encompasses foundation degrees is provided by Sodiechowska and Maisch:

‘.. where students are full-time employees whose programme of study is embedded in the workplace and is designed to meet the learning needs of the employees and the aims of the organisation’ (Sodiechowska and Maisch, 2006). This aligns with Boud and Solomon’s definition above.

‘With respect to pedagogy, the practice of WBL can be considered to be the continued Life Long Learning (LLL) adults undergo throughout their lives, following education in an educational environment’ (Boud and Middleton, 2003). WBL is a widely used approach employed by both higher educational institutes (HEIs) and businesses to educate and develop their students or work-force in all three elements outlined by Gray below.

There are many different WBL pathways and approaches employed in the education and business sectors and a range of means by which WBL students are engaged and assessed. Gray identified three key elements to WBL which all learners and employees can relate to:

‘A definition for the HE level could involve any of the following WBL types; learning through work, learning for work and learning at work’ (Gray, 2001). Gray’s *‘..... learning through work and learning at work’* aligns with Durrant, Rhodes et al.’s

‘.....*learning in and from the work*’ and Brennan and Little’s ‘.....*students who are already in work*’ above. It is helpful to see examples of each of these in practice and thus Gray’s definitions have been used with the following collection of approaches to illustrate the three types of learning.

Learning for work can involve the secondary-school student embarking on a two-week work-experience placement, whereby they would be involved, albeit very superficially, in the processes of the workplace, reporting on how they developed over their time there as well as log-keeping.

A further example is the long-established sandwich-course observed in HE; with students spending a year in industry carrying out a more significant role within their company, for example in science-based industries an involvement in new product or existing product development, observing their theoretical knowledge in a working environment while being assessed as part of their degree course.

Teacher training courses such as the UK’s Post Graduate Certificate of Education (PGCE) or Graduate Teacher Programme (GTP) routes which involve professional development of a learner with training specifically for a certain job are also *learning for work*. Teacher training courses are available as purely work-based programmes, as is the case for the GTP or School-Centred Initial Teacher Training (SCITT) courses within the UK. The PGCE route offers work placements to assist in the *learning for work*, as well as combining principles of pedagogy and classroom management through educational institutions, with subject specific work. All routes require each learner to collate a portfolio of evidence throughout their time within the workplace.

A commonplace example of *learning at work* is the well-established on-site company training schemes and programmes which provide a means of up-skilling the existing workforce without the need for lengthy periods of time away from their work. These are often taught/led by a more experienced senior expert employee or an external consultant from a specialist company. In general, these courses are not formally assessed or given accreditation.

An example of an off-site training scheme run by the British Aerosol Manufacturers’ Association (BAMA) is the Introduction to Aerosol Technology, (BAMA, 2009) designed to train and educate industries and employees on aerosol technologies. This course provides a good example of prior learning through which accreditation could be awarded.

There are examples whereby completion of on-site training courses are formally assessed and accredited; these are examples of *learning through work* as well as

accredited day-release programmes through further and HEIs. The Learn Direct agency allows for further education and training for the existing workforce, with courses designed around the learner's requirements to fit in around their work-life with their 'Learning through Work' programmes designed specifically for such needs, several courses run in partnership with the University of Derby.

With relation to WBL to organisations and employers a quote from Clarke and Copeland states that:

'WBL is commonly taken to refer to structured learning opportunities which derive from, or which are focused on, the work role of individuals within organisations' (Clarke and Copeland, 2003).

The definition above closely links with other WBL definitions and provides a foundation for this type of learning based on the requirements of the workplace, through collaboration between universities and work organisations. This approach incorporates underpinning knowledge but focuses this on real world, work-related problems. This allows for the development of a combination of the relevant foundation of theoretical knowledge complemented by the learning opportunities available through the workplace.

Brennan and Little further define one way of constructing WBL programmes as a furthering statement from their definition of 2006 above: *'Curriculum controlled by HEI, content designed with employer – learner primarily full-time employee' (Brennan and Little, 1996).*

Accordingly programmes are designed with input from employers, with the framework arising from the pre-established subject discipline structure, with credits gained from modules within the course and also from accreditation of prior learning (APL); which involves the assessment of learning gathered from work itself.

Another definition of WBL states: *'WBL begins with the learners and their workplaces, and ends with the university – in contrast to more conventional university courses, which begins with the university and its conceptions of what is legitimate knowledge, before moving to the workplace and the learner' (Boud and Solomon, 2001).* Boud and Solomon further justify the industry based demand driven nature of WBL delivery in the above statement.

Higher Education Quality Council (HEQC) (2004, 29) defines WBL in a broad way that is closer to work-related learning.

'WBL: A component of a learning programme that focuses on the application of theory in an authentic, work-based context. It addresses specific competences identified for the acquisition of a qualification, which relate to the development of skills that will

make the learner employable and will assist in developing his/her personal skills. Employer and professional bodies are involved in the assessment of experiential learning, together with academic staff. There is a similarity in this definition with Gray's *learning for work* approach with the mention of '*development of skills that will make the learner employable*'. The involvement of the employers and professional bodies is an important part of this definition which has significance to this study.

The Data Service (2008) defines WBL as follows:

'WBL generally describes learning while a person is employed. The learning is usually based on the needs of the individual's career and employer, and can lead to nationally recognised qualifications.' This statement emphasises the status of students being employed in WBL which deviates in some programmes in the current study depending on the discipline and context where few part-time employees, volunteers and even unemployed individuals are seen taking up WBL.

Bragg (2011) refers to the working definition by National Center for Research in Vocational Education (NCRVE) researchers:

'WBL means instructional programs that deliberately use the workplace as a site for student learning. WBL programs are formal, structured, and strategically organized by instructional staff, employers, and sometimes other groups to link learning in the workplace to students' college-based learning experiences. WBL programs have formal instructional plans that directly relate students' worksite learning activities to their career goals. These experiences are usually but not always college-credit generating.' There are similarities in this definition with Gray's *learning for work* and *learning at work* approaches with the mention of '*...use the workplace as a site for student learning*', '*....to link learning in the workplace to students' college-based learning experiences*' and '*These experiences are usually but not always college-credit generating*'.

In recent years, WBL has figured in UK government policy debates as a significant element of continuing professional development (CPD) and LLL. One result has been that HEIs have been encouraged to use the mechanisms available to them to give priority to widening participation, enabling adult students to benefit from HE opportunities within institutions including through WBL. Dearing in the National Committee of Inquiry into Higher Education (NCIHE) report (Dearing Committee) (NCIHE, 1997), for example, discusses the need for part-time modes of CPD, and for courses carried out in collaboration with employers. At a pragmatic level, the delivery of learning into the workplace (much of it via the Internet) was one manifestation of the University for Industry, launched in the UK in the year 2000.

There is still some confusion, however, as to what exactly constitutes learning in the workplace. In terms of WBL that is formally assessed and accredited, Ebbutt (Ebbutt, 1996) suggests a classification scheme constituting four modes:

1. *WBL as Access or Accelerated Access*, achieved mainly through the Accreditation of Prior Experiential Learning (APEL). Here, learners' experience is recognised by an institution of HE, either to gain access to that institution, or as a means of gaining credit and remission from parts of a programme. This is *learning through work* according to Gray which also directly links to the current study.
2. *WBL as Initial Professional Preparation*, where full-time students gain access to learning in an industrial, commercial or service workplace as an element of their degree programme. This is *learning at work* according to Gray which does not link with the current study.
3. *WBL as General Preparation for the 'Real World'*, where a minority, but increasing number, of degree courses incorporate the development of core or transferable skills such as numeracy, communication, and problem-solving to prepare students for the world of work. This is *learning for work* according to Gray which is similar to 2 above does not link with the current study.
4. *WBL as the major constituent of a programme of study*, where students are full-time employees, and most of the research-based fieldwork is carried out in the student's own workplace. The student group meets regularly with university tutors to discuss research methodology, share problems and develop thinking. This is *learning through work* according to Gray which is the case in the current study except for the fact that student-tutor meetings are not face-to-face always.

Therefore, Gray and Ebbutt agree with each other in terms of the approaches and pedagogy of WBL. They both show that WBL covers a whole range of delivery styles and mechanisms and thus within the scope of this study it will not be possible to look at all the different types of WBL but it will need to explore a subset of WBL and study them in depth.

Raelin (2000) argues that '*WBL can be distinguished from traditional classroom learning in a number of important ways. Firstly, WBL is centred around reflection on work practices; it is not merely a question of acquiring a set of technical skills, but a case of reviewing and learning from experience. Secondly, WBL views learning as arising from*

action and problem solving within a working environment, and thus is centred around live projects and challenges to individuals and organisations. WBL also sees the creation of knowledge as a shared and collective activity, one in which people discuss ideas, and share problems and solutions. Finally, WBL requires not only the acquisition of new knowledge but the acquisition of meta-competence – learning to learn’.

Eraut *et al* (Eraut *et al.*, 1998), however, argue that, ‘*what they term workplace learning, is a largely hidden element of LLL and one which has not been accorded the eminence it deserves in policy documents’.* They argue that ‘*formal learning in the workplace (the main focus of UK government policy) provides only a small part of what is learned at work. Most learning that arises is not planned and is non-formal, resulting from the challenge of the work itself and from interactions with people in the workplace. Achieving the goals of work requires new learning that is achieved by a combination of thinking, experimentation and dialogue with other people. Sometimes, however, this approach is recognised as inadequate and other opportunities for learning are sought out, which may include self-directed learning or formal learning or training. Even the latter, though, requires supplementation by experience at work and interaction with other people.’* This argument tends towards Gray’s *Learning through work approach* only exception being the ‘*....Most learning that arises is not planned and is non-formal’* which can also be converted into a formal learning with Raelin’s ‘Reflection’ of what is learnt through ‘*.....thinking, experimentation and dialogue with other people’* and document the same learning to be able to submit to the HEI.

WBL, then, operates at both formal and non-formal levels within the workplace, and when non-formal, often relies on networks and interactions with people both within and outside the organisation to facilitate new learning. The learning itself is often goal and work orientated. It is also often problem-centred and involves experimentation and trying things out. It may require both personal reflection on the outcomes and dialogue and feedback from others including colleagues and managers. It may include the taking of formally accredited programmes of study at an institution of HE, and may use APEL as an accreditation and learning vehicle. Many elements just described have been formalised into what has become known as *Action Learning* which may be utilised informally amongst interested work groups to facilitate learning and tackle problems, or as part of a formal, learning programme, perhaps delivered and accredited by a university.

The discussion so far is focused on definitions of WBL to recognise characteristics, approaches and features which assist the effectiveness of intended learning by different

categories of learners at workplaces. It is also noted that there are various types of delivery methods of WBL available depending on the discipline, intended target group and the context of delivery of WBL. The main delivery methods of WBL are:

1. Face-to-face
2. Distance Education (DE)
 - a. Correspondence
 - b. Online learning (OL)
3. Blended Learning

A face-to-face education session is one in which participants, instructors, and facilitators meet together in the same place and at the same time. Face-to-face sessions are synchronous. While no communications technologies are required for a face-to-face session, often other technologies, such as LCD cameras and overhead projectors, are used. A face-to-face session or event is a live meeting among participants, instructors, and facilitators. Face-to-face interaction can help to break down barriers and provide real cross-cultural experiences and networking opportunities, thereby assisting in sustaining relationships and encouraging the sharing of knowledge. Classes, seminars, workshops, and conferences, in which all participants meet together in same facility, are examples of face-to-face events. However, it is not always possible to have face to face sessions with WBL and therefore a viable alternative is DE.

'DE is a field of education that focuses on the technology and instructional systems design that are effectively incorporated in delivering education to students who (most of the time) are not physically "on site" to receive their education.' (Garrison, 1987).

This definition pulls us away from correspondence delivery of 'traditional' WBL which is still in practice to a certain extent in some of the WBL programmes being considered in the study towards OL which is in another term called Technology Enabled Learning (TEL).

Garrison and Shale (1987) suggest a definition of DE which offers a minimum set of criteria and allows more flexibility. They suggest that:

- *DE implies that the majority of educational communication between teacher and student occurs non contiguously*
- *DE involves two-way communication between teacher and student for the purpose of facilitating and supporting the educational process*
- *DE uses technology to mediate the necessary two-way communication.*

Further, DEOSNEWS (1993), the Distance Education Online Symposium's monthly electronic journal which complements the American Journal of Distance Education describes DE as follows:

- *'The separation of teacher and learner during at least a majority of each instructional process*
- *The use of educational media to unite teacher and learner and carry course content*
- *The provision of two-way communication between teacher, tutor, or educational agency and learner'*

Focusing on the distance factor and on technology takes the emphasis off the "*Dialectical relationship between teacher and student*" which Shale feels is *'the foundational principle in the educational process'*. He further states that distance and the technology that accompanies is an incidental consideration and not a "defining criterion" for education (Shale, 1988).

More recently, the definition of DE has been further refined by Moore and Kearsley as: *'it is not a new phenomenon; it has been a mode of teaching and learning for countless individuals for at least a hundred years'* (Moore and Kearsley, 1996). They further went on to say *'...planned learning that normally occurs in a different place from teaching and as a result requires special techniques of course design, special instructional techniques, special methods of communication by electronic and other technology, as well as special organizational and administrative arrangements'*

How DE is defined or distinguished from other forms of education has been the subject of much scholarly debate. From the perspective of many educators, *'DE is inexorably linked to technology'* and is viewed as different from other forms of education ((Bates, 1995); (Garrison, 1987); (Keegan, 1996)).

Garrison (1989) further suggests that *'it is the activities of sharing, application and critical analysis which helps an individual convert information to knowledge'* which is the most important factor in any form of education.

By analyzing all above definitions of DE it is significant to note that communication and interaction or participation is a central concept, if not for acquiring knowledge then for assuring, understanding and exploring the meaning of knowledge. All in all, DE has been defined by various experts as being separated between the teacher/content and the learner by way of educational media and further it has been justified that this educational media to be achieved through technology. The preceding

chapters explain the spectrum of DE delivery methods used in different WBL programmes starting from correspondence ‘traditional’ postal methods to virtual learning environments (VLEs) for OL methods.

Having elaborated on the definitions of face-to-face and DE delivery methods of WBL, application of those delivery methods in WBL towards blended learning method is explained below.

There are a large number of professionals who seek HE opportunities as well as CPD while they are employed (Liyanage, 2011). WBL is increasingly used as a mode of study for this category of learners and as a way of introducing change within the workplace. WBL is an approach which focuses upon the practical utility of learning and is therefore directly relevant to learners and their work environment. A WBL approach to learning acknowledges that learning can take place in a variety of situations and settings, and is not restricted to that developed through the classroom or lecture theatre. All WBL programmes utilise a range of tools to aid and enhance learning - including lecture sessions, workshops, tutorials, learning sets, and online guided learning activities.

OL for WBL is a further way to increase access to higher and continuing education (Liyanage, 2010a). OL is a term used to describe distance or correspondence courses that are offered over the Internet. The courses offered through OL cover a wide range of subjects, audiences, and prices. This educational method is growing in popularity as a cost-effective method of providing access to education for a large population. In OL, course work is conducted through electronic forums, discussion groups, external resources, quizzes, social rooms, and online submitted assignments. Learning activities also include pair-work, small group work and project work and availability of online guidance from online tutors/mentors throughout the course.

Today, almost all the top educational establishments in the world have adopted OL blending with their face-to-face classes in order to provide more flexibility for learners as well as to the providers. This is called “*blended learning*”. Educause, a nonprofit organization whose mission is to promote the intelligent use of information technology (IT) in HE, classifies courses based on the amount of time spent in each modality (Allen et al., 2007). According to its classification scheme, blended courses have between 30% and 79% of activities online, face-to-face courses can include up to 29% of online activities, and fully online courses can include up to 20% of face-to-face activities.

Garrison and Vaughan (2007) define blended learning as ‘*the thoughtful fusion of face-to-face and OL experiences such that the strengths of each are blended into a*

unique learning experience Blended learning is a fundamental redesign that transforms the structure of, and approach to, teaching and learning' (p. 5).

This 'blended' learning approach enables WBL programmes to be tailored to student needs and preferences, whilst still operating within an academic framework. '*WBL is a practical and successful way of creating University-level learning that is directly related to the workplace'* (Gibbons, 2013).

Having taken all above definitions related to WBL into account, the researcher formulates his own broad definition of WBL as follows: WBL is a way of delivering education where learning towards accredited qualifications is relevant and draws on the student's workplace role and situation via a range of delivery methods. These delivery methods may include face to face and DE methods including correspondence and OL using electronic media for delivery of content, communications and assessments and can be a mix of different delivery methods creating a blended learning experience. WBL can involve a range of stakeholders from the education provider, employee, employer and external influences such as the Professional Body (PB).

Having stated the above, a brief exploration of WBL context at Northumbria University as a background to the case study is given below.

1.2 WBL at Northumbria University

Northumbria University is one of the leading and pioneering institutions in the UK for WBL activities (Liyanage et al., 2010b). The university is situated in the North East region of the UK. This region is one of the most industrialised regions in the UK. In 2008, its exports expressed as a percentage of gross value added (GVA) was the highest of all English regions at 28 per cent compared with the UK average of 19 percent (Statistics, 2010). Also, the North East had the highest value of exports relative to the size of its economy. In 2007, manufacturing industries generated 17 per cent of the region's total GVA (Statistics, 2010). This could be one of the reasons why the employers and professional bodies are demanding WBL from the universities in the North East. This will uplift and develop the skills, knowledge and professional status of the employees and this should contribute to improved productivity, helping to boost the UK economy. Thus it is important to ensure that WBL is effective in the North East region and this focus underpins the current study. Northumbria University is one of five universities in the North East region. Several important endeavours have taken place in the University which are noteworthy and relevant to the current study.

The Sunday Times University Guide 2011 (Times, 2010) reports under the Northumbria University profile that more than 600 employers sponsor the university's u/g studies and 47 professional bodies accredit various aspects of Northumbria's curriculum. The main university support services for WBL are provided below.

1.2.1 WBL Framework

The WBL Framework (WBLF) was developed in 2005 to streamline and formalise activities related to WBL and was an important step in the development of WBL at Northumbria University (Northumbria, 2011). It was designed to enable employers, and sectors, to offer their workforce highly relevant professional development programmes designed to fit their specific needs in terms of areas of up-skilling, content, length and mode of programme delivery. The WBLF includes awards which can be customised to the learners' requirements and is designed to be flexible and accessible.

The notable features of the WBLF are:

- The programme is negotiable, so it can be as short as one module or include larger awards such as a degree or p/g study
- The programme structure is agreed between the University, the organisation and the individual
- Modules can be subject specific, or be designed specifically for the work environment, or be a mix of both
- Work experience can often be recognised and incorporated into the programme via APEL
- Study can take place entirely at work, at home, or combining with attendance on campus

Northumbria is committed not just to the development of individuals, but also to organisations by applying the vocational nature of its teaching in both the public and private sectors. The WBLF is ideally suited to organisations that wish to develop their workforce and can benefit from access to the knowledge base, expertise and facilities of the University (University, 2010).

This framework and the work of the Work Related Learning Services (WRLS) of Northumbria University have been commended and recognised by the Higher Education Academy (HEA) in their report on WBL: '*An evaluation of 7 case studies of UK HE institutions*' (Nixon et al., 2006b).

1.2.2 Work-Related Learning Service (WRLS)

The WRLS was established in 1999 with the primary role of developing a portfolio of innovative and relevant work-related learning products across the institution. The service explores current thinking to identify and advise on strategy, direction and new opportunities. It develops and tests curricula, learning products and infrastructure responding to the demands of employers, students, different faculties of the university and other agencies. It manages a county-wide work-related learning project as a key activity to support an increase in demand for work-related learning from University Faculties (Bennett, 2010).

1.2.3 Central Online Content Development Support Unit (LTech)

LTech is the learning technologies arm of IT services and is a central University Service set up to support the faculties including their WBL activities. LTech is equipped with experts on instructional design, multi-media technologies like graphics, animations, audio and video, etc. Any faculty which plans to develop content to be delivered online for WBL students can obtain support from LTech for their content enrichment (LTech, 2011).

1.2.4 Professional Practice Awards (PPA)

Another popular example of WBL in the university is the Professional Practice Awards (PPA) scheme which is offered by the Faculty of Health & Life Sciences. The PPA Framework was developed in response to demands from employers and stakeholders. The Framework offers awards at 60 credit intervals from levels four to seven and a statement of achievement at all levels up to 60 credits. BA/BSc (Hons) award titles include; Health Practice, Education Practice, Social Care Practice, Community Practice, Health and Social Care Practice, Education and Training Practice, Early Years Practice, Children's Care Practice and Support Services Practice. The approach adopted utilises partnership agreements with organisations and learning contracts with individuals to negotiate and define learning pathways which integrate work-based and academic learning (Shiel, 2010).

The above highlights that Northumbria University was an early adopter and pioneer of WBL and this led to the development of the WBLF and accompanying support services at the university such as LTech.

In this context, the following research questions arise regarding the effectiveness of WBL.

1.3 Research Questions

- Are the benefits of time, place, and pace flexibility, high quality material, high level of interactivity in delivery and minimal costs on institutional resources available for work-based learners? If available, are they equally distributed?
- Are university academics satisfied with the delivery of WBL programmes?
- Are universities satisfied or convinced about future of WBL programmes?
- Are employers satisfied with the return on investment (RoI) on their employees who undertake WBL?
- How do professional bodies view their members/potential candidates who apply for professional memberships with WBL qualifications?
- What are the common challenges and constraints of implementing WBL?
- How do multiple stakeholders appreciate the overall effectiveness of WBL?

All of the above questions address issues related to WBL delivery and assist to improve the overall efficiency and effectiveness of WBL but this study needs to focus on one aspect to enable a detailed research study to be undertaken. The problem statement below details this particular focus.

1.4 Problem Statement

As discussed in section 1.1 above, there is a vast range of disciplines, delivery methods and contexts in WBL which needs to be narrowed down for the purpose of manageability in an academic research study of this kind. The current study looks at the WBL programmes delivered by a HEI in the disciplines of Computing, Engineering and Information Sciences. The current study did not have much of those features of *learning for work* considering most of the students are employed and the disciplines being considered fall under STEM area (Science, Technology, Engineering, Mathematics) as opposed to education related teacher training programmes given in the examples above. Similarly, the category of *learning at work* also does not fall into the scope of the current study due to not being formally accredited by a HEI. As per Gray's categorisation of three types of WBL, the current study undoubtedly falls into *learning through work* which is further justified by Clarke and Copeland above.

This leads to the following definition for the context of this study:

WBL is education delivered by the university to the employer in the workplace and is aimed at accredited HE qualifications where the learning is relevant to the discipline and draws on the employee's workplace role and situation. As the employee is situated in the workplace, delivery is primarily through correspondence and OL with the use of electronic

media to deliver content, communications and assessments with some face-to-face components. The focus is on the stakeholder perspective and four main categories have been identified as relevant: the university, the employee, the employer and the professional body.

Although the WBL concept has been in practice for some time, a literature review highlights that research studies in this area have primarily focused on two stakeholder contexts: the learner and the academic environment, i.e. the traditional tutor-learner model. However, there is anecdotal evidence to suggest that consideration of the full range of stakeholder contexts such as the workplace and the external environment could significantly enrich the effectiveness of WBL delivery. Therefore, this study aims to address this deficit in research by considering all four stakeholder contexts and their contribution to the effectiveness of WBL.

This study explores the effectiveness of delivery of WBL by conducting an in depth case study in the Faculty of Engineering and Environment (FEE) at Northumbria University. It considers five WBL programmes in the Science, Technology, Engineering and Mathematics (STEM) area and specifically within the disciplines of Engineering, Computing, and Information Sciences (IS). These are mainly delivered via OL but in some programmes there are optional face-to-face delivery elements creating a more blended learning experience. The study obtains first hand opinions from each type of stakeholders on the teaching, learning, mentoring, accreditation and management aspects of WBL. The intention of this case study is to conduct a deep rather than broad study to identify in depth the specific issues, challenges and good practices that contribute to the effectiveness of WBL from the full range of stakeholders. From this analysis, a set of recommendations and exemplars of good practice can be drawn up to help inform future WBL delivery and practice.

1.5 Aim and Objectives

1.5.1 Research Aim

The aim of the study is to investigate the effectiveness of the delivery of WBL from the perspective of stakeholders in the disciplines of computing, engineering and information sciences within the Faculty of Engineering and Environment at Northumbria University.

The key outcomes to be drawn from this research aim is an in-depth understanding of the effectiveness of WBL in the chosen context which reflects the full range of stakeholders, including the learners, academic institutions including management, academics and support services, workplace including employers, supervisors and mentors

and professional regulatory bodies. These outcomes lead to a set of recommendations for these programmes that can be used by stakeholders as best practices. Findings from this study contribute to further insights into WBL that others can draw on and apply as appropriate to their context and requirements.

1.5.2 Research Objectives

In order to accomplish the research aim, the research is divided into the following objectives:

1. Study WBL initiatives in the United Kingdom (UK) in terms of government and HE sector support, major universities involved, disciplines of programmes, industrial and organisational involvement, support from professional bodies and current research in this area. This provides an in depth understanding of the current context of WBL delivery in the UK.
2. Study WBL initiatives at Northumbria University in general and in particular in FEE at undergraduate (u/g) and postgraduate (p/g) level. This leads to understanding of the current WBL context at the university and at the faculty in order to select the most appropriate programmes for the case study.
3. To examine the relationship between demographic and learning related characteristics of students and their perceptions on the effectiveness of their WBL programmes through online questionnaires and interviews.
4. To identify perceptions of the other stakeholders involved in WBL: tutors, programme leaders, administrators, support services staff, employers, mentors, supervisors, and representatives of professional bodies. This is achieved through conducting interviews with them on factors affecting the effectiveness of their WBL programmes.
5. To find out existing challenges and constraints of implementing WBL programmes through analysis and triangulation of the results from the above objectives.
6. To highlight best practices and possible solutions to the issues and challenges identified in the previous objective.
7. Objectives 3-6 are carried out in the context of the case study identified in objective 2.

1.6 The Organization of the Thesis

The organisation of the thesis is as follows:

Chapter two presents a literature review carried out to set the background for the study, learn about the foundations and theories of the WBL concept and to identify current research and thinking in the field.

Chapter three discusses the research methodologies including case study, survey and grounded theory approaches, research paradigms, and an analysis of doing mixed methods, before finalising the research approach of the study.

An overview of the approach and details of the embedded units of the case study are presented in chapter four. The chapter includes the details of the pilot study, the WBL programmes selected as the embedded units, research sample, instruments/tools of data collection, data analysis techniques, research ethics and the conceptual framework.

Qualitative analysis of interview data is provided in the fifth chapter. This focuses on the themes and sub themes emerged from the data categorised under quality, support and access parameters to measure the effectiveness of WBL.

Chapter six presents the quantitative analysis of survey data collected through the online student questionnaires in terms of reliability analysis, frequency analysis, cross tabulations with Chi-square values, factor analysis and Classification and Regression Tree (CART) analysis. This chapter further triangulates (‘internally’) findings of the above quantitative techniques with the outcomes of the previous chapter on qualitative analysis and also with the findings of different quantitative techniques as well identifying relationships and trends of the stakeholders in the process. This approach also minimises the subjectivity of the qualitative research.

Chapter seven summarises the triangulations of the previous chapter by comparing results of both quantitative and qualitative analyses using three main categories: quality, access and support. This chapter also triangulates (‘externally’) the outcome of chapters 5 and 6 with the literature and current practice in the WBL field to further explore and contextualise the outcomes from the research data.

Chapter eight states the main outcomes and the original contribution to knowledge made through this research. This includes: the benefits and motivations for WBL from each set of stakeholders; the emerged themes and sub themes focusing on strengths and issues affecting the effectiveness of WBL together with recommendations for the issues; the key highlights of best practices that have emerged from the case study of five WBL programmes; illustration of the four-pillar model in practice for online course design, development and delivery; example of a toolkit from the literature and how it could be

modified to include all stakeholder contexts. This chapter also presents the recommendations to each stakeholder category separately in order to improve their current WBL delivery.

Chapter nine evaluates the research study and provides a reflection of the overall findings together with strengths and limitations of the approach itself.

Chapter ten presents recommendations for future work including the development and validation of a potential tool kit that considers the full range of stakeholders. This chapter also provides an overall summary of this research study.

2. Literature Review

2.1 Introduction

This chapter sets the background for the study, presents the foundations, pedagogical aspects, values and theories of the WBL concept and identifies current research and thinking in the field. It also evaluates the current models of WBL delivery, and what is lacking in those models that could be improved in order to deliver successful WBL for its stakeholders. The evolution of distance education methods in terms of their use of technology and their application to WBL is also discussed. This chapter concludes by justifying that there is a case which needs to be resolved through an in depth study.

2.2 The Pedagogy of WBL

WBL expressly merges theory with practice, and knowledge with experience (Raelin, 2000). It recognises that the workplace offers as many opportunities for learning as the classroom. Such learning, however, needs to be centered around reflection on work practices. WBL uses many diverse technologies, but primarily it is the deployment of action projects, learning teams, and other interpersonal experiences, such as mentorships which allow and encourage learning related dialogues. Raelin (2000) explains three critical elements in the WBL process.

1. It views learning as acquired in the midst of action and dedicated to the task at hand
2. It sees knowledge creation and utilisation as collective activities wherein learning becomes everyone's job
3. Its users demonstrate a learning-to-learn aptitude, which frees them to question underlying assumptions of practice

The main difference between WBL and conventional learning is that the former involves conscious reflection on actual experience. The basis for this was explained by Meisel and Fearon (1996) in the concept of metacognition which means that one constantly thinks about one's problem-solving processes. Rather than just asking the question "what did we learn?" the question should be "what does it mean or how does it relate it with what we already know?" Hence, learning should be more than just acquiring technical skills. Peters and Smith (1997) identify WBL as "throwing a net around slippery experience and capturing it as learning". Ohmae (1982) views WBL as 'learning of this type requires a combination of rational analysis with imagination and intuition. Using both hemispheres of the brain, one reintegrates information into new patterns.'

By adapting prior work from Kolb (1984) on learning styles, Honey and Mumford (1992) introduced the model shown in Figure 2.1 in order to get an idea of what WBL experience might look like.

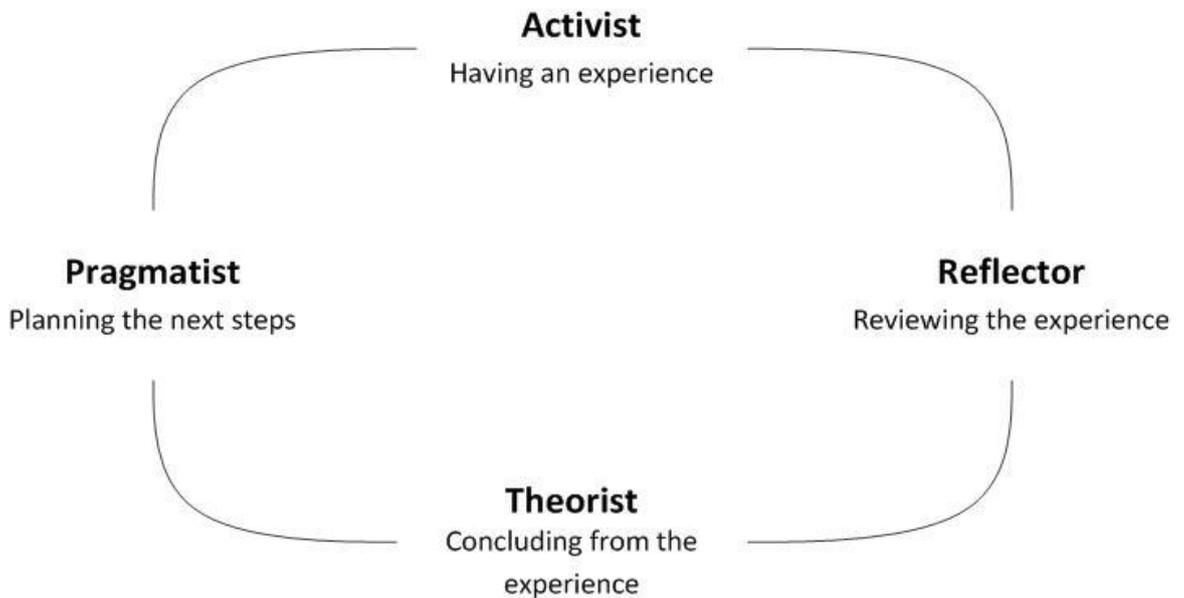


Figure 2.1 Honey and Mumford's Learning Cycle and Learning Styles

According to the above model, within a work setting, the process might start by having a manager undertake an experience that is new or unique and attempt to learn what that experience meant to him/her and what it achieved for the organisation which is the 'Activist' role. When that manager becomes a 'Reflector', it entails some deep reflection about the unique experience, brought about normally through public dialogue with colleagues. This is where as mentioned above Meisel and Fearon's metacognition relates with the question "what does it mean or how does it relate with what we already know?" Reflecting on the work experience and relating/converting that practical knowledge into theory is the third 'Theorist' role for the manager. The cycle moves forward with 'Pragmatist' role where the manager plans next steps to extend the experience keeping in mind how the learning already acquired might be applied.

Langer (1997) comments on the WBL context: '*WBL is mindful and situated learning which does not consider pre-existing knowledge as fixed but rather as provisional until tried out in practice*'. Further, WBL appreciates that learning can occur spontaneously in a given situation. WBL students are provided with this opportunity as they are in a position to practice/try out and verify what they have learnt from the university or elsewhere in a real work situation.

Derived from action itself, WBL may be thought of as a natural process tied to the human instinct to grow. In this sense, it is very much a part of our being (Raelin, 2000). According to this, it can be aligned with the seven unique criteria proposed by Vaill (1997) for making learning a “way of being”.

1. It is self-directed
2. It is creative
3. It is expressive
4. It involves feeling
5. It is on-line
6. It is continual
7. It is reflective

The next section 2.2.1 develops a comprehensive conceptual model from the literature that integrates theory with the practice. “The theory of WBL is actually quite practical!” (Lewin, 1951). One problem with omitting reference to theory is to leave an impression that WBL is “vocational”, which could imply that it is suitable for those who do not like to learn in the classroom. However, one should not think that WBL is antagonistic to theory; it respects and uses theory.

In order to better understand how WBL occurs and may be facilitated, there has to be a model which can integrate the traditions that underlie its construction. There are two dimensions fundamental to the process of WBL which needs to be integrated into that model; theory and practice modes of learning, and explicit and tacit forms of knowledge.

2.2.1 Theory vs Practice Modes of Learning

Raelin (2000) explains that the epistemological tradition of WBL is referred to as the very foundation of what makes up knowledge itself. Knowledge and activities in the world are the same as opposed to the earlier myth among educators who thought they were two distinct entities. In other words, early educators tried to separate knowledge from practical real world activities but actually the two are linked and should not be separated out. Today knowledge and learning occur as part of our everyday life. If knowledge is viewed as rising as much from active participation in our everyday life and work, then it will have to expand our conventional classroom format and interpret the home and the workplace as suitable places for learning. According to Mott (1996) WBL is much more than the familiar ‘experiential’ learning that consists of adding a layer of simulated experience onto conceptual knowledge. In WBL, theory may be acquired in combination with practice. Mott further explains that theory building may be considered as a practice

since those in practice are fully capable of producing theory. In this way, informal activities and patterns of practice can themselves be formalised and disseminated to others in the field. The theory produced by the practitioner may be more of a practical theory, but a theory nonetheless. Schon (1988) further confirms this idea by saying ‘practitioners build theory as they consciously reflect on challenges of their practice; re-iteratively engage in problem posing, data gathering, action, evaluation, and reflection; and then share the knowledge produced with others in practice.

Theory is depicted as the world of thought, and practice refers to the world of action. Theory is often construed by practitioners as impractical or as “academic” whilst practice is viewed by academics as banal and atheoretical (Raelin, 2000). However, WBL must blend theory and action. Theory makes sense only through practice, but practice makes sense only through reflection as enhanced by theory.

2.2.2 Explicit vs Tacit Forms of Knowledge

Explicit knowledge is the familiar codified form that is transmittable in formal, systematic language. Tacit knowledge is the component of knowledge that is not typically reported since it is deeply rooted in action and involvement in a specific context (Polanyi, 1966). However, the researcher believes that WBL requires a new epistemology of practice that seeks to explore not just the explicit instructions and guidelines available in the workplace but also the tacit processes invoked personally by practitioners as they work through the problems of daily management.

Pleasant (1996) further explains that although individuals may be knowledgeable in what they do, they may not have the facility to say what it is they know. Another useful distinction proposed by Anderson (1983) is between declarative knowledge and procedural knowledge. Declarative (explicit) knowledge represents our conceptual understanding of phenomena, whereas procedural (tacit) knowledge represents our skill in doing something, be it mentally or physically. Although Polanyi’s argument is tacit knowledge may not be expressed or codified, White (1994) argues that it may be teachable as in the case of a competent trainer is able to provide an observable model of tacit skill for the trainees to follow and intimate thus the tacit skill would be apprehensible and observable in use, even though not articulated or put into words.

Conventional teaching mostly tends to be theory-oriented classroom experiences relying on explicit knowledge. Unfortunately, they suffer the risk of leaving inexperienced and less-practically skilled students to enter the workforce. It was thought by classroom epistemologists that tacit knowledge cannot be taught, it has to be “picked up” by trial and error at work. Knowledge creation however has been depicted by Nonaka (1991) as

transforming what is implicit into something that is explicit, especially through spirals of ongoing interaction between individuals, work teams, and organizations.

2.2.3 The Conceptual Model

Using the two dimensions of modes of learning and forms of knowledge, a conceptual model of WBL can be constructed which provides consideration of another dimension which is level of activity (Raelin, 2000). One learns through work both at an individual level and a collective level. The individual level is through personal endeavor while the collective level draws on experiences with peers and colleagues both internal and external to the workplace.

Work-Based Learning as an Individual Property

Table 2.1 has been formed according to the already explained modes of learning and forms of knowledge above. There is a similarity between the labels used here and those depicted in Kolb’s learning style inventory (Kolb et al., 1995). The processes operating in the WBL model and Kolb’s learning from experience are compatible. The learning styles produced in the first matrix of the model of WBL results from the comprehensiveness of facets to which the learner is exposed. It is not sufficient to learn only through theoretical exposition, nor is it sufficient to engage in tacit practices without making one’s mental models accessible (Raelin, 2000).

Table 2.1 A Model of WBL (Individual level)

Modes of Learning	Forms of Knowledge	
	Explicit	Tacit
Theory	Conceptualisation	Experimentation
Practice	Reflection	Experience

Source: (Raelin, 2000)

Effectiveness of WBL results from selective attention to each of the four learning types in the Table 2.1. For example, experience solidifies the learning made tacit in experimentation but may lead to mastery more quickly when subjected to reflection. From reflection back into conceptualisation, it is hoped to achieve criticalness, defined as the ability and dedication to question the underlying assumptions within the learning process. Accordingly, the four sections contribute to a solid foundation for WBL on the part of individuals.

Conceptualisation –

It gives practitioners a means to tackle new and different problems in different contexts by introducing new principles. However, it is often criticised as not being sufficiently real-world, meaning not capable of being translated into practice. As MacLagan (1995) has shown, it is possible that individuals use theories to help them with their reasoning but purposely keep them implicit in communicating with others. Conceptualisation can also provide a basis for subsequent reflection on and reappraisal of actions.

Experimentation –

Dewey (1916) warned educators that “mere” doing or activity was not enough to produce learning; rather doing should become a trying, an experiment with the world to find out what it is like. Experiments serve to make the espoused theories tacit, applicable to the situation at hand, and more understandable.

Experience –

Learners first need to undergo a particular experience and then, as they reflect upon that experience, learn from it (Long, 1990). Experience reinforces the tacit knowledge acquired in experimentation. Learning acquired through experience is often referred as implicit learning ((Hayes and Broadbent, 1988);(Green and Shanks, 1993)) which is thought to be the foundation for tacit knowledge (Reber, 1989).

Reflection –

Reflection is fundamental to all WBL practices. It is concerned with the reconstruction of meaning. It augments the process of inquiry, leading to an understanding of experiences that may have been overlooked in practice. Reflective practitioners become sensitive to why they performed in a certain way, the values that were being manifested, the discrepancies that existed between what was said and what was done, and the way in which forces below the surface may have shaped actions and outcomes. Rather than following prescribed methods, they question whether new approaches could have led to better solutions (Giddings, 2006).

Work-Based Learning as a Collective Property

The processes of learning within work in the company of others are explored below. According to Table 2.2, four different learning types are displayed at the collective level, resulting from a matrix of dimensions of learning modes and knowledge forms (Raelin, 2000). Each type tends to be derived from a distinct epistemological tradition. These four types should also be integrated in order to produce effective, efficient, and critical learning.

Table 2.2 A Model of WBL (Collective level)

Modes of Learning	Forms of Knowledge	
	Explicit	Tacit
Theory	Applied Science	Action Learning
Practice	Action Science	Community of Practice

Source: (Raelin, 2000)

Among these four types, applied science does not receive much attention because it constitutes the classic and familiar approach to learning used in the most of the world. The remaining three types offer robust practical implications for developing WBL programmes.

Applied Science –

Although scientific knowledge has led to a bifurcation between theory and practice and has resulted in disciplinary isolation, applied science can contribute a great deal to collective knowing (Urquhart et al., 2006). Also, applied science can make an important contribution to practice by offering theories of action that are systematically tested using rigorous conditions. At the same time practitioners should be allowed to contribute to theory and comment on gaps between formal research and processes in the field. In this way theory can be united with the practice world consistent with the philosophy of praxis (Strauss, 1987). WBL methods require measurement and evaluation to ensure they are delivering the minimum standards of service they claim to deliver. WBL would benefit from an applied science that deliberately introduces its methods into the practice field and that solicits the contributions of practitioners.

Action Learning –

Action learning describes an educational strategy, used in a group setting that seeks to generate learning from human interaction arising from engagement in the solution of real-time work problems. Since practitioners are stakeholders in the problems that they attempt to solve, real problems should become the focus of study (Charmaz, 2006). As per Brown and Duguid (1993), a critical issue in action learning is becoming a practitioner, not learning about practice. Practitioners need the opportunity to merge theoretical principles with an understanding of the social construction of the organisations in which they work. According to Nonaka (2006), organisational members need to enter each others’ area of operation in order to provide new perspectives and stimulate inquiry regarding practice experiences.

Community of Practice –

An emerging domain of WBL recognises and encourages the development of tacit collective practices of individuals as they develop a common enterprise and shared ways of doing things. Communities of practice evolve as people united in a common enterprise develop a shared history as well as particular values, beliefs, ways of talking, and ways of doing things (Eisenhardt, 1989). They come together not so much on the basis of formal memberships or job descriptions but through a common purpose or endeavor and thus they do not have a formal agenda. Their efforts as a community become natural, and problem solving becomes more of a social activity than an analytically detached process. Although the knowledge produced is often tacit, community members are capable of surfacing it when needed through dialogue (Eisenhardt and Graebner, 2007) (Nelson and Winter, 1982).

Action Science –

Action science is a work-based intervention strategy for learners to increase their effectiveness in social situations through heightened awareness of their action and interaction assumptions. Action science seeks ways to illuminate their practices, especially their untested thoughts and assumptions, so that they can make better choices and enhance their capabilities for effective action. Putnam (2003) sees the goal of action science as improving social discourse in at least two important ways. First, it can improve discourse in the moment so that the people involved can engage with each other in a more productive way. Second, action science can invoke the deeper causal factors that lead people to interact as they do. Action science essentially creates an on-line learning environment that permits and encourages learners to engage in emancipatory discourse. This allows learners to test their mental models, especially their inferences and assumptions about others and their own behaviours.

A Comprehensive Model of WBL

The comprehensive model of WBL (Figure 2.2) illustrates the interplay between the types of knowledge and the modes of learning at both levels. But, as learners in practice do not step into a discrete space to perform experience or reflection, the model cannot rigidly classify these behaviours. Rather, this model of WBL represents the integration of these styles and recognises that practitioners, in order to be proficient, need to bridge the gap between explicit and tacit knowledge and between theory and practice. WBL subscribes to a form of knowing that is context-dependent. Practitioners use theories to frame their understanding of the context.

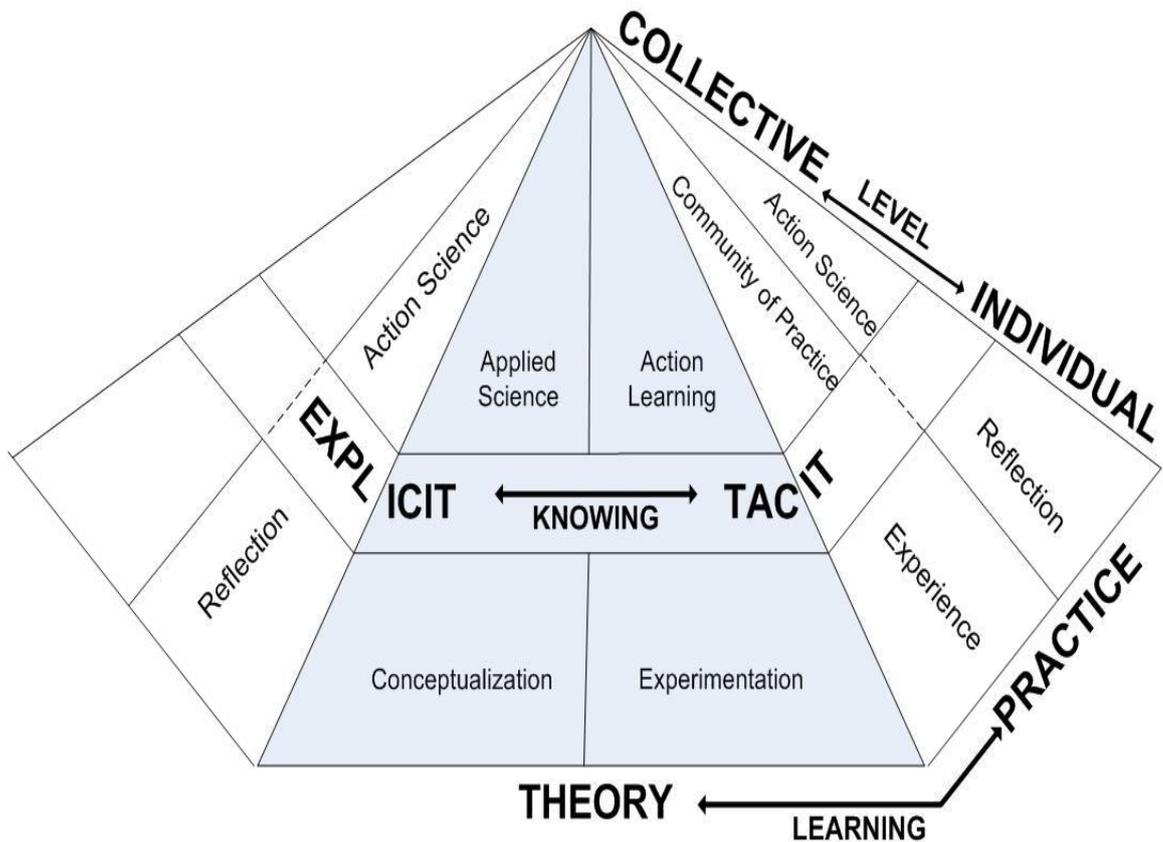


Figure 2.2 A Comprehensive Model of WBL

Source: (Raelin, 2000)

Each of the eight types of learning needs to be brought into consideration if learners are to achieve proficiency and criticalness of their learning. Although there is logic to the choice of neighbours among the types, there is no precise rotation that is recommended. There are also links represented between the levels. Furthermore, isolated reflection tends ultimately to incorporate the surrounding social context. Individual learning can proceed independently for a while but it may be illusory to think of oneself as autonomous (Brookfield, 1986). Each of the work-based styles of Figure 2.2 performs an important function, but various intersections are required to achieve comprehensive learning.

2.2.4 The Pedagogy of WBL Delivery in Practice

WBL has increasingly informed HE practices since the 1990s. In the ensuing years, this has been shown to provide benefits in terms of engaging with employers and widening participation particularly among adult learners who would not otherwise engage with HE and in many cases lack formal entry qualifications for study at the relevant level (Stephenson and Saxton, 2005). Successful implementation depends on staff being able to act as facilitators, advisers and expert resources, as opposed to working in a more

traditional academic role as discipline-bounded experts (Boud, 2001). In many cases it requires a re-evaluation of the traditional and established 'knowledge transmission role' of the academic into a combination of roles including coaching, mentoring and formative assessment which recognises the significance of learning that takes place outside the university.

There are key surveys which trace the evolution of informed HE pedagogies and practices which also account for their emergence and increasing currency over the past 20 years ((Brennan, 2005), (Nixon et al., 2006a), (Brennan and Little, 2006)). Moving ahead from previous research on pedagogies of WBL, a very recent and comprehensive analysis undertaken by McIver (2012) presents a typology of WBL perspectives in the HE system based upon pedagogical inflections and indeed differences in the delivery of these programmes. She differentiates between three perspectives in delivering work-based programmes in the HE sector:

- Discipline-centred
- Learner-centred
- Employer-centred

McIver (2012) however notes that there are subtle and interesting differentiations in the practitioners' roles involved in the three models of delivery which she specifies. In the **discipline-centred** perspectives, the practitioner tends to be tied to a particular discipline and is positioned firmly within the educational establishment. In some disciplines, notably in health, the role of the professional mentor with strong affiliations to a PB can also be quite prominent. In the case of the **learner-centred** approaches, the practitioners often start in disciplines but then move on to more generic versions taking on the role of an adviser who is an expert in pedagogy and epistemology of learning rather than disciplinary knowledge. The original discipline could be deployed for structuring learning rather than to develop content-based curricula. The roles of the practitioners in the **employer-led** perspective are framed by the exigencies of the business context of the learning situation and the workforce development requirements of the organizations concerned. In most cases practitioners have private sector or management experience that equips them for a 'recontextualisation' of existing HE pedagogy into the workplace. The practice tends to mirror business-related activity, frequently crisscrossing the disciplinary boundaries and those of the work situation.

These developments have prompted a series of reflections on the novel and possibly changing functions of practitioners who design and deliver programmes as well as

acting as advocates of this pedagogy within HE institutions. These often involve dynamic and evolving relationships between peers, in which learners bring specialist knowledge and expertise from their professional contexts and the academics' function evolves into mainly one of knowledge of university quality assurance criteria, knowledge of academic processes and deep understandings of WBL pedagogies, especially the learning epistemologies involved.

The final report of the WBL Grant Project (Costley and Dikerdem, 2012) illuminates the pedagogical practices associated with WBL and contributes to the emerging literature on pedagogies (e.g. (Boud and Costley, 2007); (Rhodes and Shiel, 2007)). WBL programmes typically employ different structures, approaches and processes from those used in subject-based academic programmes (Helyer, 2010).

The shared characteristics of these programmes usually include at least one or more of the following curriculum elements:

- accreditation of certificated or experiential learning
- learning agreements including employers as well as learners
- location of learning in the workplace or 'work' as the subject of learning
- workplace or professional practice related 'applied' projects

WBL programmes typically share the following six characteristics (Boud and Solomon, 2001):

1. A *partnership* between an external organization and an educational institution is established (contractual arrangements)
2. The learners involved are *employees* (negotiate learning plans)
3. The learning programme followed derives from the *needs of the workplace and the learner* and not from a pre-defined academic curriculum.
4. The learning programme will be *individually adapted* to each learner according to their previous educational experience, work experience and training.
5. Learning is taking place as *integrated part of projects/tasks* in the workplace
6. The learning outcomes are *assessed* by the educational institution

However, the priority given to each of these six characteristics depends on each WBL programme and its context.

According to Inceoglu and Costley (2011) there are several kinds of learning technologies that are typical of WBL practices and there are broad philosophical

approaches to the role that differ from the more conventional teacher-student relationship.

Their list of common WBL strategies is:

- Accreditation [APEL]
- Planning WBL [Learning agreements/contracts]
- Practitioner-led projects
- Research methodology
- Reflection/reflexivity

They further describe that in relation to these the following constituents of conceptual knowledge and skills base are needed to advice on WBL:

- Work and context
- Learning consultancy
- Transdisciplinary
- Enquiry
- Reflexivity and reviewing
- Learning strategies used in WBL

The ‘curriculum,’ although often structured around template and project modules, is largely created by the student from their work activities and agendas, often involving three-way negotiation between student, university and employer. It typically is grounded in and defined by a context rather than a subject-area or academic discipline. Prior learning claims are generally assessed against the student’s overall learning aims, as expressed in a learning agreement or contract, rather than against a predefined field of study. Assessment draws on workplace activity and analysis and reflection upon it and often uses generic criteria in conjunction with the student’s own learning objectives.

The characteristics of WBL clearly indicate that academic staff (and workplace tutors and mentors) supporting WBL programmes, modules or courses have a role that differs from that of most subject-based tutors in several ways. They need to act as facilitators, advisers and expert resources rather than as teachers (Boud and Costley, 2007) and be familiar with using distance learning or online processes and technologies. These factors create significant differences in the requirements for inducting WBL tutors and those for inducting other academic staff and require a culture-change for existing staff who become involved in WBL programmes.

Costley, Abukari et al (2009) provide a contextual explanation of WBL with its academic focus taken from high-level practical knowledge and learning in a work-based

context. The recognition of knowledge that emanates from work as a source of learning positions students in their particular situated context rather in disciplinary knowledge though they may also draw on disciplinary knowledge.

In the report ‘Challenge and change in further education’ published by the Teaching and Learning Research Programme (TLRP) which supports and develops the UK's educational research to improve outcomes for learners of all ages (Nash et al., 2008), the authors question whether further education (FE) is about acquiring knowledge and skills alone, or is also about learning which changes the learner by engaging them in the process. From this perspective, FE is about learning how to become a learner and how to develop an identity across education, training and also employment. It is about learners changing aspects of their lives and also the way they relate to the world. An emphasis on target-setting and achievement, regulated through outcome-based assessment and qualification systems, has led to an impoverished curriculum for the majority of school-leavers and adults entering further education. According to this research, the words “curriculum”, “teaching” and “learning” appear to have less significance in FE because of its focus on “assessment” and “achievement”. This focus has accompanied improvements in participation rates, the quality of provision, learner satisfaction and attainment rates. But they claim that it has been achieved at the expense of a narrowing of the curriculum. Therefore, there is a need to recognise how this has come about and appreciate the effect of sweeping reforms on pedagogy in FE colleges if one is to find ways of improving teaching and learning in FE.

Bradley and Oliver (2002b) in their paper ‘The evolution of pedagogic models for WBL within a virtual university’ explain that meeting the needs of work-based learners places a number of requirements on education and training providers. In this paper, the evolving pedagogic approach adopted by an online learning project, consisting of a number of HEIs and other organisations, has been described. Importantly, these evolutionary steps all reflect the sharing of the pedagogic model with a new group of stakeholders. Each group both influenced and was influenced by the discussions that took place concerning the revision of the model.

Several conclusions can be drawn from the above project explained in Bradley and Oliver’s paper. Firstly, the process of developing learning materials for a new programme is iterative and evolutionary, with any elements that are not contractually fixed being re-negotiated and re-interpreted at each step. Secondly, at any given time, a pedagogic model should be viewed as a guiding framework, since each group of stakeholders will relate it to their own experience and expertise. This process results in a number of different

interpretations being held simultaneously – a situation that can either become a constructive tension, resulting in fruitful discussion and the development of the model, or which can lead to fragmentation and divergence, depending on the goodwill of the partners and the skill of the person responsible for the process.

Thirdly, in order to understand these different interpretations and anticipate possible misinterpretations, it is necessary to be aware of the differing skills, experiences and professional development needs that the different stakeholders in this process will have. This continuous process of discussion and revision – which bears all the hallmarks of a constructivist approach to project development – is inherently educational. Many aspects of this project fell outside the experience of participating authors or the technical team, for example. Each of these groups engaged with new forms of pedagogy as the development process involved them.

Finally, it is important to note that some pedagogic features remained unchanged throughout. These included the contextual factors that were important in determining the pedagogic approach, including the needs of the learners, the aims of the project and constraints imposed by the delivery system and technology.

In summary, although an analysis of the learners provided an important ideal, the reality of implementing a pedagogic model involved starting with the backgrounds and current expertise of the authors, technical team and allowing them to develop a new understanding of the specific online medium and the implications of this for learners at work. This development process, which is inherently reciprocal, is likely to be mirrored by any other project engaged in a similar endeavour. For that reason, although the final pedagogic model should be viewed as being more robust than the initial approach proposed, it is unlikely that it, or any other case study, can be used as a straightforward example of ‘good practice’, to be adopted at need by other projects. Bradley and Oliver conclude that it is an appreciation of the evolutionary process outlined in their study, rather than any of the specific models that have been detailed, which might prove to be of greatest use to others.

2.3 Evolution of Distance Education (DE) Delivery

WBL can encompass DE methods in addition to face-to-face delivery at workplace to provide technology or non-technology based distance self-learning to learners. It is noted that traditional DE methods of correspondence delivery and even tutor/student visits are also still in practice where technology cannot make an impact. DE can be used and enables students to learn in their own time, at home, at work or wherever they choose – reading, watching or listening to material supplied, undertaking course activities and

assignments with regular support from a tutor. TEL and WBL have both drawn on the expertise from DE over the years. Therefore, it is useful to explore the background and history of DE delivery process.

The history of DE can be traced back to the early 1700s in the form of *correspondence education* (Jeffries, 1999). How to effectively conduct DE has become a key topic for researchers over the last century. The key difference between face-to-face and DE systems is that the former is mainly “teacher-centered” while the latter is “learner-centered” (Liyanage and Jayasena, 2008). Deploying technology was one of the solutions to overcome the issue of increasing access to ‘opportunity lost’ or ‘demand driven’ students.

Taylor (2001) describes the evolution of technological innovation in DE in Table 2.3.

DE evolved from the very primitive “*print*” based *first generation of distance education delivery* where students were given the educational content related to the programme they enrolled as paper printouts. Students would study individually at a distance with bare minimum support by the teacher and sit for examinations. Even today, there are many communities using this method to teach DE mode students. Obviously, it has many drawbacks which eventually results in increased numbers of dropouts from the programmes. A way out for this issue is to introduce technology for preparing, delivering and managing education in an effective way.

Technology-based DE might be best linked to the introduction of audio visual devices into the schools in the early 1900s. The first catalogue of instruction films appeared in 1910 and in 1913. Subsequently, instructional media were introduced into many extension programmes by 1920 in the form of slides and motion pictures (Jeffries, 1999).

As new media emerged, these new *multimedia* technologies were integrated into the DE delivery method of second generation such as radio (1930) and television (1939), where one-way or both-way interactivity has found students gaining more productivity in terms of understanding the content than in the first generation. Audio visuals help students to see, feel and clarify things much better than it was with just print based text. Moving a further step forward, *computer based learning* was also introduced into the *second generation of DE delivery* using floppy diskettes and CD/DVDs combining with older print, radio, television media and interactive video (Jeffries, 1999).

The *tele-learning* concept was introduced in the *third generation* where audio and video conferencing allowed two way real time communications between learners and the teacher together with Broadcast Radio and TV.

Table 2.3 Generations of Distance Education (Taylor 2001)

Models of distance education and associated delivery technologies	Characteristics of delivery technologies					
	Flexibility			Highly refined materials	Advanced interactive delivery	Institutional variable costs approaching zero
	Time	Place	Pace			
1st Generation: Correspondence print	Yes	Yes	Yes	Yes	No	No
2nd Generation: Multimedia print, audio tape, videotape, computer-based learning (e.g. CML/CAL/IMM), Interactive video (disk and tape)	Yes	Yes	Yes	Yes	No	No
	Yes	Yes	Yes	Yes	No	No
	Yes	Yes	Yes	Yes	No	No
	Yes	Yes	Yes	Yes	Yes	No
	Yes	Yes	Yes	Yes	Yes	No
3rd Generation: Tele-learning Audio-teleconferencing, video-conferencing, Audiographic communication, Broadcast TV/Radio and audio-teleconferencing	No	No	No	No	Yes	No
	No	No	No	No	Yes	No
	No	No	No	Yes	Yes	No
	No	No	No	Yes	Yes	No
4th Generation: Flexible learning Interactive multimedia (IMM), online Internet-based access to www resources, computer-mediated communication	Yes	Yes	Yes	Yes	Yes	Yes
	Yes	Yes	Yes	Yes	Yes	Yes
	Yes	Yes	Yes	Yes	Yes	No
5th Generation: Intelligent Flexible learning IMM, online Internet-based access to www resources, computer-mediated communication using automated response systems, Campus portal access to institutional processes and resources	Yes	Yes	Yes	Yes	Yes	Yes
	Yes	Yes	Yes	Yes	Yes	Yes
	Yes	Yes	Yes	Yes	Yes	Yes
	Yes	Yes	Yes	Yes	Yes	Yes

Fourth generation technologies are focused on flexible learning which combines previous media but also incorporates high-bandwidth computer technologies including interactive multimedia, internet-based access to web resources and computer mediated communication (CMC) which are referred to as web based learning or e-learning with the invention of the Internet (Liyanage, 2010b). E-learning is a type of technology supported learning where the medium of instruction is computer technology. It is used to define a specific mode of delivery of a course or programme of study where the students rarely, if ever, attend face-to-face or on-campus access to educational facilities, because they study online. With fourth generation technologies, students find it easy to manage their learning through the web with a range of interactive interfaces being made available such as emails, online chats and forums, blogs, wikis, etc. Today, almost all the top educational establishments in the world have adopted online learning blending with their face-to-face classes in order to provide more flexibility for learners as well as to the providers. This is called “*blended learning*”. Some institutions have gone even further and introduced “*fully On-line*” educational programmes where students and academics do not meet at all or students visit the offering institution or academics physically are minimized. To manage student activities in terms of admission, online content, submission of assignments, course works, payments, and examinations, software systems called “Learning Management Systems (LMSs)” are being utilised. These provide an interface for students to access programmes, interact with online tutors/mentors and fellow students, submit assignments, tutorials, course works, and do online exams. There are open source LMSs like “Moodle”, “Sakai” as well as proprietary LMSs like “Blackboard”, “WebCT”, “Learning Gateway”, “Angel”, “Desire2Learn” etc.

Today DE delivery methods have evolved further into the *fifth generation of distance education delivery* making use of the latest developments in communication technologies, i.e. mobile technologies, called *M-learning*. This is the *intelligent flexible learning* era with automated response systems and campus portal access to institutional processes and resources are available for learners which could be the best suited way of learning for our key stakeholders, i.e. the work-based learners.

Mobile technologies have penetrated the DE with the “anytime, anywhere, any tool” concept where students access educational content through wireless notebooks, palmtops, PDAs and smart phones bridging the distance, access and time barriers more easily than ever before (Liyanage and Jayasena, 2008). M-learning can be implemented in a variety of ways, such as through the use of self-paced independent study units, *asynchronous interactive sessions* or *synchronous interactive settings* (Ryan, 2001). A

new era is quietly dawning on the training industry according to Doug Harward, CEO, Training Industry, Inc (Harward, 2011). It represents a change that is both profound and permanent. For the very first time, learners have the ability to take control of his or her own learning experience.

So what's responsible for this shift in the learning landscape? It's the advent of new technologies, social platforms, and the search engine. The search engine has become a near ubiquitous tool of the 21st century. Surfing the Internet has become everyone's favored solution for resolving information challenges large and small.

For legions of individuals, the Internet has become the first option as they take greater responsibility for their own learning experience, alongside equally convenient social media tools. Savvy training organizations are adjusting to this new era by creating personal learning environments and other initiatives aimed at assisting both learners and companies. These versatile, dynamic and highly integrated Web portals embrace personal learning preferences by creating communities for formal and informal learning so key stakeholders – be they employees, customers or channel partners – can stay abreast of developments and available knowledge.

These initiatives are important for trainers because search engines have become the most competitive technology to the training profession.

Following modest increases in training department spending in 2010-11, conservative spending practices will resume in 2012. TrainingIndustry.com predicts that companies will increase spend an average of 2% more on training in 2012 than in 2011, a growth rate that mirrors the overall U.S. Gross Domestic Product (TrainingIndustry.com, 2013). TrainingIndustry.com. estimates the global market for training services to grow to \$292 billion in 2012, of which U.S. companies will represent an estimated \$132 billion, or 45%. Both figures are still below 2008 pre-recession levels. They expect higher than average spend in sales and IT training to support strategic business investments, while other training priorities like professional development will remain relatively flat.

Also, the recent introduction of MOOCs (Massive Open Online Courses) by a number of top universities also represent the 5th generation of learning by leveraging on the advantages of technology (MOOCs, 2013).

As Taylor (2001) describes above, 4th and 5th generations of distance education delivery have reached the online interactive level where the learners are able to enjoy the benefits of time, place, and pace flexibility, high quality material, high level of interactivity in delivery and minimal costs on institutional resources. WBL can be

delivered through DE methods and thus can also utilise these methods of delivery and practice.

2.4 Technology in Learning and its Application within WBL

The evolution of DE delivery as described in the previous section has reached the mobile age where ubiquitous computing has become commonplace. WB learners are now on the move more than ever and thus want to be connected to content, academics and peers to be able to carry on with their learning anytime, anywhere using any tool as they wish. In light of this, applications of technology have become important for the delivery of WBL.

Currently the prominence of ICT and other external influencing factors; economic, social, cultural and the changing role of governmental policy are driving the inner life of the HE sector. In that respect many HEIs are turning to e-learning technologies for improving the quality of learning by means of access to resources, services, long distance collaborations and exchanges (Gyambrah, 2007). The distance and time barriers to access to learning sometimes found in WBL can be largely compensated by using technology. The term *technology enhanced learning or technology enabled learning (TEL)* refers to any online or electronic facility or system that directly supports learning and teaching. This may include a formal VLE, e-Assessment or e-Portfolio software tool, or any Web 2.0 tools. This includes any system that has been developed in-house, as well as commercial or open source tools (Browne et al., 2010).

New technology can actually remove barriers to WBL. It is not only the learning content where technology can be helpful in distance delivery of WBL but other features of learning and teaching as well such as learning interface, communication, and assessment. According to Reeve, Gallacher et al. (1998), there are two key current themes in HE, i.e. WBL and the use of new technology in teaching and learning. Despite the constraints, they see considerable potential for new technology to promote greater access to learning and, in particular, to WBL. Indeed the combination of these two approaches, technology-based learning and WBL, is already a significant feature of the current LLL agenda. In attempting to outline how a successful synthesis might be achieved it is clear that the use of technology does not replace existing WBL approaches but it has the potential to make them more effective. However, the greatest contribution of new technology lies not in its ability to deliver materials to learners but in the opportunities it affords for more and better forms of communication; communication between work-based learners and between them and the university. In this way new technology can be used to support learners in their exploration of the curriculum in the workplace.

There are a series of general problems that are caused by global socio-technological changes. Evolution is presented as a trial-and-error process that produces a progressive accumulation of knowledge. At the level of technology, this leads to ever increasing productivity, or decreasing of the friction that normally dissipates resources. As a result, flows of matter, energy and information circulate ever more easily across the planet. This global connectivity increases the interactions between agents, and thus the possibilities for conflict. Dealing with climate change, our rampant energy needs, our increasingly crowded planet, and our resultant pollution, are challenges not only for technology development but also for policy-makers and other agents of social change. Margaryan in his book attempts to define the major challenges facing organisations and to analyse how technology-enhanced WBL can respond to these socio-technological challenges (Margaryan, 2008). This is brought into sharp focus that advocates a technology-enhanced WBL approach. The assertion that ‘technology can serve many roles to support WBL’ certainly seems a touch simplistic in the contemporary learning context. It does, however, articulate clearly the paradigm shift to a pedagogy that acknowledges the more situational and experiential emphasis on learning that is driven more by work requirements than subject matter disciplines. It also focuses on the use of technology to enhance WBL and it describes the design, development and evaluation of a web-based, repository-type tool which contains a range of reference materials to support practitioners in designing or updating work-based courses.

Technology to support learning is defined by any electronic or digital systems or products used to enhance the learning and teaching process. The evidence based practice in technology enhanced learning informs the decision making by practitioners in the use of technology to support employability and employee learning in HE. The student population is also increasingly diverse, with many part time and work-based learners. According to Finlay, Dean et al. (2010), the adoption of technology to support employability and employee learning needs to be understood against the background of growing demand for employability to be included in the curriculum from students, employers and Government. This makes the need for effective technology support for employability and employee learning more critical. They identify four learning technology areas as particularly noteworthy to support employability and employee learning which are increasingly prevalent in the literature as following:

- the use of e-portfolio systems
- the use of web 2.0 technologies
- the use of simulation

- and the use of open educational resources

One example of open educational resources is MOOCs (Massive Open Online Courses) which are the latest addition to the acronym-bound lexicon of HE, and quite possibly the most significant of them all (Boxall, 2012). They represent a new generation of online education, freely accessible on the internet and geared towards very large student numbers. Over recent months there has been a remarkable spate of major MOOCs ventures from top-ranked universities including Massachusetts Institute of Technology (MIT), Harvard, Princeton and Berkeley, offering free access to lectures and courses sourced from world leaders in their fields. And in July 2012, 12 universities in the US and Europe announced their involvement in 'Coursera', an internet course platform created by two Stanford University scientists. It is also one of the innovations related to the teaching and learning aspects of post-secondary education that is attempting to engage seriously with the economic, social and educational demands of our time. Interestingly, it provides a fundamental challenge to existing practices and provides new possibilities for post-secondary pedagogy and education. The essence of online learning can be viewed as learning anytime, anywhere, using any tool which very much aligns with the modern day multi-task daily routines. Presently, state-of-the-art dedicated networks have been established in many countries in order to facilitate the delivery of online post secondary level academic as well as professional programmes developed by universities and other private and public sector post-secondary educational institutions. The Joint Academic network (JANET) is one such network established by the Joint Information Systems Committee (JISC) in the UK with the vision of easy and widespread access to information and resources, anytime, anywhere. JISC works for HE Funding Councils as well as in partnership with the Research Councils (ja.net, 2010).

However, technology should not be used for its own sake and there is a need for evidence to show which applications of technology are effective in this area. According to the synthesis produced with the aim of informing the decision making by practitioners in the appropriate use of technology to support employability and employee learning in HE, evidence is categorized using the dimensions of type of evidence (account, informal and systematic) and level of evidence (course, institution, multi-institution) (Finlay et al., 2010). The findings of the study indicates that technological interventions are introduced for pedagogic, economic and developmental reasons and primarily focused on delivery, assessment (including credit-bearing) and feedback, with a small minority of examples concerned with streamlining processes. The main benefits cited include improved

engagement, greater flexibility and availability of resources, better support for students as well as improved efficiency and quality, better monitoring, easier and greener delivery, better engagement with employers and skill development for students (Finlay et al., 2010).

There are five main areas of use of technology often found in WBL (Liyanaage et al., 2011a):-

1. e-Learning portal
2. Communication
3. Assessment
4. Content
5. Technological support to students

The authors above conclude that a number of factors facilitate and/or obstruct the effective implementation of technology to support WBL and there are still a number of barriers to using technology in novel and imaginative ways to provide learning and teaching provision fit for the twenty first century.

2.5 *Spectrum of WBL Delivery Formats*

WBL can operate across a number of different delivery formats. Drawing on the established literature in WBL, the author's own experience and the examples available at Northumbria University, it is clear that WBL delivery can encompass a spectrum of formats (see Figure 2.3). These range from those where delivery takes place in the workplace by the tutors, to those where employees and academics do not meet face to face, through to those where employees come to the education provider to learn. The scenarios illustrated in the figure can be explained as follows:

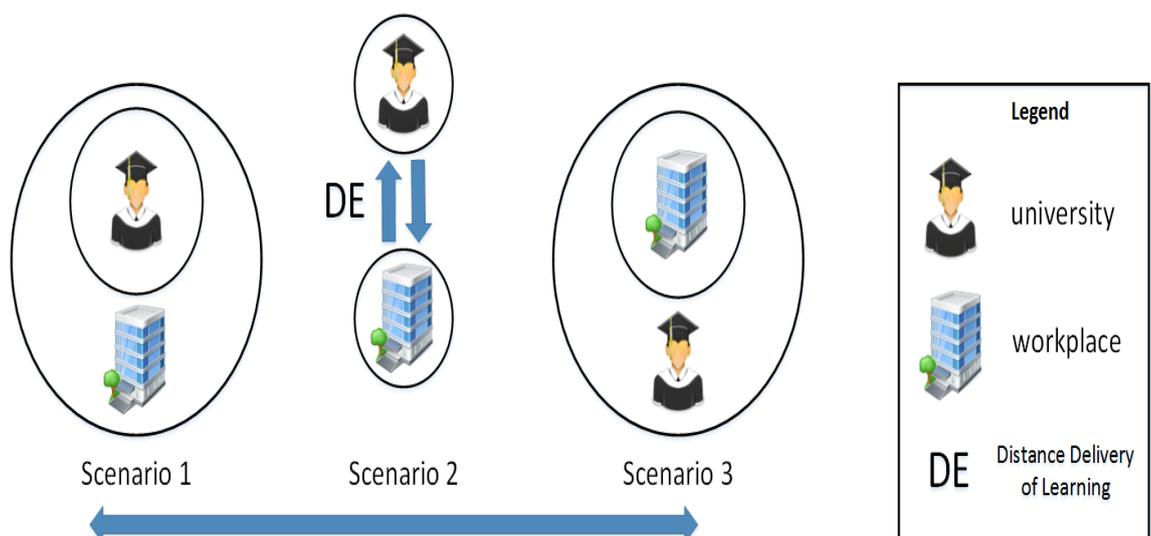


Figure 2.3 Spectrum of WBL delivery formats

Scenario 1 – This has been the practice of delivery of WBL over the years where DE methods were primitive in the sense that only postal correspondence methods existed. The visits of University/FE college academics to the workplace to deliver knowledge were effective when a large number of employees from same organisation take up WBL. The academics also benefitted out of this format being able to merge their academic/theoretical knowledge with the industrial practice at the workplace.

Examples relevant to this scenario include some of the Health sector WBL programmes and Procter and Gamble ICT programme both delivered by Northumbria university.

Scenario 2 – In this scenario, learning happens specifically through technology enabled DE methods at a distance. However, there are some components of blended learning also involved in some of the programmes where induction programmes, pre-project meetings, tutor-student mutually-agreed individual meetings happen face to face in the university as well as in the workplace. This format gives so many advantages to learners in terms of ubiquitous learning, round the clock availability of content and possibility of better and frequent communications with academics and peers.

Examples of this scenario are all five programmes being considered in this study and the PPA programme for National Health Service (NHS), Communities, & Care Industry all delivered by Northumbria University.

Scenario 3 – This is somewhat a rare occurrence in WBL which can happen through requests from the industry when companies need to provide specific knowledge/skills to their employees. In this scenario, employees visit the university for a tailor made programme customised to workplace needs delivered at the University/FE college and groups or batches of employees attend this type of training. This type of learning can focus towards theoretical or research oriented knowledge which employees sometimes lack. It could also be motivational, leadership oriented training which employers need to provide in order to up lift employees' CPD activities.

Some examples for this type of programmes are: Newcastle Business School's WBL programme for NEXUS employees, the European Central Bank programme for its employees at Northumbria University and the WBL programme for Nexus Managers at Sunderland University.

2.6 Context of WBL in the UK

The history of WBL for academic credit in the UK goes back to 1980s (Evans, 2001, 61). According to Evans, the reasons behind it were the rapid change in the social and economic situation and hence the educational life of the country during that period, and the perceived inadequate skill and knowledge levels of the workforce in general. The earlier myth that learning at HE level cannot happen in the workplace was challenged with this new initiative which put great effort into expanding HE while urging companies and HE to be more active together through partnerships, collaborations, widening access and opening those challenged boundaries. WBL introduced many mutual benefits for both education institutions and employers with partnerships formed to enhance the learning of employees. The main focus of the learning paradigm was learning from experience by moving away from the traditional curriculum and institutional structures. Accreditation of Prior Learning (APL) was one of the innovative and radical introductions to the traditional and conventional HE system. This has two parts: Accreditation of Prior Experiential Learning (APEL) and Accreditation of Prior Certified Learning (APCL) (Evans et al., 2010), also known as APL (Boud and Solomon, 2001). The UK FE system provides education for 14–19 year olds as well as adult learners and includes 385 FE colleges and over 1,000 WBL providers, as well as personal and community learning providers (Turville, 2007). This illustrates how industry and HE institutions have considered the need and importance of WBL in the development of overall economy in the country.

According to the “Business, Innovation and Skills” Committee report of House of Commons on Apprenticeships (Flyvbjerg, 2011), in 2011, the UK Government had invested £1.2 billion into the apprenticeship programme. The same year it was reported 457,200 people started new training as an apprentice. These figures demonstrate the significance and importance of the apprenticeship scheme to the UK economy. The committee had recognised that the skills development of the UK workforce is a key component of long-term sustainable economic growth. It is therefore vital that the apprenticeship programme is fit for purpose and delivers a workforce which reflects the needs of employers. It further reports that the UK cannot be satisfied with only providing entry level apprenticeships. Together, Government, employers and colleges need to be far more ambitious in expanding and delivering higher and advanced apprenticeships.

The report submitted to the parliament by the Secretary of State for Innovation, Universities and Skills (Denham, 2008) emphasises the support of business innovation. It highlights the need for the Department of Innovation, Universities and Skills (DIUS) and the Technology Strategy Board to work with partners to take forward the Sainsbury

recommendation to double the number of knowledge Transfer Partnerships and increase their flexibility and applicability to a range of educational institutions including FE colleges.

In the white paper published by the government (Rammell, 2007) a very strong emphasis has been given for WBL indicated under the “framework which spreads success and eliminates failure” as the Framework for Excellence operational in all colleges and providers of WBL from June 2008 by the Learning and Skills Council (LSC). It also indicated that WBL success rates were now close to 59%, the 2007/08 target. This also highlights that there is a difference between pre-HE and HE WBL where FE colleges and other vocational level institutions fall under the category of pre-HE WBL whilst university level WBL programmes fall under the HE WBL.

The project undertaken on behalf of Professional Associations Research Network (PARN) for Linking Professional Associations with HEIs in relation to the provision of Continuing Professional Development (CPD) (Friedman and Williams, 2008) discusses the ways in which HEIs and professional bodies are working together in relation to CPD, and what they consider to be the advantages and disadvantages of these partnerships. The report offers guidelines to HEIs for best practice in developing promotional materials and web pages, along with a set of recommendations for HEIs, professional bodies, the research partners and the government, intended to improve partnership working in the area of CPD.

Davies and Ryan (2010) in their research to explore the effectiveness of OL materials to support the mentoring of trainee teachers in the UK, who follow a one year P/G Certificate in Education (PGCE) in workplace settings identified a significant gap in the professional training needs of trainees: the knowledge and skills to engage effectively in multi-agency working. They propose that one possible solution to this is to develop online materials for trainee teachers and their work-based mentors. They also recognise that for multi-agency working, the mentoring process is the best opportunity to support and engage trainees. In the event where mentors themselves may lack expertise in this area of work, mentors and trainees would benefit from support materials provided they are easily accessible, flexible, and interactive, regularly modified and updated.

Garnett and Gibbs (2007) believe that WBL has yet to fully establish itself as a field of study although it does show signs of doing so. They further acknowledge that the diversity of the HE work-based curriculum and current student participation is comparatively limited. This highlights the extent of the cultural transformation that would make a reality of employer and university WBL partnerships. Its full emergence according

to Garnett and Gibbs will be concerned as much with academic endeavour and the development of its practices as with the political and power struggles that exist in any field of study.

2.7 Stakeholders in WBL Process

This section looks at current WBL practice in the literature and in the field in terms of stakeholder involvement.

The interim report compiled by a committee to review WBL in the UK health sector (Freeman and Lewis, 1998) revealed that there is relatively little evidence of robust evaluation of methods of delivery of WBL, assessment of learning, and evaluation of impact of WBL within the UK health sector. The report further explains the need for a relationship between the agencies commissioning WBL, the agency providing WBL and the learner to be a partnership, each bringing knowledge, skills, experience, capacity and resources to the table. It also emphasises that WBL needs to be facilitated and supported by line managers, tutors, practice facilitators and assessors.

In another study conducted by the Faculty of Business and Enterprise (FBE) of Swinburne University of Technology on their Industrial-based Learning (IBL) program (WBEC, 2000), three stakeholder contexts have been considered namely employers, university mentors, and students. However, the authors further state that although studies have explored the benefits of this type of programmes, the expectation of the three stakeholder groups is an under researched area.

The JISC funded project 'Interactive WBL environments' piloted via Westminster Business School's Business Experience and International Unit was meant to stimulate use of a VLE had concentrated the support to be provided to placement students, employers and tutors (ScienceDaily, 2011). Another example was the book published by Brennan and Little (2010) on 'A Review of WBL in Higher Education' where relationships between individual employers and HE institutions have been considered(2010). Further, according to the book chapter of Osborne, Davies and Garnett (2005), the emphasis has been given to employers, saying 'Employers are important stakeholders in the WBL programme.'. Also, in the paper by Lester and Costley (2002) on WBL at HE level: value, practice and critique, it is emphasised that universities are beginning to engage with these issues at a deeper level than that suggested by simple notions of employer engagement and skills development. Further to this, the authors of the paper "Characterising WBL as a triadic learning endeavour" whose extensive facilitation of WBL programmes for such diverse fields of professional practice as dance teaching, event management, security and the military, inform a model which represents WBL as a triadic learning endeavour in which

the student, work-based facilitator (employer) and university tutor are engaged in a mode of learning which is best conceived as ‘academy-aligned’ rather than ‘academy-based’, and in which the signature pedagogic principle is one of ‘responsive facilitation’ (Dalrymple et al., 2012). In addition, Garnett, Armsby et al. (2006) discuss as to how APEL has done much to challenge traditional discipline based assumptions associated with APEL practice through seeking to recognize the knowledge and abilities that come about through three spheres of work, academic and the personal.

This list of current research in terms of involvement of stakeholders could be exhaustive. To summarise, research on WBL has considered mainly the three groups of stakeholders which is also implicit or informal but not much to be seen formally or explicitly considering a four way dialogue where delivery is enriched by adding the fourth stakeholder, i.e. external context, in particular the PB, into the WBL model. However, there are a couple of references in the literature for example JISCinfoNet (2012) in its web page on WBL discusses about supporting the relationships between the learner, training institution(s), knowledge exchange, regulatory bodies, professional bodies and employers, using an e-portfolio which allows users to integrate learning evidence to showcase for CPD, career planning, and LLL. This fact has been observed in the analysis of data, and the author has captured the same in the recommendations to make the university VLE open for all four stakeholders for better communications and collaborations.

It is important to pay careful attention by authorities in the field of HE in terms of attracting support of all stakeholders in the process of delivery of WBL which in turn cater the professional practice needs of the industry. For example, the report of the research project funded by HEA Subject Centre Education - ESCalate (Costley and Dikerdem, 2012) discusses the future direction of HE which needs to manage growing complexity through the pursuit of new knowledge, widening participation and collaborating across disciplines and across different domains of professional practice. It further emphasizes the need of being proactively engaged with the private and public sectors, PBs and various institutions. The recommendations of the report further stress that Universities engaging in WBL programmes, modules and/or courses should work closely with employers, communities, PBs and other stakeholders on course development, design and assessment.

All the above examples of WBL research and current WBL practice show that involvement of all stakeholders is often implicit rather than explicit. They also tend to concentrate on three key stakeholder contexts: the student, the academic and university and the employer. They do not explicitly consider the external context. The current study

addresses this by explicitly examining WBL from the full range of key stakeholder contexts and this forms part of its originality and contribution to knowledge.

2.8 Conclusion of the Literature Review

This literature review sets the background and provides an in depth understanding of current and previous research in WBL pertaining to this research study. There are strong pedagogical underpinnings to WBL exemplified by Raelin's comprehensive model of WBL.

WBL can be delivered through DE methods and can share some of the same approaches, particularly the use of technology. There is a spectrum of WBL delivery from face-to-face at the workplace of the employer to fully online delivery to employees at a distance. Although there is evidence of good practice around WBL there are still a number of challenges. The documented UK government interventions and policies demonstrate the importance that is placed on WBL in the UK. While there are a large number of studies on WBL, less emphasis has been placed on consideration of the different stakeholder perspectives. There is anecdotal evidence that WBL design and delivery takes into account the different stakeholders but little formal evidence. Thus this forms one of the main foci for the current study: investigating the effectiveness of WBL from the stakeholder perspective.

3. Methodology

3.1 Introduction

This chapter presents and justifies the chosen research approach. Starting with the aim of the research study, it examines the different research approaches/paradigms that could be employed to achieve this and justifies the paradigm that this study is situated in and why the particular research approach is appropriate for this study. A detailed discussion of the chosen research methodology, case study, is followed by an exploration of the mixed methods employed as part of the case study research. This includes the reasons for using mixed methods and the strategies and approaches for analyzing and combining the resulting qualitative and quantitative data. The critique of mixed methods research and associated typologies includes a discussion of where this study is situated in that typology.

3.2 Research Aim

The aim of the study is to investigate the effectiveness of WBL from the perspective of stakeholders in the disciplines of computing, engineering and information sciences within the Faculty of Engineering and Environment at Northumbria University.

The key outcomes to be drawn from this research aim is an in-depth understanding of the effectiveness of WBL in the chosen context which reflects the full range of stakeholders, including the learners, academic institutions including management, academics and support services, workplace including employers, supervisors and mentors and professional regulatory bodies. These outcomes lead to a set of recommendations for this study that can be used by those stakeholders as best practices. Findings from this study also contribute to further insights into WBL that others can draw on and apply as appropriate to their context and requirements.

The rest of this chapter explores and delves into potential research paradigms, methodologies and techniques to achieve the above goal in the most appropriate way.

3.3 Choice of Approach – The Case Study Research

A methodology is all about perspective, the angle the researcher wishes to take on the question being asked (Pickard, 2007, xvi). Using case studies is the most appropriate research methodology according to the research aim when the purpose of the research requires holistic, in-depth investigation of a phenomenon or a situation from the perspective of all stakeholders involved. Case studies are not intended to produce generalizations, they are intended to allow for transferability of findings based on contextual applicability (Pickard, 2007, 93). Qualitative case study is characterised by

researchers spending extended time, on site, personally in contact with activities and operations of the case, reflecting, and revising meanings of what is going on (Stake, 2003). The most commonly applied definition of case study research is 'an empirical enquiry that investigates a contemporary phenomenon within its real-life context; when the boundaries between phenomenon and context are not clearly evident; and in which multiple sources of evidence are used' (Yin, 2002). This could imply a positivist approach to the case study method where a case study can be either qualitative or quantitative depending on what one is investigating and how one can acquire knowledge of the case. At the heart of it is the idea that 'the case is studied in its own right, not as a sample from a population'. The 'multiple sources of evidence' commonly produce not only quantitative data, but a large amount of qualitative data as well. An embedded case study is a case study containing more than one sub-unit of analysis (Yin, 2003). Similar to a case study, an embedded case study methodology provides a means of integrating quantitative and qualitative methods into a single research study (Yin, 2003). However, the identification of sub-units allows for a more detailed level of inquiry. The embedded case study design is an empirical form of inquiry appropriate for descriptive studies, where the goal is to describe the features, context and processes of a phenomenon.

A case study research methodology relies on multiple sources of evidence to add breadth and depth to data collection, to assist in bringing a richness of data together in an apex of understanding through triangulation, and to contribute to the validity of the research (Yin, 2003). The unique strength of this approach is this ability to combine a variety of information sources including documentation, interviews, and survey questionnaires.

"The case study is preferred in examining contemporary events, when the relevant behaviours cannot be manipulated" (Yin 2003, p. 7). The embedded case study approach is particularly relevant to examination of an environment where the boundaries between the phenomenon of interest and context are not clearly evident.

According to Pickard (2007, 85) a case study can be both the process engaged into investigate a phenomenon and the written output of that investigation. The study is both the fieldwork and the report of that fieldwork. A case study should be a study of 'a functioning specific' as explained by Stake (1994). That is to say a system that operates within well-defined boundaries; the size and nature of that system are not the issue, what dictates the case is the purpose of the investigation. The purpose of this research is to improve effectiveness of WBL which should not be overwhelmed by the size of the WBL system or nature of it is being carried out because the programmes that are being used

function within defined boundaries.

There are three types of case study research according to Yin (1981) called 'explanatory', 'exploratory' and 'descriptive'. According to the nature of this study it sits under exploratory case study because the aim of the study is to identify issues and challenges if there are any in delivering WBL programmes and to explore reasons for them from the stakeholders.

It was expected that the design of qualitative case study research would be an iterative process which ultimately give flexibility for discovery and exploration in the field. As explained by Lincoln and Guba (1985) the emergent design of interpretivist research does not allow for a detailed plan before the research begins: 'the research design must therefore be "played by ear"; it must unfold, cascade, roll, emerge'. Therefore, initially instead of focusing on a detailed plan, a basic outline of the stages should be developed.

Yin (1994, 1) further explains that case studies are preferred as the research strategy when the investigator has little control over events. This is also true with this study as the investigator has no control at all with the delivery of WBL programmes at FEE at Northumbria University being an individual researcher. This provides further rationale for selecting case study methodology for use in this study.

All above characteristics of case study research nicely align with the intension of the current study which is to look at the effectiveness of WBL from the stakeholder perspective in a particular area in depth, but not in breadth, and understand current practice so obviously grounded theory, action research, experimental, Delphi are all not appropriate.

3.4 Case Study and a Mixed Methods Approach

3.4.1 Mixed Methods by Integrating Case Study and Survey Research

Should this study be a single design using only a case study approach or should it be a multiple design? Is survey research methodology appropriate? What is the difference between a case study and a survey? A case study is in-depth research, as explained in the previous section, on a particular subject that usually spans a long period of time. When doing a case study one often physically submerges one's self in their study. As denoted by the title of the research, the study aims to examine the engagement in WBL programmes by stakeholders. This could take a quantitative angle where questions like 'how many?', 'how often?' or 'when?' would arise or be a qualitative angle where 'why?', 'how?' or 'how do they feel about it?' questions would arise. According to Yin (Yin, 1994), the research questions given earlier in Section 1.2 indicate the suitability of both qualitative

and quantitative angles in this research. 'Why' questions will try to identify the reasons for any issues and challenges of current WBL delivery whereas 'how' questions will try to solve the issues through recommendations. Klein, Nissen et al. (1991) argue that the case for combining research methods generally, and more specifically the case for combining qualitative and quantitative methods, is strong. Nonetheless, as observed by Diesling (1971, 5), research designs that extensively integrate both fieldwork (e.g. case studies) and survey research are rare. The emphasis is on the qualitative case study method and how it can complement more quantitative survey research. Kraemer (1991) identified that survey research while very useful, is greatly improved when used in conjunction with other qualitative research methods.

A survey is less in-depth. However, a survey allows for research into a much larger group of people, and is often applicable to larger society if the results have a small margin of error. This is quantitative over qualitative. Yet, for a survey to succeed in elucidating causal relationships or even in providing descriptive statistics, it must contain all the right questions asked in the right way. Kaplan and Duchon (1988, 572) suggest that "The stripping of context buys 'objectivity' and testability at the cost of a deeper understanding of what actually is occurring". Survey research is inflexible to discoveries (relatively poorer 'discoverability') made during data collection. Once the work is underway, there is little one can do upon realizing that some crucial item was omitted from the questionnaire, or upon discovering that a question is ambiguous or is being misunderstood by respondents. Essentially, the researcher should have a very good idea of the answer before starting a survey. Thus, traditional survey research usually serves as a methodology of verification rather than discovery. In this way, survey results would be able to verify the in depth details discovered in case study interviews.

The survey approach refers to a group of methods which emphasize quantitative analysis, where data for a large number of organizations/programmes are collected through methods such as mail/online questionnaires, face-to-face/telephone/Skype interviews, or from published statistics, and these data are analyzed using statistical techniques. By studying a representative sample of organizations/programmes, the survey approach seeks to discover relationships that are common across organizations/programmes and hence to provide generalizable statements about the object of study. However, often the survey approach provides only a "snapshot" of the situation at a certain point in time, yielding little information on the underlying meaning of the data. Moreover, some variables of interest to a researcher may not be measurable by this method (e.g. cross-sectional studies offer weak evidence of cause and effect) (Gable, 1994).

While case study approach can provide important insights and discoveries during the study, fieldwork is a poor method for objectively verifying hypotheses. This would not be an issue in the current study as hypothesis testing is out of scope. Attewell and Rule (1991, 313) suggest that "Traditional survey work is strong in areas where field methods are weak". Surveys can accurately document the norm, identify extreme outcomes, and delineate associations between variables in a sample. Vidich and Shapiro (1955, 31) highlight the relatively superior 'deductibility' of the survey method over field methods. They observe that "Without the survey data, the observer could only make reasonable guesses about his area of ignorance in the effort to reduce bias." Jick (1983, 138) suggests that survey research may also contribute to greater confidence in the generalizability of the results as opposed to case study which is not meant for generalisation.

Attewell and Rule (1991, 314) highlight the "complementarity between survey and case study approaches to studying information technology", stating that "each is incomplete without the other". Danziger and Kraemer (1991, 367) point out that survey research and case study have always been alternative rather than competing sources of evidence and ideas, and Kling (1991, 346), Gutek (1991, 322) and Bikson (1991, 323) suggest that it is always best to utilize several methods of data collection to adequately address the impacts of information technology. This is applicable for WBL as well which applies information technology extensively in the process of delivery.

Attewell and Rule (Attewell and Rule, 1991, 299) further suggest that "conventional survey methods, such as mail questionnaires and telephone interviews, are inappropriate for many of the issues we need to address, and that a multi-method approach is more effective". By looking at the times of the above reference it is understood that there were no advanced survey data collection methods exist at the time which have been replaced by online questionnaires and Skype interviews today but the point of multi-method approach is more effective remains true nevertheless. Bikson (1991, 327) suggests that this view is desirable in most areas of social research; especially in a newly emerging sub-field such as the study of Information Systems (IS) in organizations. Bikson further points out that the IS research whether in cross-sectional or case study designs, has relied on a mix of information gathering approaches including structured interviews, self-administered questionnaires, archival material, and observation. Kaplan and Duchon (1988, 571) suggest that "no one approach to information systems research can provide the richness that information system as a discipline, needs for further advancement".

In concluding their contribution to the Iowa Social Science Research Center (ISRC) survey colloquium, Danziger and Kraemer (1991, 367) state that, "Our attempts to analyse

and interpret the extensive URBIS (**Urbis** Social Planning and Social Research team) has database have underscored the value of multiple operationism in developing grounded theory about information technology impacts. The survey research data on the one hand, and our field interviews and observations on the other hand, have constantly been alternative rather than competing sources of evidence and ideas. Similarly, continuing interaction amongst the URBIS colleagues, each offering somewhat different field experiences and interpretations, has slowed but enriched our individual understandings. To the extent that it is feasible, those undertaking research on information technology impacts should address common questions and hypotheses with multiple modes of data and multiple methods."

Wynekoop (1992) suggests that quantitative 'micro-level' analyses should be integrated with qualitative 'macro-level' analyses, in order that the ways in which individual behavior impacts organizational phenomenon, and the ways in which macro phenomenon have effects through individuals, be explicated.

Jick (1983) observes there is a distinct tradition in the literature on social science research methods that advocates the use of multiple methods. This form of research strategy is usually described as one of convergent methodology, multi-method/multi-trait (Campbell and Fiske, 1959), convergent validation, or what has been called 'triangulation' (Webb et al., 1966). These various notions share the conception that qualitative and quantitative methods should be viewed as compliments rather than as competitors. Jick underscores the desirability of mixing methods given the strengths and weaknesses found in single method designs. Through the use of multiple methods the robustness of results can be increased; findings can be strengthened through the cross-validation achieved when different kinds and sources of data converge and are found to be congruent or when explanation is developed to account for divergence (Kaplan and Duchon, 1988, 575).

It is agreed, that given human limitations, individuals must specialize in a limited number of methods as per Klein, Nissen et al. (1991). As observed by Orlikowski and Baroudi (1991), three methods have tended historically to dominate IS research: survey, laboratory experimentation, and case study. The majority of IS researchers are well versed in one or more of these three methods. Given the aforementioned potential benefits of combining research methods within a single research design, it therefore makes sense to leverage this talent by proposing approaches to combine these methods.

Mixed methods is viewed by its proponents as the third methodological movement ((Doyle et al., 2009); (Leech and Onwuegbuzie, 2009)), and the above discussion is not a bid to get involved in a methodological debate as stated earlier, the only objective here is

to align this research study with a particular tradition and defend its strengths and try to make up for its weaknesses. Doyle, Brady and Byrne (2009) outlined the main purposes for conducting mixed methods research as: Triangulation, completeness, offsetting weakness of other paradigms, and explanation of findings.

Several reasons are given for embarking on mixed methods research by Bryman (2006) who categorised them using Greene, Caracelli et al's (1989) earlier classifications as:

- Triangulation: This is meant as a convergence of results from methods to corroborate findings from each source.
- Complementarity: This was described as using findings from one method, to clarify results from another.
- Development: Using results from one method, to inform the development of the other method.
- Initiation: Trying to discover contradiction and new perspectives by using findings from different methods of data collection.
- Expansion: Seeks to extend the enquiry, by using different data types and methods at different stages of the research.

From Bryman's (2006) analysis, most of the studies gave reasons as complementarity, and then secondly expansion, followed by development as third, and triangulation as fourth. The current study sits in the areas of complementarity, and triangulation, because:

Complementarity - student feedback from online questionnaires was verified with the interview feedback from students and other stakeholders for similar type of questions/variables with the aim of expanding/adding to data, and also as the second phase of data collection, enabling a small number of students who were interviewed.

Triangulation - the results from quantitative and qualitative analyses are triangulated for final outcomes. Triangulation is achieved within the case study by using multiple data collection techniques 'to pick triangulation sources that have different biases, different strengths, so they can "compliment" each other' (Miles and Huberman, 1994). It also serves another purpose as Yin (2002) claims 'to collect information from multiple sources but aimed at corroborating the same facts or phenomenon'. Therefore, data from interviews, questionnaires and documentation analyses are able to achieve triangulation. As Pickard (2007, 95) further explains, survey research can include qualitative and quantitative research hence *mixed methods* was adopted.

Accordingly, since ‘triangulation’ and ‘complementarity’ amongst the different stakeholder perspectives are important, it is appropriate to consider ‘expansion’ as this is a case study which yields in depth data and thus using a mixture of approaches gives that depth. All above examples from the literature iteratively justify the advantages of using mixed methods, in particular, mixing survey research with case study, in order to evaluate the effectiveness of WBL in depth from the stakeholder perspective in a particular area.

3.4.2 Mixed Methods and Data Analysis Strategies

In mixed methods research, there is the issue of how to combine both qualitative and quantitative data. Researchers like Caracelli and Greene (1993) have outlined some strategies that are regularly employed to integrate both types of data:

- *Data transformation*: Transforming one kind of data into the other, to aid analysis, e.g counting occurrences of codes in qualitative data and using quantitative analysis.
- *Typology development*: Analysis of one type of data leads to developing substantive category that is applied in analysing the data from the other source.
- *Extreme case analysis*: Case identified using one type of data, are chased via more data collection and analysis of the other data, with a view to refinement.
- *Data consolidation*: both types of data are joined together into narratives or numerical code for further analysis.

From the above categories, this study uses ‘typology development’ and ‘Extreme case analysis’ as the strategies to integrate both types of data. The analysis of qualitative data from interviews of all stakeholders excluding students led in developing substantive category that was applied in analysing the quantitative student data and then included student and support services staff interviews to verify the results further.

3.4.3 Critique of Mixed Methods

a) *Compatibility*: The debate about the two paradigms of positivist thinking and interpretivist thinking being merged has no justification. When it was that only positivism was widespread, researchers did not think there could be another paradigm at the time. Now postpositivism and interpretivism are here and has taken the other end of the continuum. The view of mixed methods proponents like Doyle, Brady and Byrne (2009) and Leech and Onwuegbuzie (2009) which the author concurs with, is that mixed methods lies in the middle of this continuum and is not a mixture of approaches but a different philosophical stand on its own, with a different epistemological view.

b) *A 'what works approach'*: Mertens (2003) argues that research should not be conducted on the sole basis of 'what works' which in a sense is a valid argument. One could equally argue that the emergent nature of qualitative research is based on what is practical in the next step, albeit focusing on qualitative methods. However research should be judged mainly on the usefulness of its outcomes, though it should generally be based on more than that.

c) *Dwells within positivism*: Giddings (2006) argues fervently that mixed methods is only serving as a way to bring back positivism to dominate as a research approach. It is not exactly clear how and in what way this was meant, but clearly there are different forms of mixed methods, some with more quantitative focus, and other with more qualitative focus, so mixed methods cannot be said to favour one paradigm over the other.

Smithson (1991) suggests three possible reasons why researchers seldom combine approaches: (1) doubts that exist over the legitimacy or feasibility of combining positivist and interpretive approaches; (2) vulnerability stemming from the close correspondence between many researchers' value systems and their single methodology paradigm; and (3) practical concerns over possible contradictory results from multiple methods.

3.5 Typology of Mixed Methods

In terms of the typology of mixed methods, this study will use a fully mixed approach which will contain both qualitative and quantitative data collection and analysis to explore how effective are the selected variables in delivery of WBL from the point of view of stakeholders. From Leech's and Onwuegbuzie's (2009) typology shown in Figure 3.1, partial mixed methods are those research designs that only use another method in explaining the findings, while a fully mixed method research design employs another method at one or more of the following stages; research objective, type of data, type of analysis and inference. If a research design has applied both methods at the same time it is said to be a concurrent design, and if they are carried out in stages it is referred to as a sequential design. If both qualitative and quantitative methods are giving equal weight in the research, then it is an equal design, while if one is dominant it is a dominant design. This study initially lied within the band of a fully mixed method and data were collected and analysed concurrently using both qualitative and quantitative methods, with equal weight. Therefore the study, according to the typology in Fig. 3.1, was initially under the *fully mixed concurrent equal status* design.

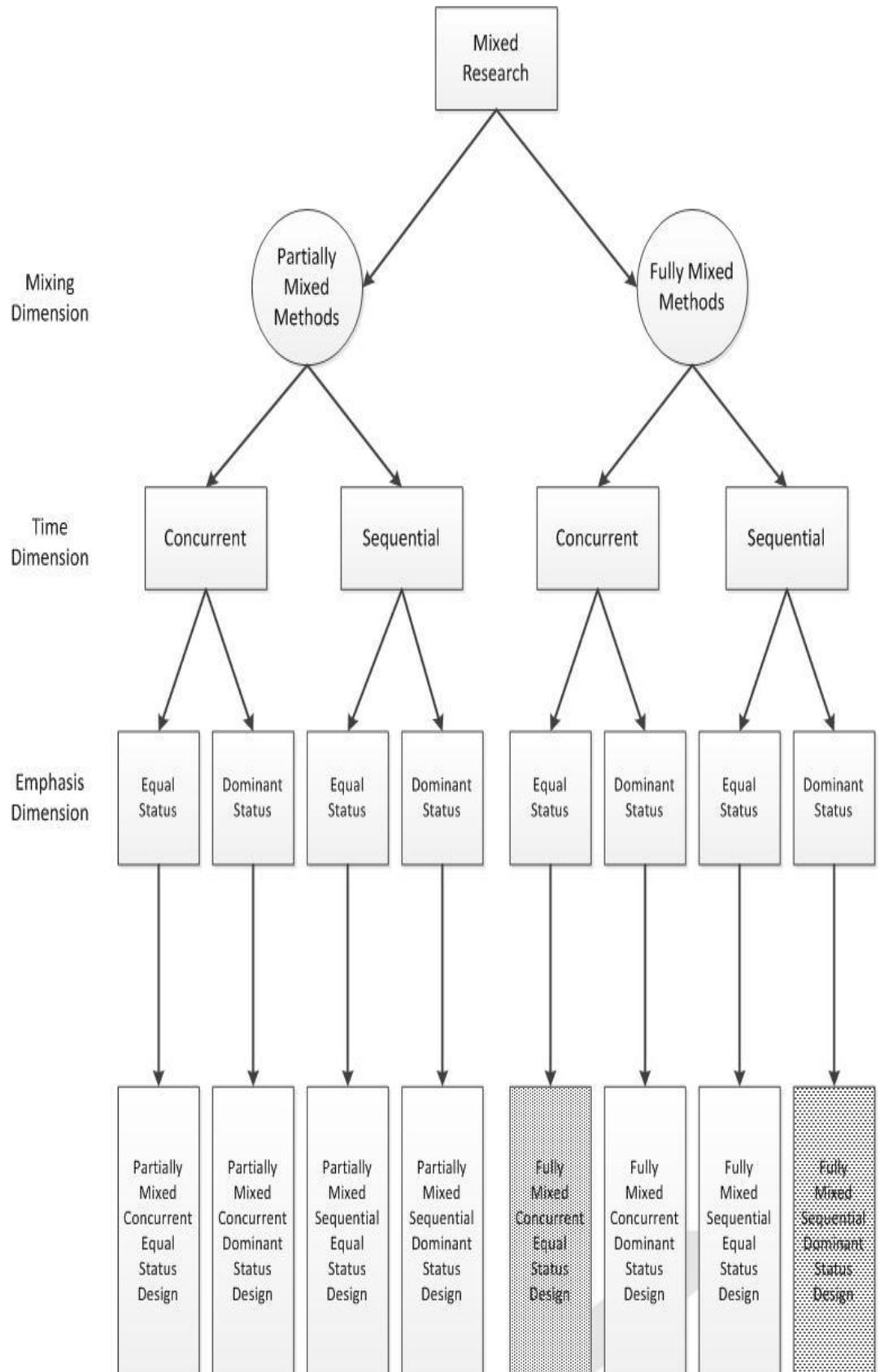


Figure 3.1 Typologies of mixed methods research, Leech and Onwuegbuzie (2009)

However, the typology shifted to *fully mixed sequential dominant status* design in the second phase of data collection where the volume of interviews were increased with the inclusion of students and support services staff.

3.6 Paradigm Dialogue

This is the area where people often express disquiet about the need for philosophical discussions or their importance in getting results from research. Paradigms and underpinning philosophies might not be so useful in terms of the practicalities of the research, but they give direction and help the researcher to set conceptual boundaries during the research process. The author delves into the issue of which paradigm this research stems from and the author's views and how they affect the chosen methodology.

What is meant by a paradigm? Kuhn (1970, 146) defines it as the entire constellation of beliefs, values, techniques, and so on shared by members of a given (scientific) community. According to Guba (1990, 17) it is 'a basic set of beliefs that guide action'. Lincoln and Guba (1985) describe that there are three major questions that help us to define a research paradigm:

- What is the nature of reality? the ontological question concerning the nature and form of reality
- What is the nature of the relationship between the knower and the known? the epistemological question concerning the philosophy of how we can know that reality
- How we can come to know it? the methodological question concerning the practice of how we come to know that reality

There are three major research paradigms according to Pickard (2007, 5) namely positivism, postpositivism and interpretivism. Table 3.1 below shows the examination of the beliefs of each paradigm by using the above questions and how to contrast the fundamental differences between them.

The discussion about the paradigms leads to thinking in a broader context to see as to how the above questions of Lincoln and Guba (1985) relate with this study. An epistemological stance under interpretivism has significance to this study where the knowledge which comes out of the study is the result of interaction between the subject of WBL and the investigator. According to the Table 3.1, and the aim of the current study, it can be placed under the 'purpose' of 'understanding' and 'reconstruction' which leads to 'transfer of findings'. However, it is seen that the methodological stance is directly linking to this study only in postpositivism (some aspects) and interpretivism paradigms:

Table 3.1 Characteristics of research paradigms

	Positivism	Postpositivism	Interpretivism
Ontological stance	‘Realism’	‘Critical realism’	‘Relativist’
	Belief in a tangible, social reality. This reality exists independently of those ‘creating’ the reality. A social reality can exist just as a natural reality exists (water remains water whether someone is swimming in it or not).	Belief in a social reality but acceptance that knowing this reality will always be inhabited by imperfections in detecting its nature. The imperfections are the result of human fallibility.	Belief in multiple constructed realities that cannot exist outside the social contexts that create them. Realities vary in nature and are time and context bound.
Epistemological stance	Objectivist/dualist Investigator and investigated are independent of each other	Modified dualist/objectivist Acceptance that independence is not possible but objectivity is seen as the goal and demonstrated by external verification	Transactional/subjectivist The results of the investigation are a product of interaction between the subject and the investigator. What can be known is a result of the interaction.
Methodological stance	Experimental/manipulative Hypothesis testing, variables identified before the investigation. Empirical testing is conducted in order to establish the ‘truth’ of the proposition. Predominantly quantitative Analysis by variables.	Modified experimental/manipulative Hypothesis testing but more emphasis placed on context. Quantitative and qualitative Analysis by variables.	Empathetic interaction Investigator interacts with the object of the investigation. Each construction of reality is investigated in its own right and is interpreted by the investigator. Qualitative, including hermeneutics and dialectic interchanges Analysis by case.
Purpose	Prediction/control/explanation Framing of general laws.	Prediction/control/explanation Generalizations.	Understanding/reconstruction Transfer of findings.

Source: Adapted from (Lincoln and Guba, 1985) by (Pickard, 2007)

a) *Positivism* – This research does not fall into this category under any of the stances according to the aim of the study mainly because the researcher is not planning to test hypothesis, and the data is not predominantly quantitative because of case study approach which is qualitative. There is not any tangible, social reality to believe and the methods of data collection do not include any empirical testing. The empirical method is generally taken to mean the approach of using a collection of data to base a theory or derive a conclusion in science (Bridgman and Holton, 2008) which is not the case in this study. ‘Ontological stance’ is focused on the nature of reality where all three paradigms are concerned about beliefs in social realities whereas this study cannot be generalised into a social reality being a case study which is limited to a small set of WBL stakeholders. There is of course some sort of generalisation in the quantitative analysis with surveying data which cannot be taken as significant compared to dominant qualitative data. ‘Epistemological stance’ on the other hand under interpretivism has significance to this study, as the knowledge emanating from the study is the result of interaction between the subject (WBL) and the investigator. However, in terms of positivism and postpositivism, the objectivist approach does not suit case study research.

b) *Post positivism* – In mixed method approach where both quantitative and qualitative analyses are conducted by variables with more emphasis is placed on context, there is a possibility that this study falls under post positivism only exception being it does not test any hypothesis nor conduct any experiments. Also, according to Pickard (2007, 93), case studies are not intended to produce generalizations, they are intended to allow for transferability of findings based on contextual applicability.

c) *Interpretivism* – Given the high qualitative nature and analysis by case characteristics, this study comfortably sits in this category. As shown in the table, the investigator was continuously interacting with the object of the investigation and each construction of reality is investigating in its own right and is interpreted by the investigator. The findings expand the understanding and help to reconstruct the delivery of WBL programmes in a better way through a set of recommendations.

According to the behavior and characteristics of research paradigms as shown above in the Table 3.1, selecting of case study research methodology and mixed methods approach give much more benefits to achieve the aim being set up. Especially the methodological stance which combines both post-positivism and interpretivism stances blends with case study research methodology and mixed methods approach comprehensively. The un-biasness can be ensured through triangulation considering the

similar characteristics of both post-positivism and interpretivism stances. Therefore, according to the current philosophy of research paradigms, case study research can be considered as most suited with a mixed methods approach.

3.8 Conclusion

This chapter explores the research methodologies and methods appropriate to this research study. Given the aim of this study, case study research with a qualitative base has been identified as the most appropriate methodology combined with survey research to justify the research questions providing a quantitative element. Mixed method research that combines case study and survey can provide stronger results than conducting each separately as the two methods can complement each other. The chapter also evaluates as to why all other research methodologies are not appropriate for the purpose of the study but how grounded theory research methodology has some association with the substantive theories came out from the data. Further discussion is provided on the traditional reasons for doing mixed methods research, and data analysis strategies for combining data from both quantitative and qualitative methods. The paradigm in which this study is situated in is interpretivism together with some post positivism features. The associated typologies are also presented followed by a discussion of where this study is situated within those typologies. This chapter sets the scene for the study itself which is presented in the following chapters.

4. An Overview of the Approach and Details of the Selected Programmes

4.1 Introduction

Having selected the case study research methodology and mixed methods approach for this study, this chapter presents the details of the selected case itself and the embedded units within it. These are the five WBL programmes delivered by the FEE of Northumbria University. The selection of survey samples and selection of analysis techniques are discussed. The methodological approach adopted in this study and its individual steps are explained in detail. The ethical considerations and measures are outlined to show how the author tackled the ethical issues in the study.

4.2 Pilot Study

Before determining the techniques to use for the full case study a small pilot study was conducted with the following individuals primarily to gather information, become familiar with the cases and inform the design of the case study itself.

1. The three research supervisors
2. Five programme leaders of selected WBL programmes
3. A Work Related Learning Development Officer at WRLS
4. Library Liaison Adviser for the Faculty of EE
5. A Principal Lecturer from the Faculty of Health, Community and Education Studies who is coordinating the Professional Practice Awards (PPA) programme for WB learners
6. A Learning Technologies Adviser and the LTech team at Academic Registry
7. A Reader in the Design Faculty who is coordinating business partnerships of design projects with other countries

The above pilot study provided the basis for creating the online student questionnaires and interview questions for all stakeholders. Each of the five WBL programmes being offered by the FEE is considered as an embedded unit in the case study.

4.3 WBL Programmes Selected as Embedded Units for the Case Study

The aim of this study is to explore the effectiveness of WBL from the perceptions of different stakeholders (learners, programme leaders, tutors, support staff, and administrators of the university, employers, supervisors, and mentors at work place, and representatives of professional bodies). The study focuses on five WBL programmes

across a number of disciplines within the FEE at Northumbria University. These mainly use features of online learning embedded with some blended learning components. The selection of five programmes reflect all levels of HE study (u/g and p/g), different subject areas (records, information and library management through IT to engineering), different types of employer sectors e.g. industrial (engineering), public sector (ILM/librarianship), business (records management/IT) and a range of professional bodies including EngCUK, CILIP, ARA, IRMS. Two of these are designated as WBL programmes by the university: BSc Librarianship, MSc Professional Engineering. The other three programmes are DL programmes with embedded WBL elements (MSc ILM, MSc RM and MSc ICT). This provides variety across DL and online WBL. However it should be noted that it does not cover the full spectrum of WBL which can also encompass extensive face to face delivery elements.

The details of the selected programmes are given below.

4.3.1 MSc Information and Communication Technology (ICT)

The *MSc Information Technology (IT)* was introduced initially in year 2000 as an in-house programme for Procter and Gamble (P&G) employees. It was designed for employees who did not have a first degree in a computer-related subject, and was developed from the FT MSc Computing programme. It was delivered by distance delivery with staff from the university visiting the P&G offices to deliver lectures/seminars. Although the programme was approved for DL delivery, materials for this mode were never developed. There was some video-conferencing support to students at one remote location. For a small number of modules, staff issued CDs prepared for a Postgraduate Certificate (PgC) Contemporary Computing.

In 2001, through ESF funding, the university started to train a cohort of ‘women returners’ to Postgraduate Certificate level, using a distance learning form of delivery. A further ESF grant was obtained to support the DL development to Postgraduate Diploma level. In January 2006, MSc Information and Communication Technology (ICT) was launched in co-operation with RDI (Resource Development International). In mid-2007 this collaboration ended and the university has since been responsible for the programme which has grown to appeal to a range of learners wishing to develop their skills and expertise in the computing and IT discipline. The delivery is 3 years by distance learning and is not linked to a PB (Damm, 2010).

4.3.2 MA/MSc Information and Library Management (ILM)

Selection of the MA/MSc Information and Library Management (ILM) in the research was influenced by the fact that public sector employment as a proportion of all employment in the North East of the UK is as high as 23%. This is the third highest among the 13 regions being considered across the UK with only Northern Ireland and Wales reporting larger percentages of 28.8% and 23.9% respectively (James, 2009). This could account for the strong regional demand for the programme although it does attract students from across the UK and overseas. The programme commenced in the early nineties at Northumbria University in FT and PT delivery modes. It started to deliver in DL mode in 2003 using online delivery of content focused on its work based learners. The programme duration is 2 years by DL.

Northumbria University has a long history with the Chartered Institute of Library and Information Professionals (CILIP) having conducted information sciences courses not only since the university's inception in 1990 but even before the university obtained corporate status. However, the MA/MSc ILM is mainly targeted as an entry qualification for the professional status of librarians. CILIP requirements for applying for chartered status are either to have an accredited Bachelors degree or any Bachelors degree with an accredited Masters degree like MA/MSc ILM. Therefore it is mainly those librarians who need to climb the ladder in their professional career who choose the MA/MSc ILM programme (Casselden, 2010).

4.3.3 MSc Professional Engineering

The MSc Professional Engineering is one of a number of programmes offered by Northumbria (Northumbria, 2010) and other UK universities as part of a Government funded initiative called Engineering Gateways (Council, 2010a). This is led by the UK Engineering Council (EngCUK) and is aimed at providing flexible pathways to becoming a professional engineer. The programme targets engineers in gaining the minimum educational requirements for Chartered Engineer (CEng) registration of EngCUK. CEng registration requires one of the following:

- An accredited Bachelors degree with honours in engineering or technology, plus either an appropriate Masters degree accredited by a professional engineering institution, or appropriate further learning to Masters level
- An accredited Integrated MEng degree.
- Completion of appropriate work-based or experiential learning (Council, 2010b)

This Masters Degree programme wholly takes place in the workplace in distance mode with the content made available on the e-Learning portal of the university. The content is designed to be directly relevant to what students are working on and aims to further their education and work towards PB recognition and chartered status. Students can use their learning in the workplace to maximise their productivity and can apply it to work based problems providing technology transfer solutions. The 3 year programme was launched in September 2008 and the first batch of 12 WBL students passed out in 2012. Mentors are assigned to each learner at the workplace in a formal way but the ratio of learner: mentor will depend entirely on the employer. The mentor will get involved with the university on the industrial activities and if and when the need arises on the academic activities of the learner as well (Perera, 2010).

4.3.4 MSc Records Management (RM)

The MSc Records Management was selected because it was the first Masters Distance Learning (DL) programme to be offered by Northumbria University in 1996. It was developed to address the education and training needs of a then emerging discipline and profession whose ‘cousin’ is the long-established archives profession ((King et al., 1996); (Hare et al., 1996)). As the first DL programme to be developed in the faculty it adopted an open learning pedagogic model (Race, 1993) which was successfully piloted with records practitioners (McLeod, 1995) and subsequently underpinned the development of later DL programmes, including the MA/MSc ILM.

Being a DL programme it attracts students from all over the UK and overseas. The first cohort included students based in Iceland and Brussels and since then students from the UK (including the local region), Eire, Iceland, Europe, the USA, the Caribbean and Africa have studied the programme. Initially the MSc was delivered over three academic years using paper based materials and annual compulsory study schools. Technology available to support students was very limited and relied largely on email communications. Electronic (library) resources were limited and records management focused literature even more so. During its lifetime the programme has developed significantly, incorporating student feedback (eg moving from a campus-based academic delivery model to a 2-year calendar delivery) and embracing technology developments, including the eLP, e-resources, Skype etc (McLeod, 2000) and (McLeod) (in press).

Accreditation of professional programmes is part of Northumbria University’s ethos. Since the Records Management Society (now the Institute of RMS) does not have such a mechanism it was involved in the programme’s validation. After five years of delivery, in line with the Society’s rules, the MSc became the first DL programme in

records management to be accredited by the Society of Archivists (now the Archives and Records Association (ARA)). It was re-accredited in 2007 with the Society commending “the incredibly high standard of teaching materials which show a clear distillation of in depth, rigorous and high quality research and a good knowledge of projects and products available as well as current trends in the profession”, “the quality of the reading lists, which show knowledge of the current markets, practice and research” and “the flexible approach to distance learning, and the desire to constantly improve the student experience” (Archivists, 2007). The programme attracts records managers from all sectors and at different stages in their careers. Many have secured promotions in their own and/or other organisations. Many work for leading national / international organisations (eg the BBC, European Central Bank, the Open Society Archives, the UN, pharmaceutical, financial and other ‘blue chip’ companies).

4.3.5 BSc (Hons) Librarianship

The BSc (Hons) Librarianship degree is the only u/g degree offered by the FEE which has been granted full WBL status by the university. The programme is ideal for those working in a library or information service environment at a junior level who are capable of progressing but do not have the right qualifications to be promoted. Applicants need to have either CILIP certification (ACLIP), or equivalent work and training, plus a minimum of 2 years work experience in a Library or information handling environment and should be able to demonstrate a record of CPD in these areas. This DL programme is designed to fit around their current work commitments and reflects the recent changes in the profession and the new 'Body of Professional Knowledge' introduced by CILIP. Each intake typically comprises 25-30 students and the programme takes a minimum of 3 years to complete in DL mode (Hanlon, 2011).

Figure 4.1 below shows the research framework in terms of case study with five embedded units and how the support services are connected around them.

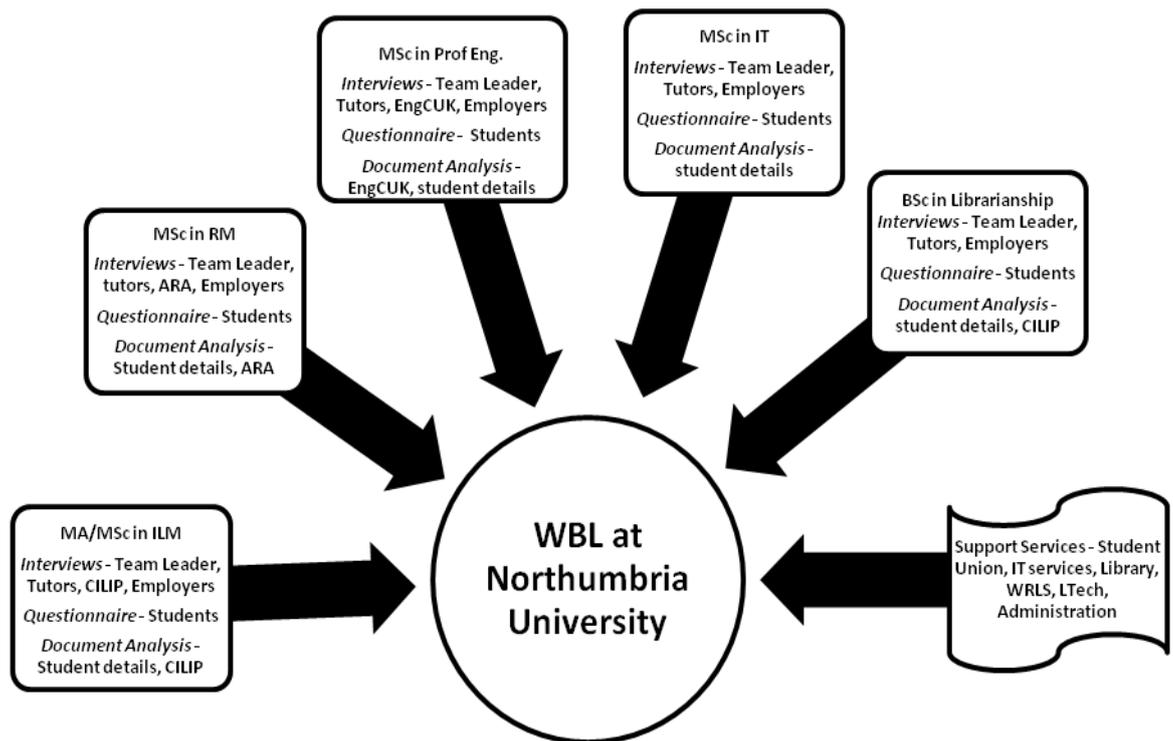


Figure 4.1 Research Framework of the Current Northumbria University Study

4.4 Effect of Researcher's Experience on the Study

The researcher has been heavily involved in various implementation roles in distance education, online learning, and e-Learning projects funded by the Asian Development Bank (ADB) under the Ministries of Vocational Training, Technical Education, General Education, and HE in Sri Lanka. Insights and expertise gained through this experience has influenced the current study. The researcher has used his experience to compare between the two contexts, Sri Lanka and the UK and contextualise as appropriate to the WBL environment in the UK. Furthermore he has brought his experience of some of the technologies, pedagogical models, values and beliefs of human behaviour in this area into the study. The selection of the variables 'quality' and 'access' as two main influencing parameters for WBL was one such influence which initially came from previous research conducted by the researcher on the effectiveness of online learning in Sri Lanka. These parameters were ultimately merged with a third parameter 'support' which emerged through the study. Development of the survey and interview questionnaires also drew on the researcher's experience although the overriding consideration here was a focus on WBL rather than DL or online learning. The researcher's previous experience proved helpful in order to understand and explain the results which emerged from the data and led to the benefits, strengths, issues, recommendations and models as contribution to new knowledge.

4.5 How Case Study Methodology was Applied?

As per Lincoln and Guba (1985), there are three major phases in the case study research process called ‘orientation and overview’, ‘focused exploration’ and ‘member checking’. In the ‘orientation and overview’ phase, the main focus was drawn towards deciding on the boundaries of the case, single or multiple case designs, selecting the sites, unit of analysis, purposive sampling, setting up a case database and determining data collection techniques. Since the focus in this research is multiple programmes and a group of people, it is very important in this phase to decide on the boundaries of the case considering the time and resource constraints. Therefore, it was decided to obtain feedback only from ongoing programmes and existing students whilst limiting the sample of programme leaders, tutors, support staff, employers, mentors and representatives of the professional bodies to be manageable but representative. Purposive sampling has been used to identify the five programme leaders of the programmes as ‘key informants’ who will have the most amount of knowledge about the programmes. Lincoln and Guba (1985, 258) encourage the use of informants, as ‘by virtue of their position within the context, such informants can provide the inquiry team with an “inside” view of the norms, attitudes, constructions, processes, and culture that characterize the local setting’. At the initial stages, information was collected from the key informants only. After this stage, and based upon the success rate of data collection, it was planned to focus on other techniques and stakeholders for data collection like students, tutors, support services’ staff, employers, and representatives of professional bodies.

In the next phase of ‘focused exploration’, data collection and iterative analysis was carried out. *Data collection techniques* were questionnaires, interviews, and documentation analysis. A technique is the approach taken to data collection, the way in which empirical evidence will be harvested from the source (Pickard, 2007, xvii). Considering the varied distribution of stakeholders, various data collection techniques needed to be considered so that the information to be harvested was optimised. This optimization is achieved through triangulation which is explained in chapters 6 and 7. Case study research together with survey research to use mixed method was selected in this study as its greatest strength allows for confirmation or refutation of emerging themes. As Dey (1993) points out, ‘*there is a difference between an open mind and an empty head. To analyse data, we need to use accumulated knowledge, not dispense with it*’. This suggests the importance of being open minded to accept all eventualities and not allow prior theory to drive the analysis. The emphasis was always constrained to theory emerging from the data but not other way round. The expectations were to identify initial categories which emerged directly from the

raw data whilst purposely ignoring any assumptions or interpretations at this point. In this way, it was ensured that the data would jump and is not pushed, that categories are not forced, they emerge (Melia, 1997). However, according to section 4.5, it was not possible to eliminate researcher's own experience but to acknowledge it has an influence. This effect was minimized as much as possible by allowing the trends, patterns, themes and sub themes emerged from data to be prominent and use of triangulation to inform the research outcomes, conclusions and recommendations whilst giving a low priority for accumulated knowledge by the researcher.

In the third phase of 'member checking', seeking member feedback and exiting the research was carried out as major activities. Member checking was practiced during the data collection process to ensure maximum information yield. This was done initially by asking the participants of the interviews for their feedback for the transcribed interviews and allowing them to alter only the way of saying it but not the meaning of what has been said or done which eventually improved the quality of the final outcome. At the end, the results were shown to some of the programme leaders and tutors to get their feedback and some of the comments they made eventually helped to improve the way of presenting the same. This was emphasised and justified in the literature by Maykut and Morehouse (1994) '*We have found that members' feedback is very valuable and sometimes helps us see or emphasize something we missed*' and also Stake (1995) '*I think I can say that all my reports have been improved by member checking*'. Finalization of the checking was decided when all data collection ceased to reveal any significant new information.

The other way of member checking being practiced in the study was publishing of research outcomes throughout the study in various aspects as they were coming out. Publications as listed in Appendix XIV include a book, a book chapter, two peer-reviewed journal papers (one in progress on corrections), and 11 conferences. This dissemination provided considerable feedback to the researcher from readers, researchers, and conference attendees and this feedback was incorporated into the study. One such example is a recent conference in Cardiff where a concern was raised from the audience on PB's role in maintaining quality standards of WBL programmes through accreditation. Again in another conference in Leeds the Westminster Toolkit was introduced by a participant which can be used to validate preparedness of the academic institution being one of the stakeholders in the process. There was another conference the researcher attended in Loughborough University where a high emphasis was given to Grounded theory research which influenced the researcher to consider how and whether there is any association of Grounded theory research in the current study.

4.6 Research Sample and Instruments of Data Collection

4.6.1 Interviews for all Stakeholders

The interview questionnaires were prepared for five categories: students, academics (programme leaders/tutors), university support services staff, employers, and PB representatives. Questionnaires were sent to interviewees in advance of the interview so that both the researcher and interviewees would be prepared to achieve more productive interview time. The questions were targeted towards the effectiveness of WBL programmes in terms of three parameters, ‘access’, ‘support’ and ‘quality’. A previous study not particularly on WBL but on DL delivery of HE programmes (Liyanage, 2010a) influenced the selection of parameters ‘access’ and ‘quality’ whereas the parameter ‘support’ was introduced through the research questions. Emphasis was given to understanding the attitude and commitment of stakeholders towards WBL and also how stakeholders foresee the future of this educational approach. The different interview questionnaires for each stakeholder type are attached as Appendix I, II, III, IV and V.

The interview sample of students, programme leaders, tutors, support services staff, employers and representatives of professional bodies is shown in Table 4.1 which has taken into consideration the scope of this research and the availability of individuals. The support service providers for WBL delivery within the university comprise University management, Work Related Learning Services (WRLS), Library and Learning Services (LLS), the Content Development Unit (LTech) under the Academic Registry/IT services, the Student Union and the faculty administrative staff. Interviews were conducted with key individuals from these entities.

Table 4.1 Summary of stakeholders interviewed

Category of stakeholders	Number of Interviewees
Programme Leaders	05
Tutors	07
Employers	06
Representatives of Professional Bodies	04
Students	11
Support Staff of the University	07
Total	40

The selection of stakeholders for the interviews from the full potential sample can be summarised as follows: 100% of programme leaders and professional bodies, about 50% of tutors, 2-3 students from each programme, a sample of employers to cover all the programme disciplines and representatives from each of the identified support services.

4.6.2 Online Student Questionnaires

At the beginning of the research, only 3 Masters level WBL programmes were suggested to be evaluated as embedded units of the case study. These covered engineering, ICT and ILM. During an interview with one of the tutors who was also the PL for Records Management WBL programme, it was decided to include the Records Management distance WBL programme offered by the faculty. As Lincoln and Guba (1985) explain, design of case study research is very much an iterative process. The initial data analysis also suggested that consideration of only Masters level programmes would not give the complete picture as it would only include perspectives from p/g students. Hence it was decided to include the only WBL status granted u/g programme in the FEE, the BSc Librarianship into the study. This late addition required the online student survey to be conducted in two phases. The first covered the p/g programmes only. A further survey was conducted with u/g students when the BSc librarianship was added as the last embedded unit of the case study. These changes clearly justify the fact that case study research design needs to be flexible and iterative, enabling the researcher to capitalise on unexpected eventualities and unanticipated developments.

The total u/g student population is 17.6% of all students of five programmes whilst the response rate of the u/g student population in the survey is 16.7%. These statistics may have had a small impact on the results when the outcomes are generalized but since case study research is not intended for generalizations (Pickard, 2007, 93) the above discrepancy can be minimised and considered as negligible. The final selection of one u/g and four p/g programmes was guided by the availability of access and range of programmes on offer across the chosen discipline areas at the university. It proved useful to have at least one u/g programme in the case to explore different levels of HE study.

The student online questionnaires were designed to consider the following main categories of questions:

- Type of programme of study by discipline,
- Demographic and background characteristics of students,
- Quality, access and support related questions.

Each of the questionnaires had 30 multiple choice questions (MCQs) with 2 open ended questions in MSc and 4 open ended questions in BSc questionnaires. The target student number was 155 from the four Masters programmes and 33 from the BSc programme representing the total number of students actively enrolled on the programmes. The response rates were 36.5% (Average of the four programmes) and 36.4% respectively

as shown in Table 4.2 below. The student questionnaires are attached as Appendix VII and Appendix VIII.

The details of the online student questionnaire results are given in Table 4.2.

Table 4.2 The details of the online student questionnaire results

	MA/MSc ILM	MSc Professional Engineering	MSc ICT	MSc RM	BSc Librarianship	Total
Total no. of students	76	14	40	25	33	188
% of target cohort	40.4	7.4	21.3	13.3	17.6	100
No. of responses	36	06	11	07	12	72
% responding	47.4	42.9	27.5	28.0	36.4	38.3
% of respondents from the cohort	50.0	8.3	15.2	9.7	16.6	100

As a validation of data collection instruments, the student questionnaires and interview questionnaires were tested through the following:

- ✓ a student who had completed the BSc in Librarianship programme with a first class honours degree
- ✓ two Masters students
- ✓ all three supervisors
- ✓ a programme leader
- ✓ an independent tutor

4.7 Data Analysis

Statistics are normally used to confirm or validate the data to a certain degree. Descriptive statistics assist in better understanding of the data (Miller, 1995). Quantitative analysis of data gathered from the student survey was carried out using the software tool called SPSS (Statistical Package for Social Sciences; SPSS/PC, 2010 version 18) (IBM, 2011). It is important to prepare the survey data in a consistent format before analysis, therefore, the student responses received on email were first stored in ‘Snap’ survey management software (Snap, 2010) which was then exported to SPSS after refining them to align with SPSS data fields. Due to the comparatively large number of potential students involved in the online survey (188) compared to total number of interviewees (40), it is appropriate to use statistical analysis methods for data obtained from the student questionnaires. The data acquired from the rest of the stakeholders through interviews were analysed qualitatively.

Berk (2005) describes twelve potential sources of evidence to measure teaching effectiveness as: (a) student ratings, (b) peer ratings, (c) self-evaluation, (d) videos, (e) student interviews, (f) alumni ratings, (g) employer ratings, (h) administrator ratings, (i) teaching scholarship, (j) teaching awards, (k) learning outcome measures, and (l) teaching portfolios. The author has used more or less all these sources to measure effectiveness of WBL delivery as

- ‘student ratings’ - through student questionnaires and interviews with students
- ‘administrator ratings’ - through programme leader and support services interviews
- ‘teaching portfolios’ - through tutor interviews and students’ feedback on tutors
- ‘employer ratings’ - through employer interviews
- ‘peer ratings’ - through employer interviews and students’ feedback on peers
- ‘self-evaluation’ - through tutor interviews
- ‘videos’ - through tutor and support services interviews and students’ feedback on content and use of technology
- ‘alumni ratings’ - through interviews of passed-out students, academics, employers, representatives of PBs and support services who were ex-WBL students
- ‘teaching scholarship’ - through programme leaders and support services interviews
- ‘teaching awards’ – through programme leaders, tutors and support services interviews
- ‘teaching portfolios’ – through tutor interviews
- ‘learning outcome measures’ - through tutor interviews and students’ feedback on learning contracts

The WBL support staff (University management, Library, IT Services, FEE WBL administrators, WRLS and the Student Union) added more insight into most of the features above.

The current study used three variables as main building blocks or enabling factors for a good learning experience as:

- **quality** (learning materials, delivery, teaching/tutoring, acceptance/credibility)
- **access** (programme content, programme leader, tutors, mentor at workplace, peer students, university services)
- **support** (University, Employer, PB, family, peer students)

The effectiveness of these variables was evaluated on the basis of how different stakeholders perceive their experience in activities such as learning, tutoring, mentoring,

administration, support and accreditation. Furthermore, the effectiveness of WBL was explored in the context of the delivery of programmes including the online learning aspects.

Effectiveness can only be measured if there are clear benchmarks and criteria being defined in terms of delivery of WBL. As mentioned above, the expectations of various stakeholders in a learning environment are very different from each other (Liyanage et al., 2010a). As a result, the angle of perceiving effectiveness is different among various stakeholders. For example, learners may perceive effectiveness from the quality of learning material, ease of accessing the content, the level of interactivity in the content, level of support by programme leaders, tutors, and employers, importance and acceptance of qualifications acquired through WBL for professional registration, and difficulties faced during studies. The tutors may perceive effectiveness from the student performance, university support for improvement of quality of learning materials, and opportunity for learning and using new technology. Further, employers may perceive effectiveness in terms of employee productivity, Return on Investment (RoI), and the support from the university whilst professional bodies may have a different view on effectiveness may be in terms of ease of accreditation of WBL programmes compared to face-to-face university programmes and also flexibility of professional registration of members through WBL qualifications.

Boulay, Coultas et al. (2008) in their review on how compelling is the evidence for the effectiveness of e-Learning in WBL place emphasis on employees' skills. They concluded that despite the limited amount of empirical research on the effectiveness of WBL through e-learning programmes, they are still being adopted within organisations. Lewandowski (2007) in his investigation into the effectiveness of explicit instruction in language learning further confirms that learners' ultimate attainment will be determined by a combination of values and consequently, the level of ultimate attainment is likely to vary from learner to learner as in all education. This further clarifies the researcher's point of view on effectiveness which can vary from person to person upon each individual's perception.

Although the research does not compare these WBL programmes explicitly against a face to face FT delivery provision, the researcher expected from stakeholders in their feedback to compare WBL with face-to-face FT delivery. Thus the effectiveness will be evaluated on this basis of the stakeholders' perceptions.

Tables 4.3, 4.4 and 4.5 show the matching of each question with variables identified.

Table 4.3 Matching of questions in online students' questionnaire with variables

	Question	Characteristics	Variable
1	What is the distance/online WBL programme you are following?	Discipline vs WBL	Demographics (Independent variables)
2	What is your age?	Age vs WBL	
3	What is your gender?	Gender vs WBL	
4	What is your highest Educational qualification?	Background Knowledge/ academic experience vs WBL	
5	What is your main employment?	Experience/ status/ responsibilities/ Support from superiors/ sub-ordinates vs WBL	
6	On average, how many hours a week do you spend on your main employment?	Time available for studies vs WBL	
7	Who is sponsoring your studies?	Self-financing commitment/ employer support/ Grants vs WBL	
8	Where do you usually live?	Distance/ Blended learning/ Hands-on part/Physical access to university resources vs WBL	
9	From where do you access your online programme/s?	Access/network support/technical compatibilities vs WBL	
10	The main reasons why you have chosen online WBL		
10.1	I can learn at my own pace	Flexibility/ time/ pace/ beneficial for weaker and stronger students	access
10.2	I prefer self-learning	Motivation/ Maturity/ background/ Quality of material/ Online tutor support	access
10.3	I do not need to go to university for studies	Distance/ time/ work place time	access
10.4	I can learn anytime when I am free	Flexibility/ time management/ online hours	access
11	An Induction at the beginning of programme made / will make me comfortable using the Blackboard e-Learning Portal (eLP)	Technology/ learner support/ Building confidence/ not all can attend (geography)/ Blended Learning	quality/ access
12	The eLP is very user-friendly	Technology/ LMS sophistication/ learner support/ communication interface	access/ quality
13	Online discussions / chat provided in eLP help me to share different views posted by others, as if I were in physical classroom	Communication/ interactivity/ knowledge sharing/ community feeling/ difficulties in synchronisation	access/ quality
14	I still prefer the inclusion of some face to face sessions in the programme because I miss the classroom environment	Blended learning/ physical interaction/ community inclusion	access

Table 4.4 Matching of MCQ questions with variables contd.

15	The programme leader is very supportive and accommodating	learner support/ university standards	support
16	The feedback I get from my module tutors for queries and submissions is timely and responsive	learner support/ online standards/ university standards	quality
17	My module tutor's subject knowledge and expertise to deliver online are of high quality	learner support/ expertise/ university standards	quality
18	My Mentor at my workplace supports me in my studies	Employer inclusion and commitment/ WBL requirements / recognition of WBL/ Mutual benefits	support
19	My employer has supported my studies	Employer inclusion and commitment / WBL specific/ Industry standards/ recognition of WBL	support
20	The following university services are supportive and responsive		
20.1	IT	learner support/ university standards/ technology	support
20.2	Library	learner support/ university standards/ resources	support
20.3	Finance	learner support/ university standards/ affordability	support
20.4	Student services	learner support/ university standards	support
21	There is an effective monitoring mechanism to ensure I progress through my programme in a timely manner	learner support/ university standards/ completion within deadline	support
22	Do you feel that the university is concerned when you are in difficulties?	Learner support	support
23	I would like the inclusion of learning elements (Eg: quizzes, animations, graphics, audio and video clips, simulations, illustrations, diagrams etc) to aid the understanding of subject content	Quality standards/ learner support/ university standards/ Interactivity/self-learning specific	support/ quality
24	The quality of learning materials of my programme is very high, relevant, and up-to-date	Quality standards/ learner support/ university standards/ university support to tutors/ technology	quality
25	My curriculum is very relevant to my role, duties and responsibilities	Learner support/ employer commitment/ PB guidance/ WBL specific/Tailoring	support

Table 4.5 Matching of MCQ questions with variables contd.

26	After completion of this programme, my professional status should be upgraded and more employment prospects should be opened up	PB inclusion/ employer guidance and commitment/ future benefits for students/ WBL recognition/ Accreditation	support/ quality
27	This programme helps me with my personal development through increased knowledge and skills	future benefits for employee and employer/ university commitment	quality
28	I am likely to continue education in distance/ online WBL mode after this programme	Motivation/ satisfaction/ university quality standards/ acceptance and recognition of WBL qualifications	quality
29	It was difficult to adjust to online learning initially	Self-learning/ online learning specific/ paradigm shift/ background/ past experience	access
30	Have you benefitted from APEL?	WBL specific/ PB/ Employer/ University support	support/ access
31	Have you benefitted from APCL?	WBL specific/ PB/ Employer/ University support	support/ access

The collected data were analysed using *narrative* and *statistical analysis* whilst document analysis was used with the collected resources. Narrative analysis of rich, detailed, qualitative interview data focused on emerging theory, using the inductive analysis process to arrive at an understanding of the ‘WBL’ phenomenon under investigation. The process of qualitative analysis involves:

- Comprehending the phenomenon under study
- Synthesizing a portrait of the phenomenon that accounts for relations and links within its aspects
- Theorising about how and why these relations appear as they do
- Recontextualizing, or putting the new knowledge about phenomena and relations back into the context of how others have articulated the evolving knowledge (Morse, 1997). This is another stage where researcher’s own experience in analyzing qualitative data had an influence in contextualising new knowledge with already accumulated knowledge and extracting what is coming out of data from this study.

Interview data were analysed through content analysis using NVivo software (QSR, 2011). NVivo gives an easy way to categorise answers of all the respondents for particular questions by allowing for removal of redundant data and summarising them according to the same theme and strong points under each theme. Some of the NVivo screens showing

how the data was manipulated within the software are given in the Appendix VI. The ‘Autocode’ function in NVivo was the most useful among all to achieve the above task.

The collected student survey data was subjected to univariate and multivariate statistical analyses such as frequency, chi square (χ^2), Classification And Regression Tree (CART) analysis and factor analysis. The dataset was tested for sampling adequacy to show whether the dataset is suitable for factor analysis (Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO) which should be between 0 – 1 and closer to 1 will be an indication of suitability) (Field, 2005).

4.7.1 How Triangulation was Accomplished?

Qualitative and quantitative data analyses have resulted in outputs in narrative form, form of codes and also in statistical form. Collating all forms of data to triangulate provides insights into the relationships, similarities and differences from the research findings. Triangulation is achieved not only between qualitative and quantitative outputs but also between different quantitative analysis techniques such as frequency analysis, factor analysis, CART analysis as well as Spearman Brown correlations as explained in chapter 6 and 7. Accordingly, across these analyses, the main themes coincided and were encapsulated into 3 main categories namely quality, access and support.

4.8 Research Ethics

The research was conducted in line with Northumbria University’s ethical requirements. The research project was registered and received approval from the University’s Ethics Committee. The important aspects of research ethics involving participants are data protection, informed consent and participant confidentiality. The participants were clearly informed of what the research is about, of what personal data was going to be extracted and were informed that they could drop out of the research at any point. An informed consent form was signed by all interview participants. For the respondents to the online questionnaire an instruction was included in the questionnaire itself. The students’ identity is not apparent to the researcher when they submit it online through the ‘Snap’ survey management software (Snap, 2010). During the data collection process a coding technique was used to protect the identity of the interview participants. Appendix IX contains the information sheet and Appendix X contains a sample of the ethical consent form used for interviewees and online survey participant students.

4.9 Conceptual Framework

The conceptual framework was developed identifying the independent and dependent variables as shown in Table 4.6. Research variables were defined according to the research questions.

Table 4.6 Independent and dependent variables

Independent variables	Dependent variables
Type of programme by discipline (Engineering, IT, Information & Library Management, Librarianship, Records Management), by level (u/g, p/g)	Effectiveness of WBL programmes in terms of 1. access 2. quality 3. support
Demographic characteristics of students (gender, age, background education, employment, hours of work, residence, sponsorship for studies, location of online access)	

Figure 4.2 below shows the conceptual framework diagram together with the research process adopted.

4.10 Conclusion

Having selected the case study research methodology and the mixed method approach with survey research as appropriate for this study, this chapter presents the details of the selected case and embedded units and the approach itself. The case study itself concentrates on the disciplines of computing, engineering and information sciences at the university and initially only three programmes were selected for inclusion. As the case study was developed, the case was expanded to include a further two programmes leading to a total of five embedded units covering the above disciplines and both u/g and p/g study. The characteristics of these five WBL programmes are discussed. The methodological approach adopted in this study is further explored with each step in the methodology explained in detail. Interviews have been conducted across the range of stakeholders and a survey was conducted across the student population. The selection of survey and interview samples, selection of analysis techniques and the overall conceptual framework of the study are explained. The ethical considerations and measures are also outlined to show how the author tackled the ethical issues in the study.

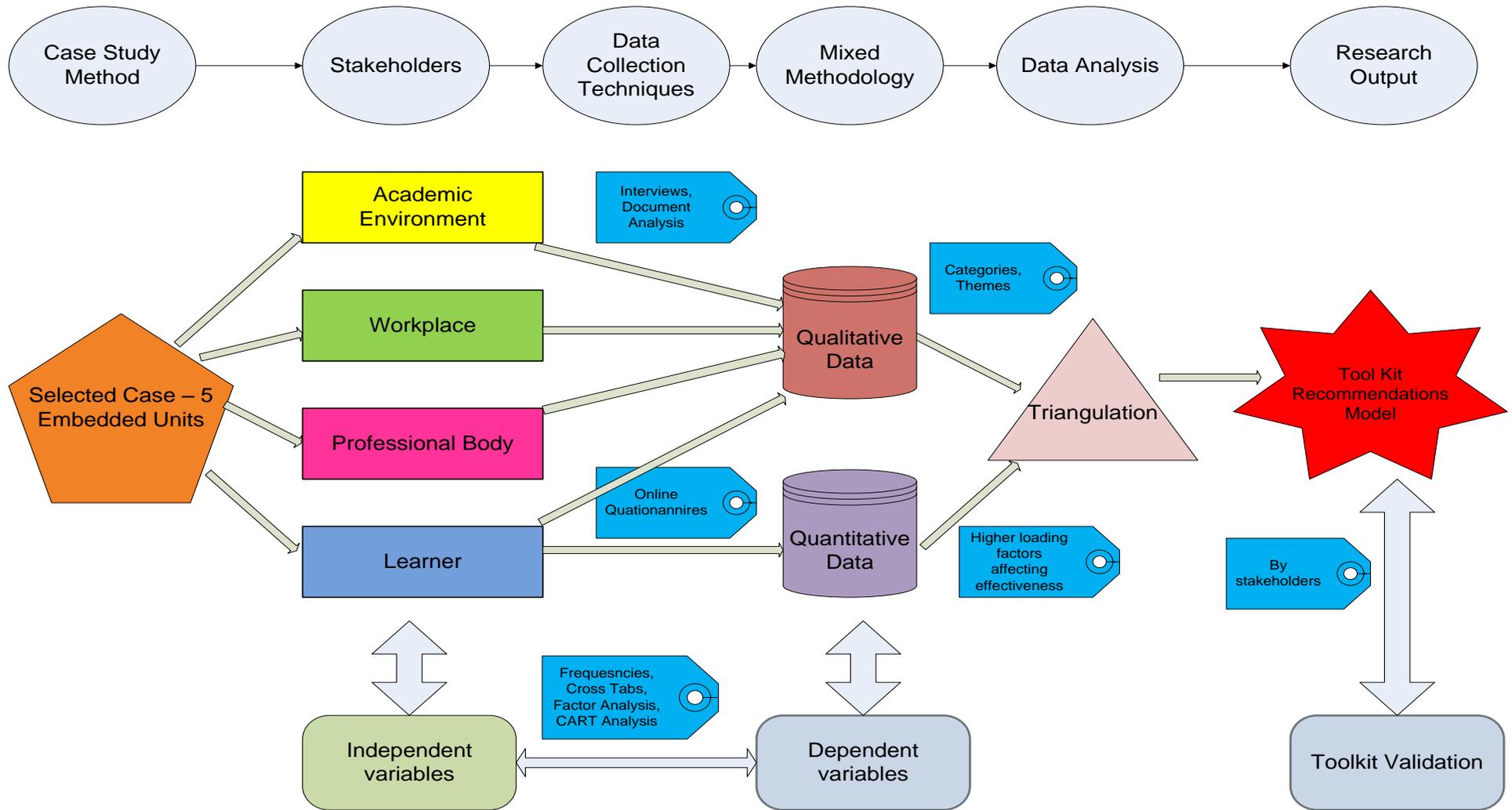


Figure 4.2 The Conceptual Framework of the Study

5. Qualitative Analysis

5.1 Introduction

Qualitative analysis was carried out on the data obtained from the stakeholder interviews. The stakeholders included students, programme leaders (PLs), module tutors, and support services staff of the university, mentors and supervisors from workplace and representatives of professional bodies (PBs). On average each interview lasted 1 ½ hours to 2 hours. The interviews were semi-structured comprising a series of set questions but then following up on particular responses in order to explore and elaborate on the respondents' answers. Interviews were carried out as physical face-to-face, Skype video and teleconferencing depending on the demography and availability of the different stakeholders. The data capture process spanned approximately 12 months with the analysis and writing up taking a further 18 months.

This chapter presents the analysis of interview data in terms of the emerging themes and their relation to the literature.

5.2 Emerging Themes

This section looks at the results of the interviews using the software programme NVivo to analyse the interviewee responses. The NVivo analysis of the interview data helped identify themes, sub themes and the key points for each of these. Eight main themes and three sub themes emerged. These are:

Theme 1. Use of Technology in Learning

Subtheme a. Quality of Online Content

Subtheme b. Use of Virtual Learning Environments (VLEs)

Subtheme c. Equality of Online WBL Standards across the Board

Theme 2. Tailoring of Learning Contracts

Theme 3. Student Isolation

Theme 4. Effectiveness of Delivery Mode

Theme 5. Accreditation of Prior Learning (APL)

Theme 6. University Support

Theme 7. Employer Support

Theme 8. Professional Body Support

Each theme and sub theme is explored in detail below drawing on the interview data itself and the supporting literature.

5.2.1 Theme 1: Use of Technology in Learning

As mentioned above, all five programmes selected for the case study use online learning features in the delivery process together with some blended learning components. In light of this, the use of technology in learning can have an impact on the delivery of WBL. There are three particular aspects of note: the quality of online learning content; use of virtual learning environments (VLEs) for access of content, communications, submissions and assessments in a user-friendly manner; and maintenance of equivalent online standards among tutors, modules, courses, and programmes. This is a key area that emerged from the data in this study.

The extent of the use of technology is a very important and meaningful decision that any institution should make before planning to embark on technology-enabled learning. There are a few areas of concern that should be considered in making such a decision (Liyanage et al., 2011a). From the teaching point of view, the academics' technical skills can have a big impact. Obviously with the rapid growth of ICT it is a mammoth task to keep up to date with all new technologies and this can make academics' lives difficult. This also can account for a large portion of the costs in the overall WBL delivery budget for the university in terms of academic time for online content design, development and delivery, training for academics, cost of outsourcing of content development, software and hardware, and maintenance and licenses. Migration from traditional teaching methods to technology enabled methods is a huge challenge for some academics. A further area of consideration is whether pedagogy should drive technology or the other way round because striking a balance between technology and pedagogy is vital. From the learning point of view, the students' age, academic maturity, level of WBL programme being followed (Diploma/BSc/MSc), background and personal skills can have an impact on their need and willingness to use technology. This was apparent from the quantitative data explained in the next chapter and during interviews with the views of variety of students covering all above variables.

There are a number of ways one can use technology in WBL. Each feature can be supported by many different software and hardware tools available in the market. For content development: tools like Wimba Create, White Board, Workbook, Camtasia, CamStudio, iPadio, Podcasting, Screen cast, Flash, VideoLink, YouTube materials, Java simulations, ScreenCam, electronic worksheets, CAD devices for session capturing are available. For assessments: Turnitin, Assignment Handler, Grade Centre, can be used. For students to access learning content and communicate with academics, the eLearning Portal

(eLP) or VLE which includes Discussion Boards (DBs), Wikis, and Chat rooms can be used.

5.2.2 Sub Theme a: Quality of Online Content

The quality of content at the outset is a crucial element of any online WBL delivery. Strother (2002) in her paper describes *“Another way of approaching the attempt to guarantee better results in e-learning programs is to look at content quality measures, i.e., the quality of the online education product itself”*. The following view of the university Students’ Union reflects the importance of having quality online content for WBL students *“How WBL students could benefit is to have good quality interactive study materials being uploaded on the VLE by lecturers across modules and across faculties”*.

Quality of learning content can be measured in terms of relevancy, interactivity and currency. The guidelines, presented in Quality Standards for Evaluating Multi-media and Online Training in Canada (ASTD, 2000), have been endorsed by the Canadian government and the Ontario Society of Training and Development. Their model evaluation process has been tested at twenty organizations. They have first determined an e-learning course's relevance toward an organization's needs, followed by analysis of content quality, usability, and instructional design methodology. According to their developer, Lynette Gillis, these guidelines provide a robust and comprehensive set of quality criteria that have been shaped by experts in the field of DE. WB learners are particularly reliant on learning materials (hard copy and online) so resources need to be comprehensive, up to date (current), organised, easily accessible with minimum technical failure and maximum technical support. Further, Costley, Shukla et al. (2011) emphasise that the Open-University style efficiency in accessing materials and their clear and appropriate content are clear benefits. More than relevancy and currency parameters which are self-explanatory, interactivity parameter is a subjective measure due to the fact that level of interactivity is appreciated and viewed differently by different individuals depending on each individual’s background, experience, context, self-capacity, personal opinion, and programme being followed. A major challenge facing providers of e-Learning is the provision of meaningful interactive courseware that is responsive to learners, allowing them to actively participate in the learning process (Thomas, 2001). Interactivity is desirable as a learning process because learning content can be presented in a more fun, enjoyable and easily accessible way.

It is believed by many educationalists that interactive courseware which allows “learning by doing” arouses interest and generates motivation providing a more engaging

experience for the learner (e.g. (Lewin, 1951), (Brookfield, 1986)). The much-used quote from Lao-Tse written in the 5th century BC sums this up:

*“If you tell me, I will listen
If you show me, I will see
If you let me experience, I will learn.”*

To those who hold this view, interactivity is seen as part of a system where learners are not passive recipients of information, but engage with material that is responsive to their actions. Interactivity results in deeper learning because learners can hypothesise to test their understanding, learn by mistakes and make sense of the unexpected (Kolb, 1984).

Interactivity is also related to ease of use of content or user-friendliness of content where learners are able to self-study without feeling isolated.

Students

A number of student comments demonstrated the need for more interactive items in content: *“I felt they were quite relevant and current but in terms of interactivity I would say they were mostly power point slides which cannot help much without explanations and MS Word or pdf articles sometimes contain 150-200 pages which were sometimes hard to read with very few tutor directions. I wondered as to how a person with little current academic experience would cope with such learning materials without much support from the tutors. There was very little multi-media stuff in the content.”* This comment demonstrates the gap between expectations of the learners and the insufficient provision of same by the tutors who should pay more attention on interactivity of content.

“At the end of course feedback, I suggested for complex functions or theory components, it would be helpful including more multi-media items like video demonstrations, Podcasts, audio clips, video lectures, live chats, webinars, social media etc in the content.”

“My early assumption was we would have had synchronous online sessions with tutors at particular times of the day because seeing the professor and colleagues online would have made a difference than just reading online content on eLP. The professors’ voice together with his video should have been embedded into the slides for distance learners. I felt I lack the online interactivity which could have been easily embedded using today’s available technologies.”

However, the subjectivity of interactivity in content is demonstrated by contrasting comments from one of the MSc Professional Engineering students *“I believe at MSc level you need to work on your own mostly with the little support from your tutors. In most of the*

cases, only the curriculum outline and learning outcomes were uploaded in the eLP and we were supposed to explore how to achieve those learning outcomes. It's up to the individual student to make it happen and I don't think that the university should give more support than that to make it easier for students. Masters level should test individual's self-learning abilities which is all about distance WBL. It's the challenge".

This context shows the importance of striking a balance between multi-media technology and pedagogy in order to maintain the quality of learning content. There is a distinction between quality of content in terms of subject area (appropriate level of information and reading) and quality of the delivery mechanism, i.e. how interactive it is, does it have bells and whistles? At Masters level one needs to consider that students are expected to engage more as independent learners, rather than having direct guidance and instruction which is more appropriate at lower levels. The report submitted by the National Union of Students (NUS) to the HE Funding Council for England (HEFCE) (2010) (2010) highlights the following trends that align with the students' views mentioned above.

Students prefer a choice in how they learn – ICT is seen as one of many possibilities, alongside part time (PT) and traditional full time (FT) learning, and face-to-face teaching.

Students are concerned about the ICT competency of academic staff – There are varying levels of ICT competence on the part of academics, whilst some are clearly skilled or at least able to function in an IT setting, others lack even the most rudimentary IT skills; 21% of students thought their lecturers needed additional training. This was true in the current study as well where not only students felt that academics need to incorporate more ICT advantages into teaching but also some of the tutors themselves acknowledged that they are behind with the technological advancements in education.

Opinions are fundamentally divided over e-learning, especially consideration of course type and exposure to ICT – both advantages and disadvantages were raised in all of the qualitative research with the students.

Appropriateness of technology varies significantly from course to course – students value the incorporation of ICT into their learning experience, but the demand in terms of the degree to which this occurs varies depending on course and type of study and assessment. Not all five programmes had the same level of adoption of technology which varied upon individual academics, context of the discipline, and format of delivery.

As per the comments above, students like to have multi-media features like video and audio clips, graphics, animations, simulations, quizzes, tutorials, online tests etc in the

content in order to understand the subject content better. This consumes a significant effort in terms of instructional design and multi-media expertise but once invested, the benefits are always multiple to many online students with economy of scale and return on investment for the university always being justified.

Academics

A tutor also backed up the MSc Professional Engineering student's view "*As there is quite a lot of theoretical content in this programme, sometimes reading the printed materials is the best way of absorbing it. Perhaps a lower level of learning might be better taught in a more interactive way but this is a Masters and we expect our MSc students to read and absorb the theoretical stand point by reading a lot.*" This tutor statement supports the point made by Lewin (Lewin, 1951) that one should not think that WBL is antagonistic to theory; it respects and uses theory.

Another tutor stated "*I believe in 'technology should not drive pedagogy but pedagogy should drive technology' and we should not carry away with technology for the sake of it being there. My view on this is Multi-media (MM) elements are not always relevant and must be used sensibly without damaging the educational value of it*". This is a very important view point where a clear demarcation must be drawn between pedagogy and technology. The same fact was revealed in ESSA *Fit For The Future* report (Leatherdale and Seal, 2010), which, while it covers the effects of ICT on pre-university/FE for 12-20 year olds, nonetheless demonstrates relevant concerns on the part of these students that ICT poses major questions regarding self-discipline, privacy and fears that technology was being used in the classroom "for technology's sake". On the other hand, the main constraints from the academics' point of view as to why online content cannot be improved/upgraded to the level of students' expectations are lack of time, technical skills, financial/morale support from the university and importantly the idea of whether pedagogically it is desirable. The following comment from an academic explains this "*Personally I have not got the time to spend too long and we don't have the support now to help us. I was recently advised that LTech wants us to use Wimba create ourselves, whereas in the past they would have assisted in changing materials for us so without the support it is tempting to keep it simple and do what you can realistically manage.*"

As per the NUS report above, ICT competency of academic staff is a major factor in online delivery of WBL. "*There is a 2 years old video clip about Turnitin using Camtasia and I don't know how to do it which needs an update. Even after PodCasting course I'm not confident. I need someone who could do this for me but the university needs*

to spend money for that which does not happen. University wants us to do what we could with minimal support.” Another tutor commented *“I want to introduce ‘role playing’ into online mode students but do not know how to do it. It’s a very important piece of hands-on practical where face-to-face students learn a lot in ‘Research Methods’ module which I miss in online mode.”* This aligns with literature in chapter 2 where consideration of collective level of activity as another dimension of WBL takes place (Raelin, 2000). It talks about learning through work at an individual level as well as learning in the workplace which requires an extension of learning out to the collective level defined as one’s co-workers be there within or outside or even outside the present workplace.

The above tutor comments show the problem of lack of technical skills in academics to incorporate technology into their teaching which needs to be addressed by the university management. This also raises the debate of whether that is the role of an academic or should this be something that the University supports by providing technicians to do technology part, and allow academics to focus on the content? Academics feel that there is a move towards expecting academics to do all.

“Need a lot more modules. I’m considering adding more but the issue is time need for that. University provides loads of training but I don’t have time. If we want to get it done through LTech there is a big queue because they are for the entire university.” The need to enhance and optimise the services of LTech is strongly reflected in academics’ comments. *“Some faculties have their own staff working on developing online content like Law faculty, Newcastle Business faculty, Health faculty, etc.”* If other faculties can afford to be independent, dependency on LTech will be minimised. Also, providing training only is not enough for academics in the absence of motivation and allocation of adequate time in their timetable to attend training and make use of the acquired skills.

“I never had to meet with any of the students and everything happened online.” which demonstrates the possibility of delivering of some modules/programmes 100% online. Some positive thoughts and acts about using technology by academics as commented *“I sought for assistance from LTech to develop a couple of audio clips. I did my own video to show how I look like to overseas students.....we adopt a work-book based approach so certain activities can be implemented on it to facilitate hands-on skills for distant students. Also, the Virtual Class Room has a feature called Whiteboard which can be used for this purpose.....we do asynchronous communication on the DB and using the Wiki. I’m using a ‘role playing’ exercise on ‘copyright’ for my face-to-face students which is challenging to do in the same way to my online students because it involves an emotional activity. Using videos, ScreenCam, CAD devices for session capturing could*

make a difference but again the staff time is the problem.” Individual tutors’ commitment and initiatives could make a big difference according to the above comment. Further, tutor comments on content should alert the university management to seriously consider their claims. “I’m certain that study materials on eLP are not up-to-date due to time constraints again. You may deliver updated content in the classroom and even provide this to online students but there is no time to update material on the eLP.”

”Animations could help but time to emulate this in ‘Flash’ software is time consuming. Would like to use ‘Camtasia’ but don’t have a license for this – maybe in the future.” and “It would have been better to embed Matlab simulations into curriculum which would ease students’ understanding as well as enable them with hands on skills they needed being remote and distant but the bottleneck is high cost of this task. I have proposed to the faculty requesting for funding to put some MATLAB licenses on CITRIX and hopefully in near future we’ll be able to do it.” The need for rationalizing software licensing issues is another area of concern according to the academic comments above.

Another aspect of this issue is the lack of some students’ demand or interest which makes academics being discouraged or rather ‘take it easy’ which ultimately does not benefit majority of students’ satisfaction nor the overall quality of content. *“Students do not ask for more interactions as they do not like to be burdened or it could rather become a requirement to study at a pre-determined/pre-defined structure having to do things synchronously online. A lot of DL students like to have materials with interactions embedded into it through self-assessment activities and DBs but not necessarily have to be online to do them. Especially, they don’t like to have online activities with deadlines which could become hectic with their other commitments. We try to embed group activities in the DB so that students have interactions there. Students have never mentioned in module reviews to add any more interactive items. We have to have a balance so that students don’t feel pressured but still feel part of a learning community.”* This particular comment signifies that not all students welcome the synchronous online activities. Further tutor comments justify the same *“The nature of the students who are librarians by trade is not that IT savvy and they are happy with MS Word/pdf based content!!! I developed the materials with the virtual aspects of the website but the students wanted them to be printed out so, I do not see a big need for inclusion of high tech MM rich materials. Therefore, my materials are like a document repository for students to print.”* These are the limitations or rather excuses which tutors face in the process of digitizing the learning materials. This also shows that at Masters level, content, rather than interactivity seems to be more important for students.

The MSc Professional Engineering programme launched by the UK Gateways pilot project has its own unique features where less emphasis has been given to online content due to its nature of almost fully tailored learning contracts based on students' workplace activities. The programme leader commented "*None of the elements in my modules have interactive elements. Students normally prefer to communicate with me on one to one basis on email than discussing on DB.*" and another engineering tutor "*We have only the curriculum outline and learning outcomes for modules on eLP. We conduct an Induction for each individual student explaining the expectations of the university in this programme.*" The nature of engineering students' individual projects could be the reason for academics to pay comparatively less attention on uploading content on eLP but it was observed that there are a number of common modules for all engineering students which needs more content support than what is available.

Another important fact was revealed by an academic who had undertaken an Open University of UK (OUUK) course previously "*OUUK takes a lot of effort to produce high quality material but because of the high investment, their shelf-time is also high (5 years update cycle) which makes the content to be outdated especially in the areas of technical subjects. At Northumbria, we don't put so much emphasis on the presentation of the material so that we can frequently update them (on yearly basis) without much effort. In between if something comes up we post notices on the eLP and embed it into the material in the following year.*" One positive aspect of content quality at Northumbria is that it is regularly updated but in terms of presentation quality compared to OUUK material, a compromising balance has to be applied.

There were some optimistic quotes from the Engineering programme leader "*Everything happens at the workplace so in this programme nothing had to be worried about. One possibility of using technology may be simulated engineering practical work. I'm sure any taught course module can be delivered online by using technology.*" The academics' role has to be proactive, innovative and positive in order to make this process successful according to IT programme leader's comments "*With the cooperation of the staff we could do it. Lack of enthusiasm from staff including myself is the problem. Computer Networks is an example which is being delivered by using Java simulations.*"

The other challenge academics face is keeping up with the technology "*Content is digital and URL based so keep up-to-date with the technology is a big challenge because you need to document for the eLP. Cannot update content with the rapid development of technology and evolution of Web 2.0 technologies (wikis, twitter, blogs, FB, MySpace, 2nd Life etc.) which young 18+ u/g students like to explore. Technical incompatibilities with*

different systems like Apple Mac/Windows etc is another issue". Interestingly 'keeping up with technological developments' is seen as one of the core benefits of WBL by both employees and employers (Glass et al., 2002).

Support Services

LTech which is the online content development support unit of the university also agrees with students' comments *"Most of the contents on eLP are text based materials converted into html format using Wimba Create software."*

An ex-WBL student who now works in the library commented *"As a student, I found that academics used the eLP as a repository to upload slides and documents. It has not been changed much even today. But as far as the library's learning materials are concerned, we have used a number of multimedia elements. Some of the materials we do in house but for advanced technical features for which we don't have the skills and expertise we do get them done from LTech. We are planning to articulate power point slides for our teaching staff by embedding video."* This was admitted by academics in their comments above with reasons as to why it is difficult.

Although LTech's capacity to cater for the entire university was questioned by many academics, LTech's view is *"At the moment we can manage the workload and no expansion has been planned for now. Our delivery depends on how much lead time academics give us. We have two trainers including myself, a project manager, a programmer, one help desk administrator and three technical experts to handle LTech work. An expansion could change our work capacity which includes a lot of video work that consumes a lot of time. It's not just video but the video should have wrapped around pedagogy. We do provide training for academics to use Wimba Create on their own and convert their text based materials into html format. The new model I suppose would guide staff not to depend much on us by leaving us to add with pieces of advanced MM stuff."* The university should address this issue of LTech being a scarce resource and could look to decentralize the services to faculty level by expanding the unit. Decentralising was found very successful in the Sri Lankan National Online Distance Education Service (NODES) model (NODES, 2009) where the central content development unit (CDU) is equipped with master multimedia experts. Each partner institution (PI) that delivers online learning programmes on the NODES network has their own content development units, supported by the CDU experts in terms of knowledge, skills, and software know-how. The CDU undertakes the development of advanced multimedia features for PIs such as creating videos, embedding 'Flash' animations and developing simulations.

Employers

An employer quoted *“Definitely you cannot deliver high skilled engineering content online. We give them real life projects as part of their study programmes to engage with while facilitating with mentoring.....”* This was highlighted in the literature by Charmaz saying *“Since practitioners are stakeholders in the problems that they attempt to solve, real problems should become the focus of study (Charmaz, 2006).”* *“.....In this way, we train them to become real practical engineers to fill the gap in the industry where most of the fresh university engineers are absolutely without practical skills hence this programme requires a good theoretical background to apply engineering principles in the real life practical projects.”* which brings out a concern that not all subjects can be delivered 100% online and even use of technology would not solve all those practical problems in WBL. The above quote once again supports what was mentioned in the literature review chapter above *“The theory of WBL is actually quite practical!”* (Lewin, 1951). It also aligns with Raelin’s (Raelin, 2000) point of view that *“WBL must blend theory and action. Theory makes sense only through practice, but practice makes sense only through reflection as enhanced by theory”*. It also illustrates that WBL has the capability to address the issue identified by Write (1994) who argues that conventional teaching mostly tends to be theory-oriented classroom experiences relying on explicit knowledge which unfortunately suffer the risk of leaving inexperienced and less-practically skilled students to the workforce.

Assessment

Assessment is a vital area in online delivery of learning which is part and parcel of quality of online content. Computer Assisted Assessment (CAA) has great potential: it can stimulate, motivate, be diagnostic and reinforce learning by providing directed feedback (Freeman and Lewis, 1998). Nonetheless CAA has many detractors who criticise the approach as being a poor test of a student’s deeper knowledge. The Web-based Education Commission (WBEC) (WBEC, 2000) to Congress recognizes the potential of extending assessment: *“Possibilities for new kinds of questions using multimedia, simulations and other resources to assess sophisticated learning goals (e.g., problem solving, visualisation, and modelling)”*. The comments of stakeholders below encapsulate several aspects of assessment practice.

Academics

Tutors can choose and inform students the method of assignment submission which starts from a physical hard copy to electronic submission via the eLP, email or a mix of these. Even within the eLP there are different methods of submission available like

assignment handler, digital drop box, email, and Turnitin. This causes confusion among the students. With last minute stress as the assignment deadline looms, students submit assignments using the least difficult method or what they can remember which sometimes leads to assignments being misplaced/not received by tutors at the deadline. Some tutors still prefer hard copy submission for two reasons: firstly it avoids technical issues (both with tutor set-up and student submission) and secondly tutors prefer marking physical copies rather than doing it online. *“Students are asked to submit two hard copies of their assignment and we annotate one copy and send it back. They are allowed to email the assignment to a generic email to meet the deadline which ensures that overseas students aren’t disadvantaged because of different postal delivery times. I do not like to receive assignments online because reading on screen is difficult.”* This is another psychological view point where reading a paper or book is preferred and easier than reading on a computer screen which eventually limits the use of technology. The results of the world's first reading study on ‘Reading a Book Versus a Screen: Different Reading Devices, Different Modes of Reading?’ stands in stark contrast with the participants' subjective reaction (ScienceDaily, 2011). Almost all of the participants have stated that they liked reading a printed book best. This was the dominant subjective response, but it does not match with the data obtained from the study. Almost all participants have stated that reading from paper was more comfortable than from an e-ink reader despite the fact that the Science Daily study actually showed that there was no difference in terms of reading performance between reading from paper and from an e-ink reader. However, this study is not representative of all people’s experiences therefore this fact cannot be generalised at this instance.

The other disadvantage in this case is the students have to bear the cost of courier/postage which could have been avoided had the academics used technology.

A tutor commented on assessment tools *“Northumbria Assignment handler on eLP is poor, clunky, and cumbersome. What I use when teaching at OUUK is much better, flexible and less complex.”* Usability of any system has to be well thought about at the design stage itself according to Nielsen (Nielsen, 1994) who has developed a set of usability inspection techniques to evaluate whether user-interface elements, such as dialog boxes, menus, navigation structure, online help, etc., conform to the principle. According to the above comment the usability seems has not been considered sufficiently in the assignment handler.

There are similarities across disciplines in terms of what influences the learner or trainee’s satisfaction with e-Learning. An important factor is individuals’ confidence in

their own abilities. This influential factor is common across all sectors and reinforces HEFCE's (HEFCE, 2005) view that there needs to be confident use of the full range of pedagogic opportunities provided by ICT. For u/gs, p/g students and practitioners, and people in the commercial sector the level of computer expertise can have an influence on attitudes to e-Learning. The ease of use of technology was important for people in WBL but was not a factor that featured extensively in HE. Students in HE have positive attitudes to blended learning and their attitudes were influenced by faculty use of technology.

"I'm not confident (may be due to age!) about assessment part with the technology so still ask students to submit hard copies as well on top of online submissions. Have a fear that technology would let students down due to technical incompatibilities." The reliability of the systems is a factor which sometimes keeps academics away from its use. University IT divisions have to ensure the system availability at a higher service level failing which could lead to ultimate students' dissatisfaction and loss of confidence.

The need of postal methods to deliver printed learning materials, student submissions and its related difficulties is a concern when the technology can cost-effectively replace it as quoted by a programme leader *"They still use postal delivery systems for paper-based materials although each course now has its own web site with course materials. Materials getting lost in the post is a problem."* Another area of concern is whether the postal costs could be absorbed by the university *"Students have to pay postage costs to submit assignments unless it is an electronic submission."*

Providing marks and feedback is another area where technology could help but tutors have different views on this:

"I don't use the online assessment facility which would take me longer. I mark on the go in the train, at home, and in the evenings so I mark on the paper by pen. I do post up percentage grades but not all module tutors do this" The change of attitude of tutors to use technology is a biggest challenge in technology-enabled learning.

One of the main criticisms against online learning is that students are more inclined to plagiarise than in face-to-face education due to the fact that distance makes it hard for tutors to recognise the actual students as well as difference between genuine and plagiarised work but the following tutor quote also held by other tutors, provides an alternative view: *"DL students seem less inclined to plagiarise than face-to-face students"*.

"Digital plagiarism is a problem for educators all over the world" (Butakov and Vladislav, 2009) and (Rowe, 2004). Online assessment submission raises serious security issues as methods of cheating are facilitated, some quite new, and it is inevitable that plagiarism will increasingly be automated and distributed as software packages. While

there are countermeasures, online assessment in DL programs should be done with caution, make use of the software tools available to uncover digital plagiarism and be continually reviewed. Tutors were aware of the dangers and commented *“I use video conferencing in assessments of projects where students have to demonstrate the project kind of a viva”* and *“We put suspicious papers through Turnitin software. Rather than creating them opportunities to plagiarise, if we can design assessments in such a way that their own workplace would be beneficial out of it, it would be better. It’s possible to conduct exams online or at physical locations face-to-face for distant learners.”* The importance of assessment design without giving opportunities for plagiarism is emphasised in this comment. *“However, if another student from the same company does the same programme following year they still have a chance of repeating it!”* The above comments show that issue of plagiarism has been handled quite well by academics in WBL. Its unique nature of tailored programmes and also background of mature and professional students compared to face-to-face students also has a positive impact on the same.

“I believe that there has to be a strong visible anti-plagiarism policy in the university to avoid this because DL students are less exposed to our anti-plagiarism culture. I have found one incident where collusion was established between home and distant students.” This is an interesting context which could happen when the same programme is being conducted in parallel on both modes to which academics should be made aware of.

Students

The students’ view on assessment and plagiarism are *“I think face-to-face students get more opportunities to plagiarise because they can discuss, collude together as they meet everyday whereas we being in isolation and self learning have less opportunities for that. However, irrespective of the mode of learning I think everyone knows about consequences of being caught for plagiarism so all are conscious about it.”* and also *“Turnitin software makes it more difficult to plagiarise. There are so many other advantages of submitting assignments using Turnitin like tutors and us don’t need to over fill our email accounts and we can verify the level of non-cited information in the pre-submission before making the final submission”*. Another important fact related to WBL which isolates from other modes of learning is *“There’s nothing you can plagiarise in WBL because we are submitting what we are doing at the workplace”*.

Support Services

How the Northumbria Student Union (NSU) assists students on the issue of plagiarism is *“We as the NSU support any requests coming from students regarding their*

appeals against accusations for plagiarised materials being caught at assessments. We represent them at panels to assure that student has not been ill-treated and also facilitate the students to seek for legal advice”.

Employers

Employers’ view point on this has an impact on employees when they undertake WBL.

“We are concerned about the plagiarism related issues of online students. University has to have checking methods about the integrity of student submissions because anyone can submit any work on behalf of someone else online. The benefit of this course is the participants are doing real life projects and we see and meet them every day so they cannot cheat or under-perform because it’s a part of their job.” There is a positive understanding by employers in this regard.

5.2.3 Sub Theme b: Use of Virtual Learning Environments (VLEs)

In the online delivery of WBL, the main interface between students and the university is the VLE or in the case of Northumbria University it is the e-Learning portal (eLP). All students’ activities happen on VLE including access of study materials, submission of assessments, discussions between tutors and peers, access of library resources, make payments, and receive notifications. It is the main channel for supporting the delivery of learning and teaching and is used to replace the physical classroom environment for these learners. The user friendliness, high availability, and ease of access and usage of the VLE are very important for the learner as well as for academics and support staff. Also, online WBL not only gives access for study materials to students but also creates an interactive learner-centred environment for them. This is the main purpose of any VLE.

Another terminology for the VLE is Learner Management System (LMS) in which individual learner profiles are interfaced to appropriate back office systems tracking learner progress. It should be as easy to report student progress and activity in a simulation to any LMS, as it is to report on use of any other course components. Compliance with standards such as IEEE, and SCORM are important if this goal is to be achieved. The eLP has been customised from the ‘Blackboard’ (BB) VLE (BlackBoard, 2012). The views of different stakeholders on this are discussed below.

Students

Students primarily access the eLP to contribute to online activities and study content. The National Union of Students' (NUS) *NUS/HSBC Student Experience Report* reveals that 96% of all students had used the World Wide Web as a source of information as part of their studies, that 61% used social networking sites compared to 45% using VLEs, which shows their low priority of using the VLEs (NUS/HSBC/GFK, 2009). Other than the eLP, some academics and students prefer to use the PebblePad e-Portfolio for their teaching and learning activities. The Survey of TEL for HE in the UK in 2010 explains the latest situation in terms of usage of VLE (Browne et al., 2010). *“Although Blackboard remains as the most used enterprise or institutional VLE, its usage has declined since 2008. Moodle has increased in usage as an enterprise solution and remains the most commonly used VLE platform at a devolved level within faculties and departments. Adoption of other open source platforms is negligible across the sector. Centrally supported use of plagiarism detection, e-submission, e-assessment tools is now pervasive across the sector. Wiki, blog, e-portfolio and podcasting tools are also well established since the 2008 Survey. The breakdown of how TEL tools are used to support learning has changed very little from 2008. The use of tools to supplement other forms of learning is still the primary approach, with web dependent usage gaining a little ground since the last survey.”*

“The approach of its use is pretty much top down where the teacher has full control over the content. If a student wants to create a discussion thread still you need to go through the tutor.” This was further confirmed by the LTech itself *“It’s teacher-centred. It doesn’t provide an environment for students to create their own interactions like Web 2.0 type social networking tools. We have to understand that online WBL is not only giving study materials to students but also creating an interactive learner-centred environment for them.”* The importance of creating an online working environment for WBL students is highlighted which is something academics need to pay attention as online WB learners should also be made independent on the eLP to freely communicate among them.

“One of the issues with eLP Discussion Board (DB) is when I post a question and when someone has answered I wouldn’t know about it because there is no notification being sent to me unless I check the DB every now and then so I might even forget I have posted a question after some time and by then we have lost the flow. This is even worst when parallel discussions are on board on different modules.” The need for a notification system on email when a particular communication thread has been responded by someone is raised similar to Facebook. This is currently one of the disadvantages of asynchronous communication.

Another major drawback distance WBL students face is eLP downtimes for maintenance which always fall during weekends, the prime learning time for them. They would prefer the maintenance to occur during night times on week days so that they will not be affected that much. However this could be daytime for students in other parts of the world so care needs to be taken over this issue particularly as Northumbria University grows its number of international students.

There are two main ways that distant students can access university resources: firstly via the university website and eLP and secondly via a virtual tunnel and a thin client application called 'desktopANYWHERE' (DTA). DTA acts as a remote access facility to allow students to access specialised software, the NORA library resource and the shared drive similar to logging onto one of the campus PCs. Students find DTA cumbersome to use due to technical incompatibilities. In the online survey, almost 50% of the students failed to access the questionnaire through DTA which was hosted on one of the university servers through DTA. Subsequently, a Microsoft Word version of the questionnaire had to be sent to students. Students' comments on this included: *"My computer doesn't like DTA at all. I have had real problems trying to use it so it wasn't just your questionnaire. DTA should be clearly explained as it allows non UK users to access the library in a timely manner"*.

"I had a hard time in using DTA due to incompatibilities with Citrix and Internet browsers. DTA is messy due to its short time-out periods and slowness hence cannot access the U Drive. I wished if the eLP and MyNorthumbria (the student's individual portfolio on the university website) were together because then it would be like a one-stop-shop to everything." This is a good suggestion in terms of single login to all what students want.

Academics

Whilst students had few complaints about the functionalities of the eLP, academic staff had quite negative views on it. Academics' comments include; *"I wouldn't say it's perfect. It's clunky and has too much functionality, which is frustrating which takes a lot of time."* and *"You cannot upload more than one attachment at a time Formatting is very poor in the eLP having to re-do documents/copy-paste content."*

"eLP user interface was not particularly well defined and is awkward, making tasks inconvenient, rather than difficult even to carry out a simple task. Virtual classroom works fine which needs less bandwidth but not up-to-date so Skype would be a better alternative."

“I would prefer to have direct contact with eLP rather than going through IT Helpline to save time and effort. I need to seek for LTech support to create and upload my own videos and audio material into eLP. Also, I’m worried about the lack of control when uploading material into the eLP without checks for copyright because if someone violates copyright rules the bad name comes to the university. Therefore, you need to have some sort of a form or warning in the eLP before allowing uploads. Having students on the right eLP pages can be time consuming and cause delays to the students’ progress.” The copyright violation is applied to academics too hence it is important to have copyright controls before letting academics upload their content.

“I recently used grade centre as a test for face-to-face students and needed help but the eLP online helpline is not always that helpful. In all our modules we use discussion threads for formative assessments and in one module we use it as summative assessment as if it’s not assessed they avoid this like the plague so we give marks for their participation in the DB.” Evaluation of the students’ meaningful contribution towards the online discussions and acknowledging it in the marking scheme creates an environment that encourages students’ online communications. However this is not practiced by all academics. This was seen as a potential problem. Pena-Shaff, Altman et al. (2005) report some students to have rebelled when discussions are graded, resulting in a negative impact on their participation. Also, studies have shown that motivating students to actively participate and contribute in online discussions was challenging. Perceived lack of relevance and usefulness seems to hinder student motivation as they assume an ‘invisible’ online role posting discussions with minimal content (Beaudoin, 2002). Confusion, anxiety, apprehension in writing and difficulty in phrasing, and time constraints are other reasons attributed for student passivity or nonparticipation in online discussion forums (ODFs) (Balaji and Chakrabarti, 2010).

A tutor commented *“I feel the current eLP is too restrictive, complex, big and not object-orientated. I rather prefer to use Moodle which is simple, open source.”* Moodle (2012) being an open source learning management software is the first choice of the researcher too whose background is from a third-world developing country where annual proprietary licenses are not affordable for Blackboard type of VLEs. Also it is possible to customize in Moodle only what one needs to use unlike Blackboard.

“I only used DB but the problem is again compatibility and doing it online because some students have lost their content while trying to post online with eLP crashes so we recommend them to type offline and then post it online. Didn’t use online tests because reliability was a problem (flaky) for even face-to-face students when I used it this year.”

Students and tutors had contradicting views on the user friendliness of the eLP. One reason for negative views of academics about eLP is that they access the eLP to set up the modules and populate and manipulate them to provide online content and activities for the students. Therefore their views reflect the difficulties in using the eLP from a control and management viewpoint.

Tutors further commented as a disadvantage of WBL: *“Students require appropriate equipment to access courses (PC+Internet) whereas face-to-face students can access or learn from university facilities”* and it is *“...costlier for students in some countries where communication infrastructure is less developed (3rd world countries)”*.

Support Services

The students' union has its own view on the eLP *“eLP is not that user friendly which is why some students and even tutors don't use it.”*

LTech which manages the eLP commented saying *“We do conduct training on eLP for academics. For any product or service it's not possible to satisfy everyone so as for the eLP. We do work on continuous improvement of eLP depending on the feedback we get. Of course there are some flaws on the current version which will be addressed soon but then there will be new issues coming up. It's a big challenge for us to cater for 30-40 thousand users' needs. It's not the faults many people are concerned about but the design of it. It comprises a large number of functionalities out of which only 1/3 of the people use most of the interesting pedagogical functions but the rest 2/3 would only use basic functions.”* eLP is not only for distance learners which mean all students access it but on campus students do not have to depend on it as much as distance students do.

Faculty administrators had their own negative comments on eLP *“Always we face problems with the links to SITS (student database) because student lists are not always correct. I don't like to send emails from eLP because the copy I get once sent a mail doesn't show to whom the mail was sent.”*

Communication

The online WBL experience should be as rich as, if not richer than, the traditional educational experience. Online WBL allows learners to access content at their own convenience, but they learn at workplace, separated from academics and peer students by distance and time. Such students can lack the sense of community that interaction with other learners and tutors can bring. Learner-learner communication is often neglected, but is critically important in collaborative tasks requiring team-working skills where dialogue and social negotiation must take place. Indeed, it is this social dimension that is the primary motivation for some types of learners (Houle, 1996).

The main communication channel among learners, tutors and programme leaders is email while telephone, DB and occasional Skype/video are also used. The main issue raised with regard to using Skype was synchronous timing and issues with access at the university as noted in the following comments.

Academics

“I want to do Video Conferencing (VC) but due to inability of not being able to synchronise with everybody’s time schedules and students’ other roles, students would not be able to sit at their desks and Skype about something not to do with work hence I have only discussions and asynchronous chats. I’ve not had MSc students wanting to use Skype although I have offered.” Skype is not installed on University PCs which makes it limited to use as quoted by tutors *“Would be better if Skype can be installed in my PC to contact students because it is installed in specific rooms”*. A positive note came up though *“There is a project running to have Skype for all staff on university PCs.”* The limitation of using VoIP (Voice over Internet Protocol) video conferencing to communicate with students in the university is strongly felt. Live video conferencing is impossible due to difficulties in synchronizing but at least majority of students would benefit from it and the rest can be made accessible to recorded video lectures.

Other difficulties seen by tutors are *“I miss the facial expressions of students in online environment which applies for those hands on stuff and also first-hand instant feedback to realize whether they have understood or not.”* and *“Personal Effectiveness module which I teach face-to-face has never been taught online because it’s very difficult to get the communications right. But I should start thinking of this module to deliver online using video clips, simulations etc.”* This means that there is a lot more to do in terms of instructional design of content for online delivery of WBL.

“Also, it’s easier to explain certain things face-to-face to avoid miss-interpretation. Students necessarily need to be proactive to avoid above so you need to wait for students’ call. Some students do not get involved in dialogues for various reasons such as shy, greedy, time limitations due to work/home commitments, and language problems. However, shy students would raise clarifications on individual basis on email. Some respond only to get marks for interactions at the last minute of the deadline (steal others ideas but not willing to give their ideas).” This brings out the need for students to be proactive in DL. Being proactive could have a relationship with students’ maturity. Some u/g students may be matured in age but not matured learners because it is their first degree but even young p/g students may be academically more matured.

“Too many modes of communication and the one within the eLP is not necessarily used by students which could cause them to miss important information.” This can be a serious issue to build up confidence among students on the use of eLP by standardising the protocols of using technology in communication and assessment.

Communication between the university, professional bodies and employers are limited to phone, emails or occasional face-to-face meetings but not on the eLP which only limits to strategy and high level elements such as accreditation rather than operational aspects or support for students.

The latest trend for communication is the use of social networking media like Twitter, Facebook, and Blogs and also for collaboration tools like YouTube, Bookmarking and Wikis. According to the papers published from the symposium held at University of London (WLE, 2007) this was further elaborated as saying *“Recent years have seen a growth in the social networking capability of web-based services, known as ‘Semantic Web’ or ‘Web 2.0’. These terms refer to online collaboration tools, such as photo and video sharing services, pod and video casting, weblogs, wikis, social bookmarking, syndication of site content etc, which facilitate the sharing of content by users.”* The university has a system that links the student information system to an instant messaging system which enables the university to send text messages to students on their mobile phones. It is currently used to inform students of late changes to their timetables and any urgent notifications. The system has been welcomed by staff and students alike although care has to be taken not to ‘overload’ students with too many texts, so the use is restricted to a small subset of staff to control the overall number being sent.

5.2.4 Sub Theme c: Equality of Online WBL Standards across the Board

This is one of the key findings of the study where a huge difference in standards of delivery of WBL among tutors, courses, and programmes was observed. This was seen in online content, tutoring, delivery, assessments as well as support. Most of the content and assessment related inequalities were discussed under ‘Quality of online content’ section above so only the rest of the areas will be discussed in this section.

Students

Students are the best to comment on standards they receive in different modules.

“Some tutors are very good and post very helpful and informative material; others post the bare minimum (the module descriptor only) and provide little support. In couple of times I had to chase for the feedback”

“One of the records management modules had Podcasts which was extremely useful because that part would have been very difficult to understand without the Podcast. But I wouldn’t say we had that type of interactive items across the board in all modules. There was one module in which the content was out of date and doesn’t synchronise with the book.”

Academics

The academics further proved the points of students’ comments above. A programme leader commented *“All use workbook approach across the board but beyond that it’ll be different”* and *“I believe that LTech has to operate at faculty level for this exercise. Some faculties like Law have spent a lot of money for this. Each individual module tutor has to decide whether to acquire skills to do this through training courses. I’m prepared to it half a day or a day of my time once or twice a month but not everyone. Faculty level administrators have been appointed in other faculties to work on this.”* The above explains some of the differences in standards and possible remedial actions.

With regard to emails and other communication methods, tutors had different standards about the response time for student queries:

“I normally work from 7.30am-5.45pm on weekdays and usually respond to students during that time window. I do check emails sometimes at weekends.” and *“I receive around 10 emails per week and students sometimes phone. I usually give Monday 11-12 for Distance WBL students to contact me online live but I reply to them during the week but not during weekend.”*

“On the DB, I do not post anything and let students to post any queries they have so it’s reactive from my side. I do not access office mail after 5pm on weekdays and entire weekends because do not want to become a slave to emails!” This is one of the differences between two modes of learning and teaching where face-to-face mode doesn’t require academics to get in touch with students outside work hours but in distance mode they do. It is doubtful whether tutors can meet this need and also whether it is fair to expect them to meet this need.

Compared to the earlier comments, the following demonstrate a more flexible approach: *“I do not have any particular time slots for Distance WBL students but I tend to allocate a day of the week where I work from home. I receive calls from students at home after office hours and during weekends and even I access office emails at home. I try to respond to their email queries maximum within 48 hours but for any urgent things they can call me”* and *“I have a lot of phone calls. I’m badly disciplined about specific time slots but I respond to student queries in an ad hoc manner even after office hours and during*

weekends because of my flexible work arrangements. The standard response time according to guidelines is 48 hours but I try to respond as and when I'm available." The standard response time of 48 hours to student queries seems to be the university norm which should be adhered by tutors across the board.

Support Staff

University support staffs who liaise with students raised another area of concern about equal standards for all WBL programmes. *"Some faculties have their own staff working on developing online content. It's interesting to see how the Professional Engineering and IT students will cope up as they are not getting the face-to-face induction like ILM or RM students which gives an extra familiarization on university IT facilities like stuff"*

LTech suggests adopting the model developed by the Law faculty by all other faculties *"The faculty of Law has developed an online template which should be the model for all the faculties"*. Central workload allocations for all WBL/DL related academic staff will rationalize online content development as it has not been done focus-fully.

The Student Union is also dealing with standardization of quality of content *"Across modules and across tutors it's not standard which is the main problem we are dealing with now. One of the good suggestions we brought this year was the standardization of use of eLP which we managed to pass to the university's main learning and teaching committee. This was included in the university's education policy"*. This issue should have been tackled by the university management by setting up benchmarks/standards for academics across modules/*faculties* which will benefit the entire student cohort. The emphasis here is not only the use of eLP in various aspects of online interactivity such as chats, DB, quizzes etc which should have adopted standard design principles but also the quality of content itself which should have aligned with pedagogical rules, subject relevance and freshness (up-to-date).

5.2.5 Theme 2: Tailoring of Learning Contracts

The tailoring concept is one of the unique features being extensively used in WBL. This is one of the attractions for WBL from employers and employees. The work-based learners' learning contracts are customised to their work role and responsibilities so that they learn at workplace without having to commute to the university. This arrangement is agreed upon between the employer and the university to ensure that it meets with the academic rigour, standards and learning outcomes of the programme whilst contributing to the productivity of workplace. This is a radical change when compared with the traditional HE programmes where structured teacher-centred programmes are delivered. The Learning

and Skills Improvement Service's (LSIS) (2009) World Class Skills programme (WCS), 'the Operations delivering successful WBL Skills' make explicit reference to the workplace as the preferred learning and assessment environment. The importance of identifying and incorporating specific work activities, facilities and equipment into the learning programme for individuals and/or groups of learners should be acknowledged at the programme planning stage. Liyanage, Strachan et al (2011b) emphasise the importance of receiving inputs from the employer and PB at various stages in the process including the planning phase in order to improve the effectiveness of design, development and delivery of online programmes for work-based learners.

Some of the quotes from stakeholders indicate the pros and cons of the tailoring concept.

Academics

The academic comment below shows the difficulty of implementing the tailored concept *"The concept sounds lovely but administratively and practically a nightmare. Our systems and support are not set up to achieve this plus with module occupancy, even options are not enabled. I cannot do it on my own without support from the faculty/university. It's costly in terms of time and resources and not affordable by the university. Tailoring for all the modules and giving them options is not possible. In assessments we ask students to look at their workplaces and focus their projects towards it. In RM, once there were students from European Central Bank who had a whole course tailored to their needs"*.

Another approach to tailoring is to offer different options to students. This is under consideration by academics but practically it is not happening in most cases. *"We are slightly increasing choices so that students could skip what they are knowledgeable about and take up something they want to their workplace."*

An MSc Engineering tutor commented *"All hands on practical projects are carried out at the workplace so what students are requested to do by the university is to cohesively report/document their work and what they expect from the tutors is just the guidance to do it but not teaching. However, students always seek the theoretical view point from us when they cannot resolve the problem at workplace."* This disproves the point in the literature which says "One problem with omitting reference to theory is to leave an impression that WBL is "vocational", which could mean in other words that it is suitable for those who do not like to learn in the classroom" but students cannot get around with the work-place problems without merging them with theory as per above tutor's comment. In addition, this tutor comment proves Dewey's (1916) view point which warned educators that "mere"

doing or activity was not enough to produce learning; rather doing should become a trying, an experiment with the world to find out what it is like. Experiments serve to make the espoused theories tacit, applicable to the situation at hand, and more understandable.

Other than the administrative difficulties in terms of time, and cost with higher number of students, there is a further important concern about tailoring: *“Not a good idea because students come from different backgrounds and different capacities so maintaining equal quality standards according to the programme benchmark levels will be difficult.”*

However, the same Engineering tutor further commented *“Students are guided on fitting their projects to meet the module learning objectives. In our case, students have more power in terms of content because they are the experts in their own subject so we as tutors can only assess the module on the basis of learning outcomes of documented project only but not on the complexity of the project.”* This is a very important quote which explains the way students’ engineering projects and assignments are tailored. The subjectivity in level of complexity of different individual projects in terms of comparison purposes is compensated by assessing them against defined learning outcomes.

In other disciplines other than engineering, not much tailoring takes place as a whole programme *“Standard curriculum structure is fixed for all the students but they undertake projects with the approval of employers to be benefitted for workplace.”* This is a key benefit for the employers in WBL where student projects contribute to resolve and improve organisational issues.

When asked about the difficulties in maintaining standard marking practices *“We assessed those using standard learning outcomes and created standard marking schemes to which examiners were trained in order to maintain the equal marking standards for all the learners.”*

It was observed that majority of tutors are concerned about offering module options to students due to the same constraints mentioned above but following comments from students reflect their desire to have the same. There is also a structural constraint that those options with too few students are discouraged by the university as they are not efficient to conduct.

Students

“I can apply any work based project to a particular module, but there is no tailoring with respect to the modules I can take.” There is a need for academics to let students choose modules from a list according to their wish, capabilities and knowledge gaps. However, this does not sit well with the University policy regarding this, and a desire to achieve staff efficiency.

“I really enjoyed the fact that it is not just tailoring but you could apply that for your work. I designed a website for my college through one of the assignments. I did a project to capture disabled students’ learning styles in my dissertation which was used by my college for the benefit of disabled students.” This further confirms the academics’ view above on mutual benefits an employer could enjoy out of tailoring if students are supported as opposed to *“I didn’t do anything related to libraries in my dissertation. I being a self learner anyway didn’t have to contribute to my employer in my dissertation by taking a project from the college.”*

“It’s very beneficial for students though because you could get a lot of help from your workplace for those assignments which are related to your work role.” These comments show that by tailoring, students and employers get most of the benefits. However the university’s RoI is doubtful due to the high investment needed.

One of the MSc Professional Engineering students commented *“All my modules were based around my work role and I believe that in WBL you need to be able to reflect on what you did and try to see better ways of doing it in future”*. Reflective learning is emphasised here based on Honey and Mumford’s (1992) Learning Cycle and Learning Styles and Meisel and Fearon’s (1996) concept of metacognition which means that one constantly thinks about one’s problem-solving processes. Also, how they prepare learning contracts is shown in the comment below *“I sat with my mentor/training manager and looked at each module’s learning outcomes and tried to tailor it from the company’s business point of view as to what is best for the company from my learning whilst complying with the university’s expected standards and the programme leader gave inputs to improve it. The programme leader explained me that my learning contract would go to the EngCUK at the end of my programme for them to see what my intension was and what I have achieved.”* These types of exclusive partnerships between employers and students contribute to a healthy WBL operation.

Support services

The example of diversity of approach among programmes is highlighted by the support staff *“The engineering WBL programme has a lot of tailoring in the student learning contracts whereas the other programmes have a set of modules which students have to compulsorily follow”*. Among the five programmes being evaluated, this currently happens only in the Engineering programme whereas other programmes include ‘standard’ modules although opportunity to apply ideas to their workplace through some of the assignments and through the final dissertation exists.

The following comment illustrates the complexity of handling different learning modes (FT/PT/face-to-face/DL/WBL) and their respective tailoring. *“For face-to-face students we have core modules and then a number of optional modules. Then for DL students we need to have different codes to identify them from face-to-face students and those optional modules create another set of complex combinations. Administratively this is very costly. We are planning to increase DL student numbers in next 5 years so we need to seriously think about this before that. Also, WBL students may study at a stretch and also they may take a break due to an overseas work commitment which they inform us but they might forget to inform us back after the break when they resume studies so our systems should be able to track this”*. Well established administrative procedures have to be incorporated into the system to handle these instances.

The view of the Students’ Union regarding tailoring is both positive and negative. *“When you tailor student’s workplace activities as part of their assessments, I feel you degrade the rigour of a university degree and it’s a disadvantage for student’s personal development and creativity. In face-to-face degrees students have to learn new theories and refer so much new resources for new knowledge but in WBL if you ask the student to submit what they have done in the workplace it could be done in a way they find easiest or what they are good at but how would you develop the skills you are not good at but are essential in your life/career?”* and positively *“for those who couldn’t make it to university due to various circumstances even though they are clever enough to acquire required levels with many years of work experience at higher level it’s fair to recognize and appreciate their skills to be able to convert them to a paper qualification.”*

“It won’t be difficult if we develop a framework.” The necessity of a framework is emphasized here which can streamline the tailoring concept so that equal standards can be maintained for each individual programme. *“A learner who has done a quite tailored or specific WBL which might not transfer the requirements of another workplace, they will have to explain the employer that they did it in accordance with the framework and levels of HE and also QA has been complied according to standards.”* This is where the accreditation by the PB could play an important role.

A support services staff provides an example of how she has personally tailored her learning to workplace *“I did MSc in Life Long Learning (LLL) and Adult Education on Distance mode recently and I used a lot of stuff what we do at workplace. Most of my assignments were about pedagogy of WBL, and policies and my project was on impact of WBL. I didn’t have an official mentor. You have to be well organized, motivated and independent. If you don’t push yourself no one will push you”*.

When queried whether the applying of tailoring concept is depending on the subject area and student numbers *“I don’t think so in terms of the subject area but WBL is viable for smaller student numbers”*.

Employers

A key beneficiary from the tailoring of learning contracts to the workplace is the employer. Thus their views are important in assessing this approach. *“As a concept it is an excellent idea, unfortunately I feel that this would impact upon the delivery times and costs of these interventions”*

“I’m not convinced of tailoring it to individuals but it should be easily done for a company or may be to a series of companies. This is where APEL can play a role. We are looking for rounded engineers who can attend to any engineering matter irrespective of their core discipline. If the programme can accommodate individual student’s weak areas it would be beneficial. As per the Institute of Accreditation everyone has to achieve competencies in all levels therefore learning different skills at this level would be beneficial for employees as well as for the company. Also, if management force runs out of vacancies being created in one position, everyone will have opportunities if they are competent in all areas to fulfill those gaps.” The idea of tailoring content for employees by identifying their skill gaps is more sensible as per the employers’ views. However, employers too, appreciate the fact that it can be difficult for the university to do.

Professional bodies

Tailoring of learning content to workplace activities cannot be achieved without the support of the PB which accredits or approves the programme content/qualification. Otherwise students will not get the intended benefit out of it. The PBs had mixed views on this. *“Excellent concept but difficult, expensive and time consuming. These cannot be accredited for its individual nature but they can be standardized up to an extent”*. This shows the negative and challenging nature of it whilst the following comments demonstrate the positive aspects. *“As long as the final qualification can be guaranteed to show the student has met our institution’s knowledge needs, this would be welcome.”* and *“You cannot get away with the fact that WBL is individual and two employees in the same company will learn two different things and we do take them as case by case basis on different learning contracts. That’s why we don’t accredit MSc Professional Engineering but we recognize it”*. The best way to approach this situation is to obtain prior approval from the PB once the learning contract is prepared before embarking on the programme.

5.2.6 Theme 3: Student Isolation

Student isolation is one of the main critiques against and grievances from distance learning. However, WBL by its nature of learning at workplace differs slightly from this issue as there is often a mentor/supervisor and/or work colleagues. Palloff and Pratt (2005) for example, describe the importance of community for effective learning in online environment. They conclude that a strong sense of community foster connectedness among the participants thereby increasing sharing and discussion of subject matter. Further, it reduces the feeling of isolation, burnout and engage the community members in deep exchange of ideas. Inceoglu, Shukla, et al (2011) explain that the DL nature of WBL degrees has a strong bearing on the extent to which learners feel a sense of identification with their HEI. The work based learners have little physical contact with the HEI as a whole with interactions mostly limited to their individual WBL advisers. The physical remoteness of the HEI also limits students' involvement in the social aspects of student life such as making friends and participating in social events. For most students this lack of physical and social presence of the campus in their lives contributed to a lack of sense of belonging to the HEI. A student quoted *"...I didn't really feel I was at university. I didn't really think I was part of the social fabric of the whole thing because it was distance learning. So I wasn't that involved socially."* However the lack of connection to the HEI was not simply a result of physical isolation. Students also perceived the university as a 'young' space, which they, as mature people, did not fully feel part of as quoted by a student. *"...I must say I saw the differences with mature students that we don't feel quite part of it as the FT students do. So I wouldn't say I would ever really at this stage access any of the student sites or really the general university and you know what's available on campus all that stuff goes on."* Therefore, for most WBL students, engagement in terms of experiencing a sense of belonging or community with their particular HEI is relatively weak. This can be attributed in large part to their physical and social isolation from the campus as well as their own perceptions of themselves as older students for whom 'university life' is not relevant.

Unlike in the on-campus face-to-face learning where students physically meet and interact with peers and academics and learn from lectures/seminars/group discussions/from each other, online distance WBL physically separates the learner from others. Therefore, one of the ways for this separation can be compensated or minimized is by using technology as appropriate. The instructional design of online delivery features should be used appropriately in this regard whilst the support from the university, employers and PB is paramount. Not only students' comments below show the issue and remedial actions

which can be taken to address the same but also almost all stakeholders agree that ‘student isolation’ exists as a main flaw in distance WBL.

Students

No other stakeholder can be a better witness than students themselves as to how they feel about this. Inceoglu and Shukla (January 2011) explain that some students did find the absence of peer interaction ‘isolating’ and bring students’ comments as follows “*I think that is because of the nature of my work. It’s a bit isolating, so it’s difficult to find time to even phone someone. ...with WBL everyone is doing something different to do with their own jobs. So having contact with others would not have been quite as relevant.*”

With their busy schedules, work based learners have not felt they had time to maintain contacts and following student comments further justify this burning issue.

“Occasionally I felt isolated and less motivated so in those types of occasions it’s better to have some face-to-face contact/advise from someone. I visited the Northumbria university twice once for Induction and just before the project which I found very useful. Had I missed them, it would have been difficult to establish the relationship with academics and colleagues which is very important irrespective of mode of learning and I would have found it very hard to keep motivated and even it could have affected the completion of the programme.”

“Missing the classroom features like body language, sharing knowledge then and there with others, learning from others’ questions, talking live with others about difficult components, brainstorming and networking. Although most of equivalent online features to compensate the above were present in my programme, it was a different context altogether. In face-to-face, I would have asked many more questions from my colleagues which somewhat limits in online conversations naturally. It also depends on personal preferences too as I consider myself as a good self learner but from time to time you need face-to-face tutor support as well” as opposed to *“I prefer face-to-face learning and also being pushed by someone always. A person like me who is not pessimistic and not believing me enough, self learning is not the ideal way”*. Video (synchronous and asynchronous) can be effectively used to compensate those disadvantages to a certain extent. Individual preferences can be a factor affecting the student retention/drop-outs. One has to be careful before deciding to embark on WBL. The above student comments highlight Raelin’s (Raelin, 2000) view point of consideration of level of activity where one learns through work at an individual level whereas learning in the workplace requires an extension of learning out to the collective level.

The MSc IT and MSc Professional Engineering programmes did not have face-to-face induction programmes. This was highlighted by a student: *“Completely cut-off from other students and staff!. I’m a kind of gregarious person so this cut-off has had some effect on me. It is understood that DL is some sort of isolation but nothing was there to compensate it at least to a certain extent. There was no face-to-face component at all like induction programme or so in the course which I suggested in my feedback at least for future students. Had there been at least once a year physical gathering to meet with your online colleagues and tutors/programme leader it would have been great. My motivation was very high so I managed my isolation but it was not the case for all the students who needed some push”* This student brings out ‘self-motivation’ as an important characteristic in self-learning.

“I used to visit the university at least once or twice a semester and had meetings with the programme leader and module tutors as I live closer to both my workplace and the university because sometimes the support on email could get the meaning away from you. It would have been very difficult for me if I had to rely on online communications only but I know there are students who follow courses even from overseas.” Students do not always live close to the university so this is not always possible for all the students.

Although face-to-face study schools are organised not all students can make it not only because of distance but also due to work commitments. *“I could never go to the Induction or study school because it was the time where my own library conducted induction so I was not able to take leave from work. On DB there was very little conversation/dialogue by the students, each making individual comments but not really commenting on each other’s ideas. I knew only one person from my course that I interacted with on DB.”* Some sort of a mandatory arrangement needs to be arranged to improve online interactions on DB which could minimise isolation and improve the effectiveness of WBL.

Academics

Academics need to handle and address this issue by motivating students, facilitating with any special requirements that students need, encouraging and creating opportunities for online discussions, chats etc. Academics’ own experience as distance learners can make a big difference. *“I found it very easy to ignore what I had to do as a learner. Attending in person was preferable to concentrate on the learning and not to be distracted by other tasks.....students are often isolated and without much support in person who have to be very motivated as opposed to face-to-face students who are in-directly motivated with each other. Tutors can see the students, sense their feelings, ask about*

progress and motivate/support them. University systems like exam boards and students union are not set up for distance WBL so it tends to get overlooked, or worse treatment. We do not see them so easier to lose the grip” The ‘motivation’ factor is again highlighted by tutors similar to the students. Also, it is the responsibility of both the student and the tutor to have a regular online dialogue in WBL. *“When allowing students to take the interrupted study option, students miss the network and cohort feeling (start with one cohort and finish with another). To avoid this isolation, initially we made the induction workshops and study schools compulsory but everybody couldn’t attend so had to revert back to optional.”*

There was this interesting observation by an academic *“Some would welcome the opportunity of being able to interact with other students online but others select distance WBL because they do not like to mix with other students in group work! They prefer self-learning”* This means the isolation seems to have been welcomed by some students.

Another potential problem has been the evaluation of the student’s contribution towards the online discussions. Pena-Shaff, Altman and Stephenson (2005) reported some students to have rebelled when discussions are graded, resulting in a negative impact on their participation. Some students found it difficult to interact when the human interface was not present; this was reflected while communicating in ODF environment (Bullen, 1998).

Support Services

Support services also expressed views on the isolation issues for students. *“They are isolated somewhere and they don’t get the university learning experience. They miss student activities like volunteering, networking or opportunity to make friends which are helpful for students’ own personal development. The opportunity to make presentations in front of the class won’t be there too”*

Further insights from the support staff include *“Some students stay quiet and it is difficult to determine if this is caused by high level of confidence or because they are not sure of what they are doing but are too shy to ask which could be a potential problem in distance WBL. The quality of work of a WBL student could be low sometimes because they wouldn’t exactly know whether the work they are doing is right or wrong being alone until the submission whereas face-to-face students have the opportunity to discuss among colleagues before submission.”* A support services staff that had previous WBL experience commented *“I studied PT face-to-face while working FT. I was day released and also sponsored by my employer. A group of 5 of us managed to get together and created a peer support environment where we shared always and tried to motivate/push each other in our*

difficulties which worked very well. Fortunately we were within 50 miles from each other so we could even meet up time to time. This wouldn't have been possible for those who are geographically dispersed far away but I must mention that things have changed during past 8 years dramatically in terms of ICT and there are so many networking opportunities today even you are very distant” This is a good example of how to collaborate effectively with peers as opposed to the negative comments reported by certain individuals above.

Employers

Employers also mentioned how their employees feel isolated and how they try to deal with it.

“My employee lacked a feel for the specific interests, personal views and opinions of the course leaders who had little communication with other students, no idea of their progress or difficulties with the course. It was like working in isolation”

“If you are not driven there is a high chance that you will get dropped due to no visibility to tutors and other colleagues. Not getting timely responses for online queries where students could miss out the focus is another issue”. Most of above comments indicate the lack of online communications and responses for queries by tutors, peers which needs to be improved to address this issue to a certain extent.

5.2.7 Theme 4: Effectiveness of Delivery Mode

A comprehensive comparison between face-to-face learning, 100% online learning and blended/hybrid learning is a separate study which is not within the scope of this research. However through some of the questions in the questionnaires and interviews, the researcher was able to obtain views of stakeholders on this to a certain extent as described below. The comparison was focused on aspects of university support, performance of students, learning materials, tutor performance and preferences and student collaboration/interactions. Factors such as the discipline of the programme, purpose of the study (declarative, procedural, and strategic), nature and proportion of hands-on skills required had some impact on choosing a WBL approach. However, the majority of students favoured some face-to-face meetings indicating that a blended learning approach should be used wherever possible in order to enhance the understanding, collaboration, inclusiveness and ownership among the students.

Academics

The academics' comments on this are quite insightful with their learning/teaching experience in both modes.

“I did my Masters Education with the OUUK in 2002 through postal correspondences while working here. Some modules had regular regional day schools and summer schools which could be picked up according to your comfort which also depends on where the tutor is based in. Communication happened through emails with tutors.” The arrangement of regional workshops could minimise the distance discrimination to a certain extent but it is not an easy task. The researcher observed back in 2005 how an online nursing degree was delivered in Manitoba, Canada with practical components being arranged at local hospitals whilst the theoretical content being delivered online which is quite similar to the NHS WBL model in the UK.

Another tutor commented *“I’m taking a French Language learning course online where materials have been uploaded in the eLP. The support I get from the tutor is excellent, helpful and the interactive elements make my learning enjoyable and ease the understanding. However, I feel that learning languages online is not 100% successful because I need to be able to listen to someone speaking which makes my understanding sharper than reading. I applied the learning from this course to my students.”* Tutors’ online experience both as learners and tutors is an important factor that can benefit students immensely.

The below comment is in contrast to the view quoted by tutors about the quality of work from students. *“In terms of results, WBL students’ work is work-related so the quality is high. They should get extra credit for managing the challenge, showing self-reliance, and demonstrating good time management skills. This can depend on culture, country etc though. Some potential students have asked me whether the words ‘distance learning’ would appear on their certificate because it would give a lower value in their home country. In certain countries it would not be accepted as a valid qualification.”* The recognition of distance WBL qualifications varies by discipline, context and country.

“Due to lesser demand two of the previous distance u/g programmes I have been tutoring had to stop so I’m not sure whether this is because of less recognition from the employers or something else.” The general opinion is online WBL is more suitable for p/g level mature students which could have been the reason for discontinuation of those u/g programmes. The acceptance and recognition would automatically be gained if and when the quality of delivery standards are assured and maintained.

A comment on additional time needed for online WBL teaching *“Academic time is sometimes wasted having to spend on each distance student’s questions separately (due to their different learning contracts) unlike in the face-to-face situation where you can clarify it to everyone at one go. Also, it’s difficult to track what students are doing and how they*

are progressing. Again the issue is staff time to follow up frequently with students” An interesting comment which needs some careful treatment as there are two sides of the issue. The nature of online WBL is such that students’ individual online queries need to be attended on individual basis with the availability of 24X7 online email facilities today. On the other hand, if those queries are common, they could be answered to all students online to avoid the same query being popped up again from another student.

“When we go on holidays, we swap with colleagues and inform students in advance. Even for face-to-face students, they work all year doing dissertation in the summer so the problem exist for them as well but they try to front-load their work to get over with it” The need of academics’ availability throughout the year is raised here on distance mode but the swapping of duties is the only solution seems working.

“Online WBL suffers more than face-to-face on retention. Rather than drop-outs we have abstainers in WBL due to various problems like inability to cope up with academic requirements, financial and health related issues, laying-off from job, complicated lives with stress, children, family, being women etc. We try to be flexible within our limits for those students as a measure of easing out for the sake of retention of students.” Statistics on student retention from various modes of learning are very difficult to obtain due to different status of student absenteeism so comparison between two modes on this issue is depending on qualitative feedback from academics/support staff who deal with it. Another staff commented saying dropouts are higher among first year FT u/gs than online WBL students!

There are some extra cost elements applying for online WBL students compared to face-to-face students *“There could be an extra cost for online WBL students on printing because in face-to-face classes you may give printed course materials but this could be equal for both categories as university policy is changing to have learning materials on eLP even for face-to-face students. For library books online WBL students have the disadvantage of posting cost when they return the books.”*

“In online supervision tutor could forget about the student unless there is a standard way of communicating/reminding frequently”. The researcher had his own experience being distant during the latter part of the PhD where weekly email communications and monthly ‘Skype’ meetings with supervisors were set up by the researcher himself.

All the comments above that relate to the disadvantages of online tutoring can be eliminated to a certain extent by using technology (see earlier ‘use of technology in learning’ section above).

Academics, however, need to first assess whether their WBL programmes could be delivered online or not. They should also have an idea on the instructional design aspects of it as to how to incorporate technology and whether to deliver 100% online or use blended learning. Also their experience and inputs were extremely important to improve the quality of delivery *“I was heavily involved in pioneering the design of the first ever distance WBL complete MSc programme of Northumbria University 14 years ago. Being the first DL programme and in the absence of the eLP, my role was not just developing quality open and distance learning materials but also to conceptualise in terms of pedagogy such as student support, library support, etc. and to push the university towards a DL culture”*

“I am not 100% supportive of online WBL as I still see the importance of face-to-face contact. For some stand alone products, you won’t be able to get 100% result by doing it online. We believe that it should be blended especially in engineering discipline although technology could make most of the things happen as if they are being delivered face to face.....I studied a CPD course at the Open University. Found it very useful, and enlightening how online learning can be exploited, making it interactive”

The following is an interesting but negative quote as one tutor commented *“I haven’t been an online learner as I consider myself too old to be an online learner”*. Digital literacy and academics’ age should not be contradicting with each other and academics at any age should be equally willing to learn technology and use it. It is not purely down to age as Cantor (1992) points out the adults have different barriers than children on their way to learning. Some of these potential barriers might include:

- many other responsibilities (families, careers, social commitments)
- lack of time
- lack of money
- lack of child care
- scheduling problems
- transportation problems
- insufficient confidence
- having to learn, if told by boss, but not interested or ready

Students

One side of the argument between u/g and p/g students from students’ point of view is *“I learnt how to learn, how to academically write, how to research and I would have also needed colleagues around me in my first degree. When you are matured you know you are paying for it and you need to get it done but when you are young and if your*

parents pay for you, there isn't that responsibility who may not undergo the rigorous process of maintaining standards of WBL therefore I don't think WBL is suitable for them." The maturity of students is the key when considering the self-learning nature of WBL. Such considerations are also found in more general studies of management. Hersey and Blanchard (1988) in their work on organisational behaviour, draw attention to the importance of situational and contextual factors in determining appropriate styles of leadership, and in particular the readiness and maturity of the followers/subordinates for any specific task; readiness being seen to depend on ability (experience, education, understanding and role perception), and maturity being seen to depend on motivation (security, confidence, willingness and incentive).

"For face-to-face students bursaries are frequently available. Online WBL students can also get bursaries but there are very few." This could be an issue related to recognition and acceptance of online WBL which indirectly links when employers are not offering sponsorships.

Those students who have done their u/g studies in face-to-face mode had a clear idea as to how different are the two modes of delivery. *"WBL is very challenging especially the time management. Dividing time between work, studies, official travel, meetings, family and social life. I have never had any DL in my life before which made it harder for me to cope-up with being away from the university. You have to be really organized yourself. All my previous studies were 90% exam based whereas this is 100% assignment based. I'm still trying to get accustomed to email communication with tutors on learning matters and still seeing benefits of face-to-face learning."*

"English being my second language I may not understand everything on a sheet of paper so I need to talk to people. In face-to-face, you always get the opportunity to correct yourself when you meet up with someone but in online self-learning you don't know whether you are on right path" This is another area of concern where face-to-face explanations are often more effective than what is written on paper. The language barrier for non-English speakers is common but the point here is it is likely to have a greater effect in DL mode compared to face to face delivery.

According to the study conducted by Means et al (2010) which compared online and face-to-face learning, an average effect size of +0.20 ($p < .001$) standard deviations favoured the courses with an online component. This means that, on average, students in courses with an online component outperformed students in face-to-face courses by a small but statistically significant amount, after controlling other factors. Means et al are careful to say, however, that this finding almost certainly does not represent a pure effect of

technology, or of the delivery method used in the different courses. Instead, online courses were associated with other instructional conditions, such as increased learning time, different materials, and enhanced opportunities for collaboration, which are the likely mechanisms through which they achieved superior results. The above statement contradicts with what was found in the current study because WBL students did have less time for studies with their work, less opportunity for collaboration due to its distant nature, and some students' unwillingness/inability to communicate with others due to various reasons. However, in the current study, students were able to use variety of different learning materials with multimedia features in some programmes whilst other programmes had only the curriculum outline.

Means et al also explain about the factors that had no effect. The meta-analysis analyzed the influence of a large number of potential moderator variables and found that the main effect holds independent of the vast majority of these variables, including:

- * Learner type (K-12, u/g, graduate/professional);
- * Subject matter (medical/health care, others);
- * Type of knowledge tested (declarative, procedural, strategic); and
- * Type of computer-mediated communication with peers and with instructor (asynchronous only versus asynchronous plus synchronous).

The findings of the current research however showed that significance exists between u/g and p/g students, among subject matter, and synchronous and asynchronous communications between tutors and students.

Factors that had an effect were statistically significant according to Means et al including:

- * Blended learning: The authors separated purely OL from “blended” or “hybrid” conditions, or courses in which face-to-face instruction is enhanced or supplemented by online materials and/or activities. They then compared each of these separately to fully face-to-face conditions. Completely online instruction had an advantage of +0.05 ($p = .46$, not significant) standard deviations over purely face-to-face instruction, while the advantage of blended instruction over face-to-face was +0.35 ($p < .001$). Since the current study did not collect data from face-to-face students the above finding cannot be further proved/disproved but between blended and pure OL, many learners preferred the blended version as they miss the physical community feeling in pure OL.

- * Curriculum and instructional methods: When students in the online condition were exposed to a different curriculum and/or instructional methods from students in the

face-to-face condition, the advantage of the online condition was +0.40 ($p < .001$); when these factors were equivalent across conditions, it was +0.13 ($p < .05$). This finding suggests that the positive effects of using online technology in education are enhanced when an instructor adapts curriculum and instructional approach to the use of technology. Adding more and more technology into teaching and learning was demanded by students many times in the interviews and academics also had their views as to why it cannot be done as per the expectations.

* Type of OL experience: Instructor-directed, expository learning had an effect size of +0.39 ($p < .01$); collaborative, interactive instruction, +0.25 ($p < .001$); independent, active OL, +0.05 (not significant). Similarly, it was observed that almost all programmes in the current study except for Engineering MSc had 100% tutor-directed OL which was not well accepted by some students who mentioned for example that online communications among students has not been very effective on the DB as it is tutor-centred and no opportunity for students to create their own discussion thread without tutor's intervening.

* Time on task: When students in the online condition spent more time on task than students in the face-to-face condition, the advantage of the online condition was +0.45; otherwise it was +0.18. This difference approached the threshold of statistical significance ($p = .06$). Only doubt here is whether WBL students can spend more time on task than face-to-face students.

The researcher followed an e-learning course which spanned for about one year on online course design, development and delivery. Conducted from Manila in the Philippines, there were fifteen participants from various Asian countries. Throughout the course, the participants met online on a weekly basis through synchronous chats, asynchronous DBs, and emails and worked on individual projects using Moodle open source platform. However, the blended learning part was the most interesting and productive where the participants met twice in Manila once before the course began (Induction) and then to present the final project at the end of programme. Those physical meetings actually enhanced participants' knowledge, bonding with peers and tutors, and sharing knowledge and experience of each other. Similar views were observed by students in the current study.

"I visited the university twice (once for the induction and then for the study school before the dissertation) which was a really useful thing to happen as we managed to introduce with each other in the batch as well as meet with our tutors and the programme leader."

The geographical disperse seems the biggest bottleneck for blended learning. One of the solutions for the benefit of remote students who miss out the induction programme and pre-dissertation programme is to make it available as a live streaming/recorded video. As being practiced in some programmes, regional day school type of face-to-face components could facilitate the removal of the distance barrier to some extent but it could have an impact as standards could differ from tutor to tutor.

Support Services

The views of support services were mixed and they include view point of university as well as their own personal. *“It will depend on the employers’ own experience. If he/she is a campus based learner he/she would prefer face-to-face learners and so on. But I believe that anyone who has studied while working should be appreciated more than a face-to-face FT learner because it is a lot of work.....WB Learners are passing out with knowledge plus experience as opposed to FT learners who have got only theoretical knowledge.”*

An important view point was mentioned however *“I always believe that face-to-face education is superior to DE but if I were to pick one from two modes, I wouldn’t consider the way they studied but the merits of the particular candidate.”*

“Today’s students have much more things than before where you don’t feel like cut off. I feel that today we are depending too much on technology where distance students have to sit and look at the computer all the time in that sense face-to-face learning is nice.” This is an interesting comparison between two eras and advantages of today’s advances in communication which students enjoy.

“I consider university education as a membership of a Gym. When you get the Gym membership you are being given all the tools necessary for your fitness for a certain period of time to use but unless you make your own effort the tools wouldn’t make you fit, similarly irrespective of the mode of delivery the students have a responsibility to work hard and get the maximum out of the university.” This analogy of Gym is very appropriate because in WBL much depend on self motivation and drive whereas face-to-face learning has academics and peers to drive the learner regularly. In WBL, making Individual Learning Plans (ILPs) is recognized as a better way of achieving the goals in a methodical way. Brown and Knight (1994) specify four stages in the development of a learning plan:

1. The skills, knowledge and understanding profile which can be constructed using specifically designed proformas
2. The needs analysis, specifying the learning outcomes learners need to achieve

3. Action planning either individually, with a tutor, and/or a workplace mentor to identify what learners are going to do, timescales and resources (including tutor and peer support) required
4. Evaluation of how successfully, or otherwise, learning outcomes have been achieved.

Particularly where outcomes have not been achieved, this may lead to further action plans and activity (and evaluation).

Goodwin and Forsyth (2000) argue that learning plans allow learners to negotiate non-standard programmes of learning that reflect both their own professional needs as well as the needs of their employer.

Professional Bodies

Regarding quality and recognition of WBL programmes against face-to-face programmes, PBs had mixed comments as follows.

Being negative as *“WBL is not structured or rather haphazard. It could take much longer to obtain the same level as an academic MSc. In university, you accept MSc level at each subject due to capacity of lecturers, properly assessed examinations with external examiners, the whole university support structure is behind you and QA procedures in place whereas you don’t get all above necessarily in WBL. You don’t know whether what you do and learn is correct at workplace unless your learning is properly assessed and monitored.”* and being positive *“I am sure distance WBL programmes are of similar quality. As far as IMechE is concerned, we at least internally recognize it as equivalent to any other on campus FT MSc programme. It’s fair to say that general public has a different view on this as WBL qualifications are less credible. That’s the disadvantage of WBL students who have not only to acquire skills and knowledge but also to demonstrate the same level of academic rigour similar to FT MSc students.”* This shows the difference of the angle of professional bodies by which they look at WBL.

Employers

Employers’ own personal experience in DL and also how they have adopted online delivery of content in their training was exposed. *“We use OL currently for a small percentage of our courses before going offshore; other courses are delivered in a classroom setting to allow interaction with the trainer that would prove difficult online. We are looking to expand our use of online media to include more vocational training without the need for travel and accommodation for studying individuals.”*

Another comment favoured blended learning *“I have gained my own p/g diploma in HRM via a combination of classroom and DL. Class room based interaction was found to be preferable to my own learning style, the interaction and cross fertilization of knowledge and information that can be gained by discussion with individuals from disparate working environments is an invaluable source of shared experience and created useful opportunities for discussion related to the subjects being taught. DL only was found to be more difficult as unfamiliar concepts could not be explained in a different way or discussed to facilitate understanding, that said I was able to absorb a considerable amount of raw information in a timescale which suited me and fitted around my personal circumstances.”*

“I did my MBA as a WBL student on distance online mode with one face to face evening workshop per week. We had a pre set up programme which made it very flexible to follow as and when we have time and still fully concentrate on our work. We created work groups which made it easier for us to closely communicate among us. I used to do a lot of work during that period balancing both work and study.” All the above comments favour blended learning whilst there are also some positive comments for 100% online delivery. *“I enjoyed doing Frontline Reader Development course which allowed me to work at my own pace and when I had time to get on with it. My days are often busy and working in an online environment suited my personal situation.”*

5.2.8 Theme 5: Accreditation of Prior Learning (APL)

Accreditation of Prior Learning (APL) has become an integral part of WBL provision and when it was first introduced it represented a radical departure from the traditional access mechanisms to HE. APL has two parts; Accreditation of Prior Experiential Learning (APEL) and Accreditation of Prior Certified Learning (APCL) (Evans et al., 2010). The G.C.E. (Advanced Level) milestone which usually gives access to HE system is challenged by the APL framework where students' previous learning and work experience are counted as pre-qualifications or selection criteria to enter a degree or p/g degree usually though not always through a WBL approach. Evans et al further explain in their paper that APL offers learners a time-saving and an empowering device. Time saving because the learner will not have to repeat in the HE course what he/she has learnt in the workplace and where they are able to evidence that learning. Empowering because it is a method to show the learner just how complex and challenging his/her work role actually is.

The comments below show how different stakeholders view this aspect which are self-explanatory.

Students

The students who are the main beneficiaries of APL had their views as follows.

“I benefitted out of APL immensely which led the university to exempt me from the first year due to my ACLIP/City and Guilds qualifications and also number of years of experience. I think it’s a great concept for people who couldn’t pursue HE due to various reasons but are capable and experience enough in the latter part of their lives to acquire HE.”

“The university really considered APL in my case. I had ‘A’ levels and all other trainings related to my job which showed I was continuously improving myself plus number of years of experience in my field. Apart from that, I believe that my group manager’s and line manager’s references definitely would have helped in the process because I am a hard worker at the workplace which paid off in this case. I also had a course which added credits to CPD scheme so it was a very critical point in my profile as well. Personally I think APL concept is very good which allows a person to pursue with HE who is continuously trying to improve her/himself without much prior paper qualifications.”

Another use of APL is during the course when it can be applied to select which modules the student should study and whether there are any modules that can be exempted from. The university can work with the student to identify skill/knowledge gaps and try to fill them by selecting appropriate modules. They can also exempt the student from modules for which the student has already acquired skills and knowledge to a sufficient level and can evidence this. *“I was not made aware that it is possible. I was a professional cataloguer with 3 years of experience and it was silly to take up the cataloguing module had I known that you could have got an exemption for that.”*

The comment below confirms the difficulties students face when applying APL and how the university had supported/should support them when they cannot cope with the course.

“It was difficult to get adapted to p/g level academic environment without having a prior university degree. Especially the report drafting and writing part I had to learn. In fact the university provided enough support and materials in this regard which was very useful for me. I assumed that my colleagues were ahead of me in that area but because of the support I got from the university it wasn’t as bad as I presumed.”

Academics

Being the offering party, the academics and the university have a responsibility to maintain equal enrolment standards across the board. They had both positive and negative

comments about their experience. *“Some of those who have not had a first degree, but equivalent work experience working at senior level really struggled with the academic content. Problem is at a distance we cannot support much for weak/struggling students. I even have students with PhD who follow my MSc who want to get a professional qualification but other than the degree, work within Library environment, references and experiences also can be applied as APL but it is difficult and administratively cumbersome.”* This is an area which needs attention when considering APL because the required level of academic rigour may be inadequate for those who come only with work experience and references. Also, when considering APCL like the above PhD case, those students also could struggle without having much experience in the field therefore, maintaining the balance between APCL and APEL is important.

Another tutor commented *“Loathe doing it because it is very difficult to assess and compare what they have done in order to exempt them from a module or two. I don’t do any publicity on this in my programme. The main reason is why ILM, RM and Prof Eng can do this because they are niche industries and they have a great understanding with the employers and professional bodies in respective areas whereas IT is not and my students work everywhere. There could be some opportunity in future for me to consider exemptions from modules if a student can demonstrate good experience.”* The subject dependence to apply APL is another point of consideration.

“I applied this for RM students in one module. The nature of people who come onto this programme is that they have a lot of practical experience but no paper qualifications so APEL is appropriate. However, students found it difficult to complete the APEL which was a portfolio of evidence to demonstrate the module’s learning outcomes instead of doing an assignment so we no longer do it. We do however, mention about APEL in the advertisement and encourage students to apply.”

It is very important that PBs are aware of APL considerations which could otherwise become a problem when applying for the professional registration. As commented by the programme leader of MSc Professional Engineering *“We do offer APL in our advertisements for those who do not have Bachelors degree in Engineering but have extensive engineering work experience. However, engineers who have no technical input in the company or who do not contribute to any engineering projects wouldn’t be suitable for this programme. There was no guideline from EngCUK to take APEL into consideration but they’ll consider it on case by case basis at professional registration for CEng.”*

“CILIP is accrediting their members for award of ACLIP (para-professionals) using APEL framework, which allows them to get exempted from the 1st year of u/g

program. In case of students possess with NVQs/HND/Foundation degree from the colleges in Library Science they could straight away go to the 3rd year of the degree (level 6) as a top-up using APCL. This depends on the standard of the college/qualification though. For the university also this will be beneficial in terms of increased student numbers. Our curriculum is according to the CILIP standards. Roughly about 75% of our students come with ACLIP and the rest through portfolio/APEL.” These comments demonstrate that the APL concept has been able to benefit many students although different disciplines and PBs had different views about its execution.

Support Services

A former WBL student who works at the library commented *“When I was interviewed I mentioned that I didn’t want to spend 6 years for the degree and then they looked at my work experience and applied APEL. I was allowed to complete it in 4 years. Therefore I think that concept is very valuable.”*

WRLS by its mandate has developed a framework for APL. *“We update the framework time to time to meet the current requirements. I think it has not been properly adopted in the university. The reasons could be its bit difficult to practice in terms of time and effort in administration. It’s very important to record your decisions in these standardizing procedures to ensure transparency so that everyone will get treated equally.”* The importance of ensuring transparency and equal and fair treatment in the selection process through frameworks is again emphasised.

The students’ union had views from two angles *“We know how much effort and pain face-to-face students put first to get selected for the university and then to obtain the degree so when someone else who has enjoyed during that time and also earned money will also get the same MSc at the end which will be firstly a disadvantage for the face-to-face students. Secondly, for those who were not fortunate to enter university due to various circumstances even though managed to acquire required levels after so many years of work experience, it’s fair to recognize and appreciate their skills to be able to convert them to a paper qualification.”*

Another comment from the Health faculty *“We used this for nurses who come with certificate level qualifications for enrolment for the degree. We try to articulate their experience and enroll them to the second year of the degree. We try to fill their gaps like academic writing skills and IT skills to match with the requirements as they could have been out of education for a longer period.”* APL has been applied in various disciplines differently according to the comments above.

Employers

The employers are benefitted out of APL in two ways. Firstly, their unqualified but skilled employees get qualified and secondly they use their training budget for a productive cause. Employers' view on this *"I believe that APL will enable more focus to be placed on areas that the individual is lacking, it give the interventions a more tailored feel, the individual will no longer have to cover areas that they are already proficient in"*.

"We have an MSc programme for our Managers who didn't have required academic qualifications who managed to still join the Diploma level with APEL. There is a problem of standardization though due to the high subjectivity of this concept. You need to have a scheme where you have pre set up all qualifications around and try to match with HE standards." The all important issue of standardization through a framework is essential for APL.

Professional Bodies

PBs need to agree on the concept and how it matches with their professional registration criteria and policies. *"I am aware that some programmes accept a level of relevant prior experience as a factor when considering students for acceptance on programmes. My personal view is that the important issue is the relevance of the experience and the character of the individual. However, having said that, I would be unhappy to see the accepted qualification in general fall below p/g level."*

Two PBs very positively commented *"This would encourage more candidates and we would be pleased to see all their learning credited."* and *"For PBs it's not that relevant as it does for the university. We did include it in our policy in the CEng evaluation scheme. We require them to include all their WBL activities in their profile which will be assessed. We have a fairly complex academic qualifications assessment matrix for CEng qualifications to make it more objective where candidates are advised in the guidelines as to how much further learning is required as a way of APL. In a nutshell, we see it as a positive thing for the university."*

5.2.9 Theme 6: University Support

In the proposed four-pillar model, the university is the pillar which has the most important and active role in delivering quality WBL programmes to students. The design, development, delivery and support of WBL programmes are carried out by the university and if any of these activities fails to perform to the expected standards, the whole process can be negatively affected. The comments of the stakeholders reflect the importance of university support and highlight where it is inadequate and the main areas where improvements are needed.

Academics

Academics did comment on university support to students as well as how the university management should consider supporting academics to deliver better WBL. *“Administration service has been improved but we don’t have a counter support like in the face-to-face setup so it is difficult to develop a strong personal relationship between students and the university. Academic calendar does not fully recognise distance WBL which happens all year round. Admissions and enrolment processes need to be streamlined. U/g clearing takes priority over the summer when many of our applications arrive. It worked better when admission was located in the faculties rather than centrally.....Notification of new students from Admissions was at the same time as that for face-to-face students. This gave insufficient lead time for a DL programme considering the time to post materials. Many drop out or suspend than face-to-face students. Finance which changes their procedures every year has been a nightmare for students without giving them correct information.”* Most of the comments related to issues of finance and admin procedures are not difficult to solve if the university pays appropriate attention.

“I’ve increased the duration of the programme to ease the course fee burden for students from 2 ½ to 3 years. We have problems of lack of staff, resources, and staff time.” The areas where university support is required can be seen in this comment by a PL.

“It is needed to make flexible rules and guidelines for submission; flexible payment terms; study breaks when they are in trouble, and better admin and technical support. Main problem is university’s core business is face-to-face so it lacks the co-relationship for DL which needs to be fine-tuned” The main problem for less support for DL has been pointed out as university’s core business being face-to-face teaching.

The following comments indicate the pivotal role PLs and online tutors from individual faculties play with minimum support from the university management for the smooth operation of WBL programmes. *“Not officially but PLs work hard to sustain this and the faculties are concerned about the retention of students but I’m not sure about the university as a whole which is reactive, not proactive.”*

A tutor comment *“Distance WBL programmes are not obvious like classroom packed with students in face-to-face situation yet 100s of students sending emails online. MSc ILM is big in terms of student numbers as similar to any other p/g programmes in the university but the research capabilities of students, value of them, and work-load of tutors of the same are comparatively under-valued”*.

“I had to convert work-book materials into web-based materials for the eLP for a module which is being tutored by a new member of staff”. This was a comment by a PL who carries responsibility for a large proportion of the WBL delivery process by not only

coordinating the entire programme with students and tutors, tutoring his own module/s, liaising with the university management/support services, employers and PBs but also attending to other module tutors' content preparation matters under his programme.

As mentioned under 'quality of content' above, academics view it as essential that the time and effort it takes them to prepare and support online activities for distance WBL is fully recognised by the university. *"This is more challenging and additional work for tutors in terms of time and resources apart from their face-to-face teaching with little incentive."* This shows there is a perceived issue with the university workload distribution model among academics that needs to be addressed.

"I was not aware that the LTech is in existence still...." One issue is the ignorance of the particular tutor in this case. On the other hand it shows that the university/LTech is not creating enough awareness about this important central service.

"I communicate with students on email during the week (I work 12-14 hours on a week day) and try not to do academic work during the weekend." This is a fair statement from the point of view of tutors but then how about the distance WBL students who can mainly afford to spend time on studies during the weekend? This is where the university should have online tutors and face-to-face tutors separately so that different working times could be allocated depending on their teaching requirements.

In the study conducted at Swinburne University of Technology (Swinburne_University_of_Technology, 2011) on *'The stakeholder approach of expectations of industry based learning'*, employers, students and academic mentors had been interviewed to explore their expectations and their perceptions of the other stakeholders' expectations. Results had revealed interesting agreements and disparities. Three distinctly different comparisons between the stakeholders' expectations and perceptions of expectations had been made that had identified four gaps: a gap of expectations between employers and students, a gap in students' perceptions of the other stakeholders' motivations, a service expectations gap of the university, and a gap in recognition of the university's role in the partnership. Overall the academic mentors had the best understanding of the expectations of both the students and employers due to their extensive experience with the programme. However, the gap in expectations of the university's role in the partnership required urgent attention.

Students

"When we post the assignments at the deadlines, they wouldn't reach the particular tutor on time because mail is being sorted out at a central sorting office which takes few more days! I had to face difficulties for not complying with deadlines which made taking

day off from work and personally bring it to the university!” This statement appears strange and potentially indicates a serious management lapse by the university as to why the central post could not put a date stamp which would indicate that the deadline has been met. *“Getting reading materials also take a little longer especially books. Postage time sometimes takes longer”* was one of the comments from a student from the African continent. Most of the student views on university support areas were discussed under other themes.

“One of the issues is there is no government support in terms of financing the learners! In my case, I had to take a personal loan for my studies.” This brings up another issue of not having many funding opportunities for WBL which has to be addressed by the universities/employers by making it as a case to the government.

Support Staff

Support staff are responsible for facilitating all non academic support to WBL students and for academics to deliver their programmes swiftly whilst coordinating with employers and PBs too. The WRLS has a role to initiate, convince, design, and provide support for new WBL programmes for faculties. *“We normally support faculties to get the programmes up-and-running only but we need to make an effort to follow them up as well.”* WRLS admitted it needs to follow up the progress of the entire delivery of WBL programmes but they did have their own limitations with staff capacity: *“All what we do is support and advice them on best practices and procedures as we can. We go out to all faculties having distributed our work between three of us. In that way, we develop close relationships with faculties and we have leaders/champions from each faculty that would closely liaise with us and take the concept on behalf of us across the faculty.”* This would help propagate the message across the faculty by using someone within the faculty. However, their main concern is *“There is an issue of explaining this concept to the faculties and convincing them.”*

There is a good example of the university’s positive consideration of WBL which is not limited to delivering to other employers/employees but as an employer itself encouraging and supporting its own staff. *“The university is encouraging admin staff to do NVQ and they pay for it centrally so this is a wonderful environment for WBL for our admin staff.”*

University administration plays a fairly large part in delivering WBL. The top management, faculty level administrators and support services are involved in various parts of the exercise. *“No fix time for student enrolments”* which is a huge administrative overhead when they have to track student progress individually and this has resulted in the

following quite negative comment *“Academics sometimes tell our Admins that they cannot understand why students cannot see their courses on eLP. The Admins get the blame due to this whereas it should be an academics’ problem and they should attend to it.”*

Employers

According to the literature review, it was observed that the current WBL model lacks sufficient intervention from the employer who could enrich the employees in their learning as well as the process. Although willing to be an active contributor their main concern is the university’s ‘closed policy’ with employers. Employers would have liked to contribute in many ways by establishing close formal/informal communications with the university so that their inputs could be offered in a regular framework. The comments below, however, indicate that irrespective of the sponsorships for students there is no such formal reporting mechanism being formed.

“No contact with us, only in as much as feedback passed on informally within the organization as to the progress of our candidates. Not closely involved with the Northumbria eLP either.....Some direct contact with the university would have been useful. The interventions are delivered to the learner and appear to be self managed by the individual concerned, I feel that other providers are more proactive with their levels of interaction with the company. For example I currently have individuals studying with other Universities and colleges and I have been involved with the content of work based projects to the extent that the tutor has met with myself and the learner involved to discuss the proposals for the project and on one course (Foundation degree in electrical engineering) 25% of the mark for the work based project was awarded by the company giving us a direct influence over both the content and quality of the work submitted.” This statement covers everything about the level of involvement employers would expect from the university.

Another employer negatively commented *“We had a previous bad experience with Northumbria university’s business faculty for a CIMA qualification where having paid for one year we had to withdraw the candidate for not performing and part of the blame should go to university as well for not reporting to us so we lost one year. What I need from the university is to report to us if our candidates are not performing, not attending or whatever. Our graduates are always communicating with me if and when they have problems so I’m aware and can correct them with the university. Now I’m directly communicating with the programme leader and I visit the university quite often.”*

Professional Bodies

As already mentioned, the literature does not provide much evidence regarding active involvement of the PBs in WBL delivery except for some anecdotal evidence. The PB's views on university support are as follows:

“Universities have a good relationship with the ARA through the work of the Accreditation Team. We are in regular contact where a member of the group of Programme Directors sits on the External Qualifications Sub-committee, which deals with accreditation. Also, as Head of the Team, I am invited to attend meetings of Programme Directors in the university as and when necessary” Accordingly, it seems working for archives association but the engineering council's view was different.

“If the university requests us to assess their online WBL programmes we would do it. As of yet, no university has approached us.”

5.2.10 Theme 7: Employer Support

Unlike in PT learning where students learn a set university programme in the evenings and weekends independently from their employer, WBL is directly related to the employer and workplace hence employers' support in many ways could impact on students' learning and performance. Employer could play different roles as top management, line manager, supervisor, colleague/peer, of which any of them could be the mentor for the student whilst extending support in terms of inputs to the learning contract, and providing technical, financial, logistical, moral and admin support. How different stakeholders view on the same is depicted below.

Students

How employees are supported by their employers will have a significant impact on the success of WBL delivery. The support could be in many ways as mentioned above and even a mere moral support would assist in a big boost for student's progress. The student comments below are self explanatory.

A technical issue was mentioned related to access to university servers *“I couldn't download Citrix software for DTA application in my workplace due to IT security restrictions at the workplace which was the only flaw.”*

“Being a volunteer employee, it was difficult for me to ask for any kind of assistance/support from my employer which I found quite difficult during my WBL programme. Also, not being in their permanent cadre, they didn't have any obligation to train me or support me.” This comment brings out the importance of being in the permanent cadre of the workplace for the employee to seek for support. Also about a supportive employer *“I used to access learning content at workplace and from home. I*

didn't have any restrictions from my employers to use physical workplace resources for my studies."

Academics

According to WBL theories, employers should support the employees in many ways but most importantly they should support on the learning contracts with their subject expertise. The academics commented on this as follows.

"I have observed and noted in the u/g programmes that some employers are getting fed up with employee questions related to work-based projects and also by letting employees take time off for studies during office hours. I have so far 4 students either dropped out or deferred due to employer related problems."

On why employers' inputs are important *"May be because without supervision in that level of professional context student wouldn't know what to learn and also what's the best way of doing certain things. Also, the student would need supervision from a person in the workplace who has certain level of authority to reflect and evaluate the actions student would perform."*

Not only do the subject knowledge/skills matter but also the overall development of the employee is important and this largely depends on the employer support *"WBL happens in real life scenario which mainly depends on how much time and effort the supervisor put towards the learner towards development of the learner. From the employer's point of view, the learner has to be treated as a valuable resource for the company and pay careful attention which would ultimately benefit the company upon employee's completion of the HE qualification. The learner's team work abilities, communication and leadership skills would be part and parcel of the learning which would allow the learner to become an important contributor to the organization"*.

On how employer sponsorships are important *"Main drive for WBL from the employees' point of view is employer sponsorships which had a big impact for the increased numbers. I guess many school leavers will opt for WBL as many won't be able to afford the new university fees and we haven't traditionally targeted WBL for school leaver market which we'll have to do in the near future."* and how to tackle the sponsorship matter is *"Each organization has a budget for training and what they are looking for is work-force skills. If the employers see these WBL programmes are adding value to the organization as well as to the employees who are already in work or even a school pass out new employee, they would sponsor because it's beneficial in the longer run to have qualified and experienced employees."*

Employers

Employers should see this as an opportunity and extend their support where possible. *“We would hope to keep staff but if there is no suitable career progression they may choose to leave. Our CPD policy regarding bonding is in the event of a member of staff leaving the College while they are studying for a long external qualification the College reserves the right to seek the return of all or part of the costs incurred by the College in relation to the qualification. Normally the College would seek repayment of all costs it has incurred if the member of staff leaves within one year of completing the qualification, and 50% if they leave within two years. However, we do conduct cost benefit analyses before enrolling our employees on University WBL programmes comparing against short term industrial training programmes available”* The bonding arrangements should be enforced to ensure staff retention after obtaining qualifications on employers’ account.

“Our final target is to make them achieve their CEng status so we support them to prepare for it by supporting for MSc Professional Engineering type of affordable programmes. If the programme cost goes higher with the current trend, we will have to look for alternatives.” This is a serious issue which all universities in the UK would face with the new fee increase and the government should find alternative remedial actions to solve this issue.

The employers’ expectations of the WBL model from the university are clear in this statement. *“No bonding arrangements but the degree qualification is only the beginning of training for professional librarianship. I am continuing to support my employee with ‘on the job’ training.....I would think that any interaction between employers and learning providers is beneficial to both sides, it gives the company a better idea of what the individual is required to produce, deadlines and enables the company to feel involved in the learning interventions being delivered on our behalf.”*

There was a very positive supportive approach from this employer in terms of CPD point of view of employees. *“I believe that employees value the investment that the company is prepared to make in them, which has been proven to myself in terms of our very low staff turnover and high level of qualified individuals who have started with the company, some in trainee and apprentice roles that are now going onto fulfill positions of responsibility within the company. This has led to opportunities to recruit individuals from other organizations where perhaps their development needs were not being addressed.....Our aim is all our professionals get their charter status and once they become professional members, we even undertake to pay their membership fees.”*

There are occasions where the full package one can expect from an employer has been provided like in this case. *“We support by fully sponsoring course fee, encouraging and guiding, allocating free hours for studies, providing a book allowance, study leave for exams, and providing a mentor at workplace”*.

“The current student who is working on the University’s distance WBL programme keeps me in touch with what she is undertaking. We had an interesting discussion about the ethics of charging for elements of services which was stimulated by the work she had been reading over the weekend” This is the kind of collaborative approach needed where employer too would learn from the new knowledge the student gains in the programme. This comment justifies Raelin’s (2000) quote in chapter 2 which says *“WBL uses many diverse technologies, but primarily it is the deployment of action projects, learning teams, and other interpersonal experiences, such as mentorships which allow and encourage learning related dialogues”*. Evans et al (2001) explain in their paper how an employer benefits from high quality informed research of employees in the example of a food retail company which had sponsored 20 of their managers to undertake PG WBL programmes. The management of the company felt that the projects undertaken by those managers were of a vastly improved calibre compared to the equivalent work of external consultants because the managers’ insider knowledge of the detailed context of their work brings in-depth understanding and analysis.

Another employer commented on monitoring of their employees’ progress *“I formerly meet them every month to discuss their progress. Although it is a monthly meeting, I see them almost every day and if they have any problem/issue they would tell me.....further employees have to produce weekly reports and submit to me. Graduates are requested to report at the management meetings in front of all others so they cannot survive if they haven’t performed or learned up to the expectations. I have created an electronic journal where they have to maintain their daily learning. I expect them to note down the skills and learning on this journal which will require as the training need for their charter qualification as well. We do have around 20 chartered engineers in the company already which has a big impact in the commercial bids as long as the company profiles are concerned. We are very happy with our engineers who follow this MSc on their progress“*. This employer has realised what is expected of him in this process and the ultimate benefits the company would reap. He further added *“If the university can advertise about their WBL offerings, it will have more weight for our employees as well as for PBs than us doing it”*.

Professional Bodies

This positive endorsement of the PB indicates their willingness and desire to make this WBL initiative realistic through employers' support. *"We can't force employers to do this but they have to see the advantage of their employees being developed and better qualified. Although employers want to make profits primarily, they also like to support employees seeing the real tangible benefits of WBL. We do however encourage our candidates to talk to their employers before they embark and seek support to get an assessor/s from the company itself (other than their mentor or supervisor) because company itself is the best to know their employees' learning from the workplace. I would be surprised if a candidate says to me that my company is not willing to support me in my WBL because appointing one or more senior person/s for different aspects of employee's learning is beneficial for the company. However, much depends on finances: some employers have been more supportive than others. Given the current cut-backs facing local authorities in the UK, I would not be surprised if employers no longer felt able to support staff"*.

5.2.11 Theme 8: Professional Body Support

Although the WBL concept has been in practice for a while, the literature review revealed that it had mainly looked at two stakeholders - the academic institution and the learner with sometimes the addition of a third stakeholder, the employer. This current study moves this on further by formally amalgamating the employer to its full potential and incorporating the PB into the model. The active involvement of the PB in the process is a key requirement for the success of WBL delivery. The comments below from stakeholders indicate how they feel about the support from PBs in the process of WBL delivery.

Professional Bodies

ARA's viewpoint is positive *"ARA members, who are also employers, have been on the whole supportive of those staff wishing to undertake WBL programmes."*

In order to cater for overseas students who would like to obtain CILIP membership, CILIP/UK is even prepared to work with overseas professional bodies *"We have accredited DL and we are working with the WBL programme at Middlesex University to see how CILIP members applying for our qualifications can address their individual learning needs. Universities can advertise their qualifications, whilst trying for PB accreditation. Where there are gaps in offerings, PBs can offer services like professional qualifications and accreditation to individuals and universities overseas as well."*

The engineering PB approach towards individual company based WBL scheme is also positive. *“What we advise the candidates is before they embark on WBL, make sure with their superiors whose primary objective being making profit whether they would support in this assessment process. We could support employers in this assessment process but we try not to do it as a service otherwise it would be a practice. Every time we set up a company further learning (FL) scheme, we develop the scheme together and refine it which will then go to the academic assessment committee for approval. It could further be reviewed given the high level of subjectivity. We have around 20+ professional development consultants whom I can contact to work with employers. They are empowered to talk to companies in terms of FL to encourage for professional membership. We see FL as a very powerful way of satisfying academic requirement.”*

The universities should proactively work with PBs and seek their advice on approval/accreditation of WBL programmes which would then benefit students who themselves not having to approach PBs individually. *“What candidates should do when they plan to start WBL MSc programme is to inform us about their learning contract through the university so that we can approve it which makes them feel comfortable that once completed it would satisfy academic requirement for CEng at IMechE.”*

Commenting on the Gateways project for MSc Professional Engineering *“So far only one member graduated from Gateways project. We do appreciate that it’s an expensive way of teaching for the university and we are observing as to whether many other universities are coming on board or not. Current universities are running it in a very small way as opposed to what we envisaged due to this individual nature of WBL. It depends on the value engineers put upon CEng. EngCUK however doesn’t have any automatic eligibility for having MSc qualification for CEng but this would only be an essential qualification as an added advantage to apply for CEng. We are open to working in a global context where our British engineers who work overseas seek assessment of WBL can contact us with their employers and we will, of course, do that against the same standards we have set and use for the UK.”* Similar to the CILIP case, they are open to negotiate for overseas students who would like to obtain EngCUK membership.

The positive approach by IMechE was further commented *“WBL is recognized by the IMechE as one of the ways of meeting academic qualification requirement for professional registration. My role is to talk to organizations who offer WBL to present WBL cases to the committee for approvals. Also, people would send me information about their WBL to see whether they meet with our benchmarks.”*

The comment below explains how a PB would assess a student with WBL qualifications at the professional registration *“Accreditation is recognition of an academic course but when it comes to IMechE, the word ‘accreditation’ is not exactly appropriate to use because in WBL student does not follow a course that everyone is following to accredit but he/she works individually with his/her own work so it is far best to use the word ‘approval’ of WBL qualifications. Emphasis here is what you learn at the workplace but not what you do. We try to compare and equate this qualification with a FT university Masters level programme in terms of academic standards”*.

Academics

The programme leader of MSc RM was a rich information source who commented *“The difference between RM and ILM is there’s no need for MSc qualification to get a job in the RM field whereas in the library field being chartered is a must for a career as a Librarian and the MSc ILM is the easiest way to get the chartership. The Society of Archivists (now ARA) is more concerned with archives and archives management than RM. The IRMS (Information and Records Management Society) is the one most of our students are members of. One cannot become a member of ARA without an archives qualification and because our MSc doesn’t have much archiving content our students tend not to apply for ARA membership. However since our MSc is accredited by ARA they could become full members.”* According to this, the RM PB has its own characteristics which are different to the library and engineering bodies.

“When you have BSc Librarianship you can apply for the charter and the MSc ILM is a conversion degree to those who have their first degree not in librarianship.” This is a very good opportunity for those who want to change their career into the librarian field.

5.3 Conclusion

The qualitative analysis was able to extract important themes and sub themes from the data. The transcribed narratives of all forty interviews were entered in the NVivo software which then categorised them into different areas of questions using the ‘Autocode’ feature in NVivo. At the end, the analysis identified and recognised interesting phenomena being classified as eight themes and three sub themes which look disparate to each other but are internally linked. The findings are cross tabulated against the outcome of quantitative analysis in the next chapter to discover any commonalities and relationships from the two methods of data collection and subsequent analyses. Also, how each theme and sub-theme can be encapsulated into three main categories ‘quality’, ‘support’ and ‘access’ are carried out in chapter 7.

6. Quantitative Data Analysis and Triangulation with Qualitative Outputs

6.1 Introduction

As explained in the methodology chapter above, a mixed method approach was chosen in the case study. Data capture was carried out using semi-structured interviews with a range of stakeholders including a sample of students and online MCQ type questionnaires with the wider cohort of students. This chapter presents the quantitative data analysis of the responses to the student survey. Also the ‘internal’ triangulation against the qualitative outputs of the previous chapter (chapter 5) is presented.

In order to prepare the questionnaire response data for in-depth analysis and for triangulation with the results of qualitative data analysis, the data was prepared with the SPSS software package. This required the merger of two databases, one for the p/g student responses, the other for the u/g student responses into one database in SPSS as illustrated by the example output in Figure 6.1.

	SEN	STUCAT	STUCHAR	MSQ1	q2	q3	q4	q5	q6	q7	q7_1	q7_2	q7_3	q7_4	q7_5	q8	Q9	q9_1	q9_2	q9_3	q9_4	q9_5	q9_a	q10_a_1	q10...	q10_a_3	q10_a_4	q11_a	q12_a	q13_a	q14_a	
19	6	1	M.Sc.	2	1	2	2	9	3	123	1	1	1	0	0	1	12	1	1	0	0	0	0	2	2	2	2	2	2	2	5	2
20	8	1	M.Sc.	2	3	2	2	9	4	2	0	1	0	0	0	3	12	1	1	0	0	0	0	3	3	1	1	1	1	2	3	2
21	13	1	M.Sc.	2	2	2	5	9	1	1	1	0	0	0	0	2	1	1	0	0	0	0	1	0	1	2	2	1	4	3	3	1
22	15	1	M.Sc.	2	1	2	2	9	2	1	1	0	0	0	0	1	12	1	1	0	0	0	0	2	2	1	2	4	2	4	4	
23	22	1	M.Sc.	2	1	2	2	9	3	1	1	0	0	0	1	2	1	1	0	0	0	0	0	1	3	1	1	1	3	3	2	
24	26	1	M.Sc.	2	1	2	1	9	3	13	1	0	1	0	0	4	1	1	0	0	0	0	0	1	3	3	1	2	1	1	3	
25	38	1	M.Sc.	2	2	2	2	9	4	4	0	0	0	1	0	4	12	1	1	0	0	0	0	2	3	1	1	1	1	4	2	2
26	41	1	M.Sc.	2	1	2	2	9	2	13	1	0	1	0	0	1	14	1	0	0	1	0	0	2	3	4	3	2	2	4	2	
27	48	1	M.Sc.	2	2	2	4	9	2	1	1	0	0	0	0	1	14	1	0	0	1	0	0	2	3	1	1	2	1	1	2	
28	54	1	M.Sc.	2	2	2	2	9	2	1	1	0	0	0	0	2	12	1	1	0	0	0	0	1	1	1	1	2	3	4	5	
29	58	1	M.Sc.	2	1	2	2	9	4	123	1	1	1	0	0	2	12	1	1	0	0	0	0	2	3	1	1	2	4	2	4	
30	62	2	B.Sc.	0	3	2	0	9	4	1	1	0	0	0	0	2	12	1	1	0	0	0	0	4	4	4	1	2	2	4	6	
31	65	2	B.Sc.	0	3	2	0	9	4	1	1	0	0	0	0	2	1	1	0	0	0	0	0	2	2	2	2	1	2	1	4	
32	68	2	B.Sc.	0	1	2	0	9	4	2	0	1	0	0	0	1	124	1	1	0	1	0	0	2	4	4	3	2	3	2	2	
33	70	2	B.Sc.	0	3	2	0	9	4	3	0	0	1	0	0	1	12	1	1	0	0	0	0	1	1	1	1	2	2	2	2	
34	72	2	B.Sc.	0	1	1	0	9	2	1	1	0	0	0	0	1	12	1	1	0	0	0	0	1	2	2	1	2	3	4	3	
35	25	1	M.Sc.	3	3	2	2	10	3	12	1	1	0	0	0	2	1	1	0	0	0	0	0	4	3	2	2	1	3	3	3	
36	53	1	M.Sc.	2	3	1	1	10	4	123	1	1	1	0	0	2	1234	1	1	1	1	0	0	0	3	2	1	2	2	2	3	
37	59	1	M.Sc.	2	2	2	10	4	2	0	1	0	0	0	0	2	1	1	0	0	0	0	0	6	6	1	1	1	2	5	3	
38	61	2	B.Sc.	0	1	2	0	10	2	34	10	0	1	1	0	2	12	1	1	0	0	0	0	2	3	2	1	2	2	2	2	
39	63	2	B.Sc.	0	3	1	0	10	4	1	1	0	0	0	0	1	12	1	1	0	0	0	0	0	0	0	0	2	2	2	1	
40	64	2	B.Sc.	0	3	2	0	10	4	12	1	1	0	0	0	2	12	1	1	0	0	0	0	4	4	4	4	2	2	2	2	1

Figure 6.1 Example of combined responses from MSc and BSc databases

The reason for this was to identify any significant trends/differences between the two categories of students for the same statistical function which would otherwise have been difficult to compare if they were in different databases.

A version of the prepared questionnaire was piloted with a sample of seven respondents and a reliability analysis was carried out to find out the reliability of the scale. The reliability analysis indicated that the scale is reliable and required no more improvements (Cronbach alpha = 0.808; 80.8%) as shown in Appendix XI.

The collected data were subjected to univariate and multivariate statistical analyses including Frequency analysis, Spearman Brown correlations, Factor analysis, and Classification Analysis of Regression Tree (CART). All these statistical analyses were carried out only to support outputs of qualitative analysis but not to make any general conclusions due to the unequal stratified distribution of data from individual programmes as shown below in Table 6.1. Triangulation of qualitative outputs against outputs of all four quantitative techniques is provided in this chapter.

The online survey was targeted at all the current WBL students from the five selected programmes. The responses received are given in Table 6.1.

Table 6.1 The details of the online student questionnaire results

	MA/MSc ILM	MSc Professional Engineering	MSc ICT	MSc RM	BSc Librarianship	Total
Total no. of students	76	14	40	25	33	188
% of target cohort	40.4	7.4	21.3	13.3	17.6	100
No. of responses	36	06	11	07	12	72
% responding	47.4	42.9	27.5	28.0	36.4	38.3
% of respondents from the responded cohort	50.0	8.3	15.2	9.7	16.6	100

6.2 Frequency Analysis

Frequency test is an exploratory and non-parametric statistical data analysis technique where each variable is considered separately to identify patterns in the data set. The frequencies of all questions in table format are shown in Appendix XII but only demographic characteristics with relevant charts are explained in the next section.

6.2.1 Frequency Tables

The age distribution of students as shown in Figure 6.2 below is explained in detail in the CART analysis (section 6.5) by taking both MSc and BSc students into account separately. In general, 70% of students fall into age category of 21-40 years and another 26% are in the age range of 41-50 years.

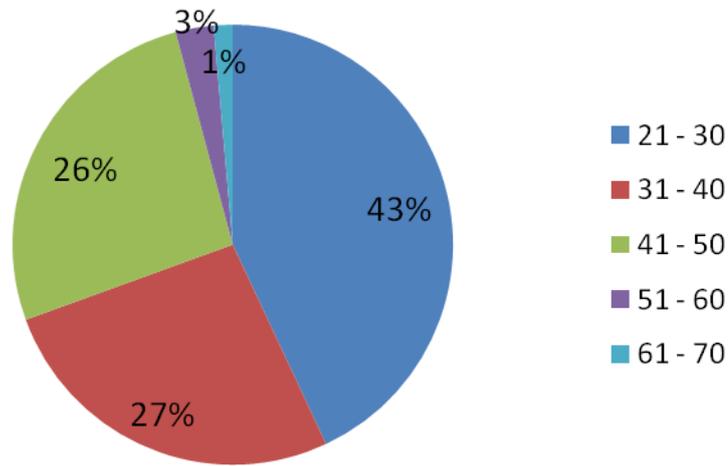


Figure 6.2 What is your age?

Figure 6.3 below shows the gender distribution of students in the survey. The main reason for the imbalance of gender is the nature of disciplines and the number of responses received from each discipline. The responses from male dominant disciplines like engineering and IT were 6 and 11 respectively out of total 72 whereas responses from female dominant library and RM disciplines made up the remaining balance of 55. The composition of 34.7% males and 65.3% females in the study however was exactly matched as per the HE Statistics Agency data for 2011 (HESA, 2011). There are 212880 females (65.4%) as opposed to 112575 (34.6%) males in PT studies in the UK.

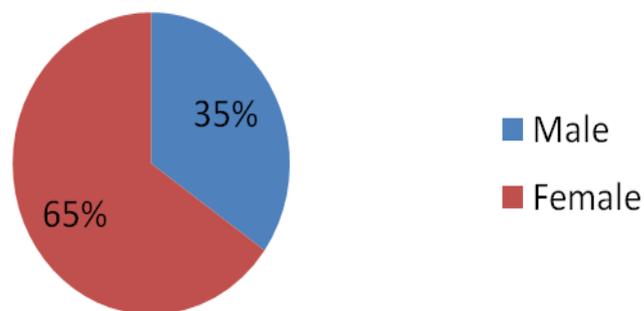


Figure 6.3 What is your gender?

Figure 6.4 below shows the details of students' background educational qualifications. As explained in the CART analysis and Spearman correlations sections below too, this is inter-connected with the employment and the discipline of study. The MSc Engineering programme requires a Bachelors engineering degree as a pre-qualification, although students can apply for the programme without a degree. The MA/MSc ILM and MSc RM programmes do not specify the subject of the Bachelors degree that acts as a pre-qualification, but it is generally assumed that it will not be similar to the Masters subject area. MSc IT students mostly enroll on the programme without a relevant first degree. The 13.9% of non relevant degree holders are the students who need a

career change in the library or RM fields and this is supported from the interview data. The 6.9% of students who have other professional qualifications must have directly benefitted from the APL scheme. Some students in the BSc (Hons) Librarianship programme also had foundation degrees although it was not an entry criterion and they mainly fulfilled the ACLIP professional qualification together with work experience in a library. The majority of 40.3% of Masters Students who did not have relevant Bachelors' degrees represent a typical category of WBL. ILM is a conversion Masters so most students have un-related first degrees.

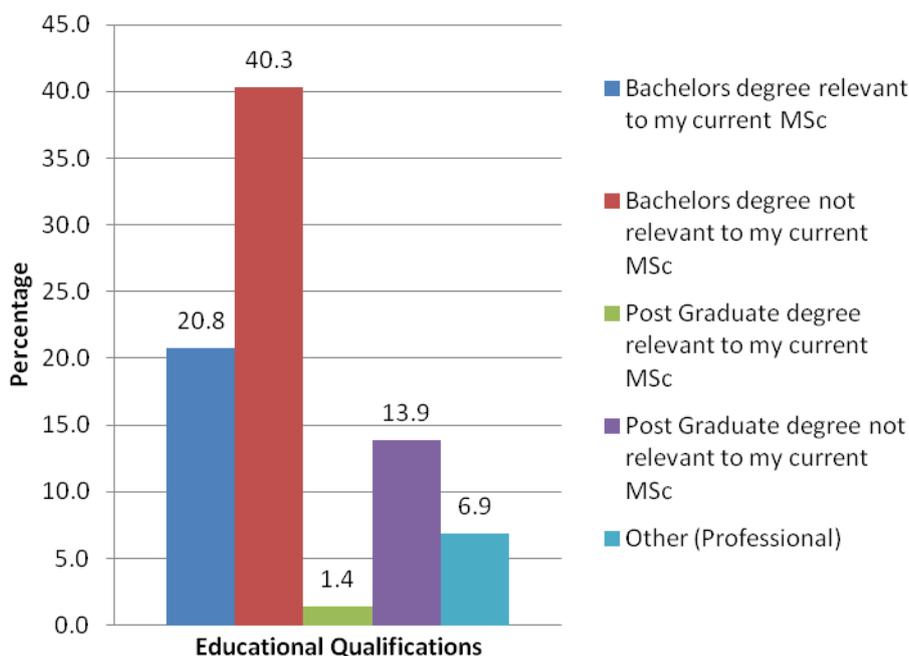


Figure 6.4 What is your highest educational qualification?

Figure 6.5 below shows the distribution of employment amongst WBL students. By analyzing the list, it is observed that WBL has paved way to access to HE for many professional, and semi professional employees.

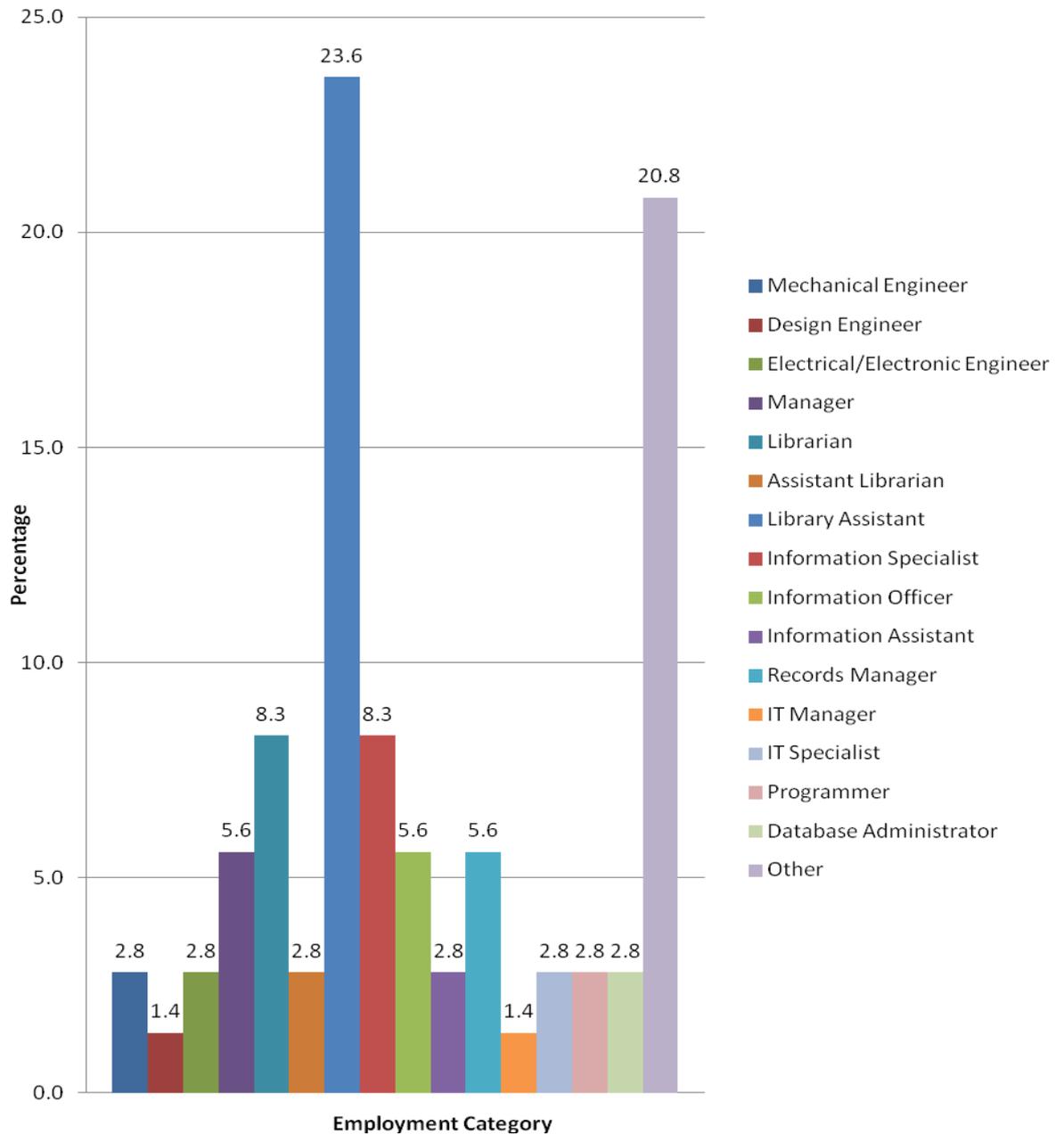


Figure 6.5 What is your main employment?

Figure 6.6 below shows the number of hours students spend on their main employment. This fact was explained as to how students' gender affects to working hours in the CART analysis in section 6.5. However, the key importance of this fact is to find out whether WBL students get enough time for their studies whilst being employed, whether this is the main reason for student dropouts or low performance, and whether employers are concerned about this fact. This was further elaborated at the interviews which revealed that sponsored students gained more benefits than non-sponsored students in terms of free study hours and study leave being granted from their employers.

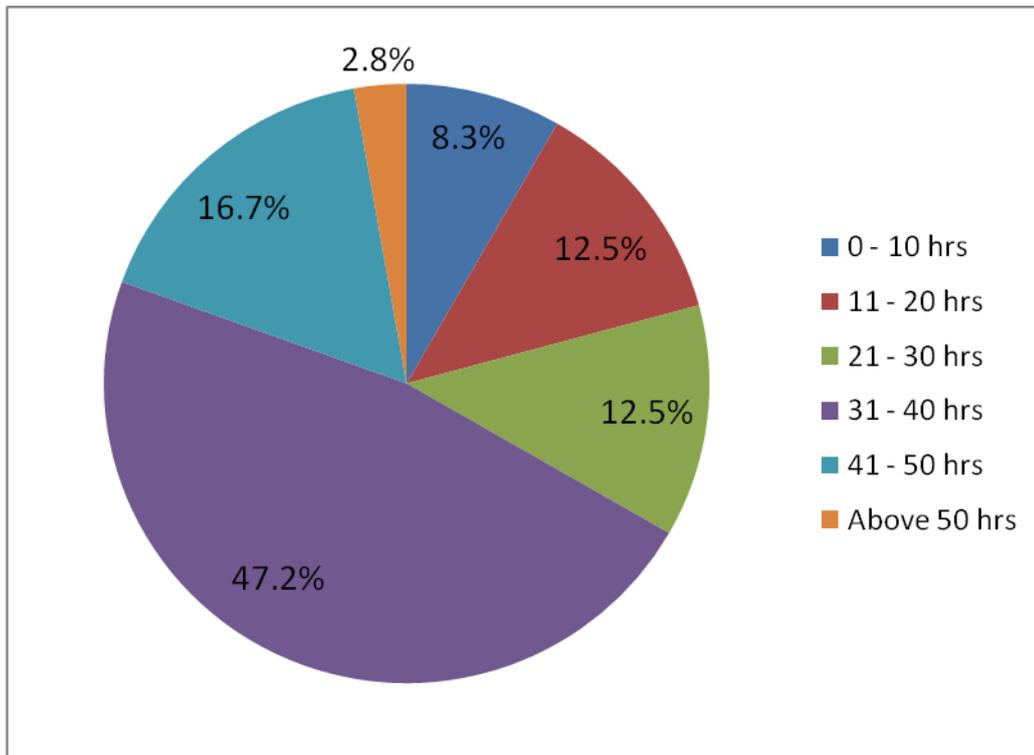


Figure 6.6 On average, how many hours a week do you spend on your main employment?

In general, the usual maximum working hours of 48 hours for a week in the UK (NIDIRECT, 2013) is the dominant figure in the sample where 63.9% of students work between 31-50 hours and a further 2.8% above 50 hours. Only 33.3% of students work for 0-30 hours.

As shown in Figure 6.7 below, only 20.8% of students are fully sponsored and another 11.1% are partly sponsored by employers. The significant portion of 51.4% self finance their WBL and this implies that their workplace earnings are sufficient to allow students to pay their own fees. This reflects another important fact that future university HE programmes could be more work-based as this gives students a better financial advantage during the global economic crisis.

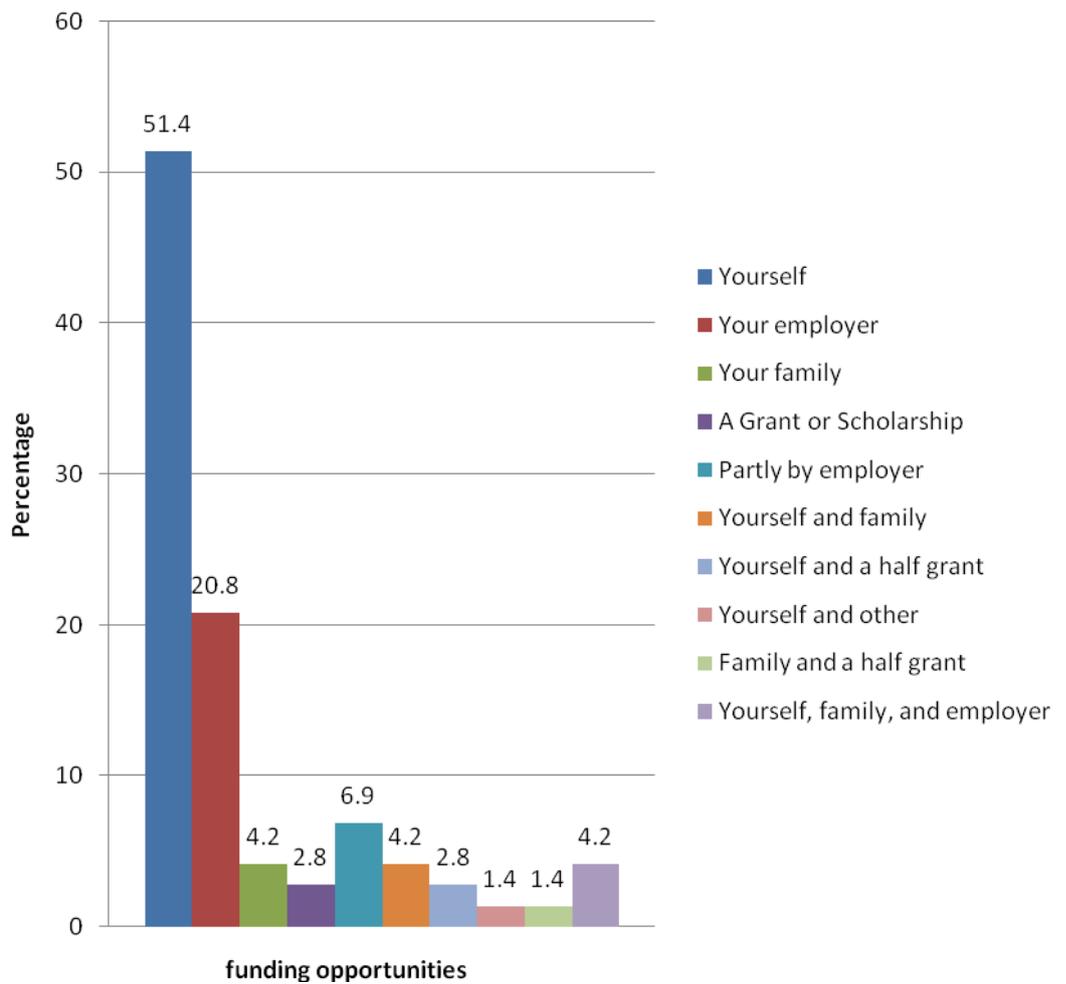


Figure 6.7 Who is sponsoring your studies?

Although the students' place of residence as shown in Figure 6.8 does not seem to have any relevance to online distance WBL, this fact cannot be simply ignored in some WBL programmes. It was revealed during interviews that those students who live in the North East of England (23.6%) tend to visit the University more often in order to meet with academic staff, thereby using their close proximity to their advantage. Students who lived further afield, but still within the UK (48.6%) attended study schools as they appreciated the benefits of face to face meetings. From interview data, it was clear that those who were unable to attend study schools due to work commitments or distance regretted for not being able to do so. These facts lead us to think that the physical community feeling is a significant factor in WBL. However, students from outside the North East (76.4%) who would not visit the university nor meet academics in person could still perform well in the programmes using the distance support.

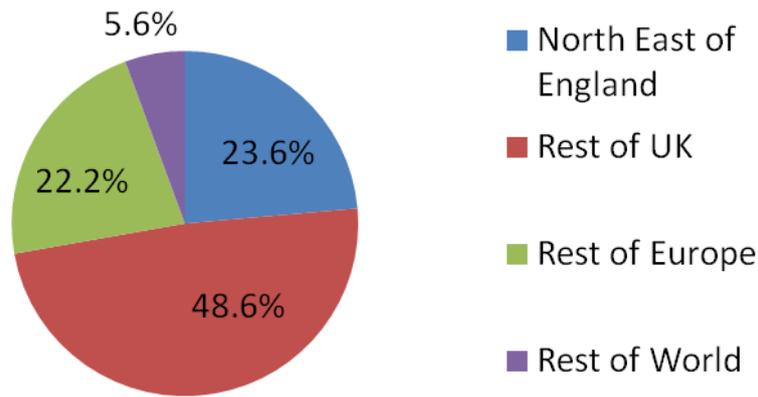


Figure 6.8 Where do you usually live?

Access was found as one of the key deciding factors in WBL for all the stakeholders. The revolutionary rapid growth of ICT today has made access much easier. Student access of online programmes from university servers through the internet is round the clock and can support the globally dispersed nature of students. Figure 6.9 shows the students' locations of access of programmes which spreads from home to workplace to libraries but the dominant access location is home where most of the individual WBL takes place.

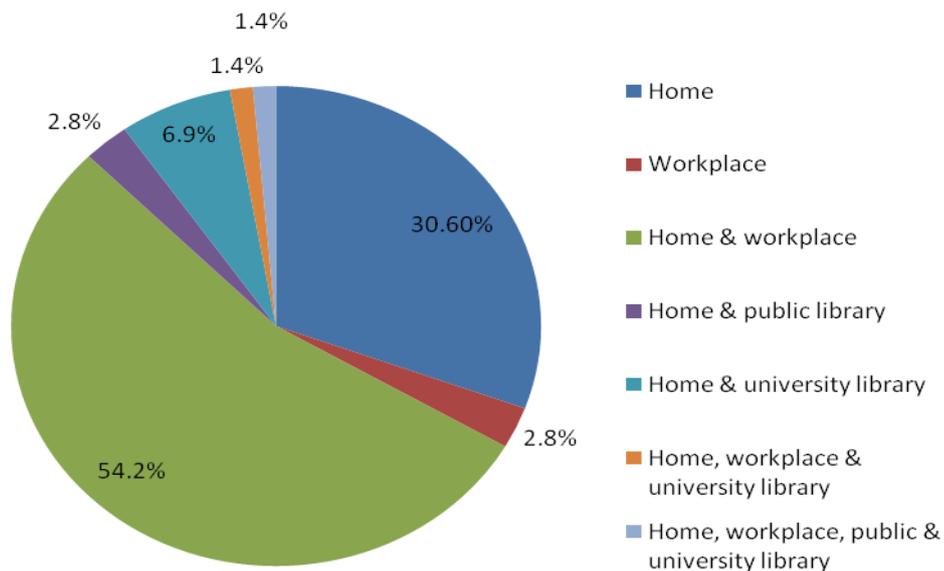


Figure 6.9 From where do you access your online programmes/s?

The main demographic characteristics have been analysed on a frequency basis. The other sections of the questionnaire responses are analysed with three different analysis techniques as described below.

6.3 Spearman Brown Correlations

Spearman Brown correlations test is also a non-parametric test which compares two variables at a time to observe for any associations between them. Cross tabulations were carried out across all the questions as given in the Tables XIIIa, XIIIb and XIIIc in Appendix XIII.

In this section, only the correlations which indicate significant associations among the variables are discussed. There are a number of variables which were significantly correlated with $p \leq 0.05$. For the purpose of analysis, the most significant correlations with $p \leq 0.01$ were considered for triangulation against either outputs of qualitative analysis in chapter 5 or other quantitative analysis techniques considered in this chapter.

The correlations which were triangulated against other quantitative analysis; factor analysis (Section 6.4) and CART analysis (Section 6.5) are not considered in this section. Tables 6.2-6.7 below show the most justifiable correlations.

Table 6.2 Triangulation of correlations of Spearman Brown analysis

Factor	Co-relation	Triangulation
Gender	Weekly hours at work	Female students work < 40 hours per week as opposed to males who work > 40 hours per week. This fact was further proved at interviews with students as male students have to often travel for job related matters and spend more time at work than their female counterparts.
Learn at own pace	Prefer self-learning	These are the core benefits of online WBL. All four factors are inter-related among each other, i.e. they are mutually inclusive. For example, one cannot learn at his/her own pace if he/she doesn't prefer self-learning. During interviews this was the most unanimous fact agreed upon by all stakeholders as key benefits of WBL (chapter 5)
	No need to commute to university	
	Learn anytime	
eLP user-friendly	Online discussion and chat help	The Discussion Board (DB) and chat rooms are built into the eLP therefore these factors correlate with each other always. It was pointed out by both students and academics at interviews that their main communication occurs on DB (Ex: To post their views and to seek advice from academics).
	Library helpful	The online library can be accessed through the eLP where research literature being hosted under 'NORA' portal.
Library, Finance and Student services helpful	IT services helpful	All four services come under the university services for students which means any kind of negativity of any of the four would have an impact on other services which will subsequently add to the reputation of the university. IT services is central to ensure online access to all other services which is least costly compared to land phones, mobile phones and fax. During interviews this was further confirmed indicating interrupting access to university web site and DTA time to time due to various reasons affect WBL students badly as their learning time is round the clock. As with the rapid development of technology, students' access tools are also shifting towards mobile technologies. This has become a necessity for IT services to ensure compatibility between IT interfaces and mobile tools available in the market. Through this enabling, WBL students who are mostly on the move could access the university anytime, anywhere, using any tool.
Likelihood of continuing WBL	Personal development through knowledge and skills	Student's personal view about the programme and its benefits would decide whether to continue WBL for further qualifications or not. Most students during interviews mentioned that they were quite happy about their learning experience especially with the opportunity of working and learning simultaneously which could lead them to decide to follow further WBL qualifications like professional doctorates.

Table 6.3 Triangulation of correlations of Spearman Brown analysis contd.

Highest educational qualifications	Student union's help	This was triangulated at the interview with the students' union (NSU) where the concept of APL was not well supported by the NSU as an entry qualification indicating it could be unfair for the on campus FT students who get enrolled with standard educational qualifications required by the university and at the end both types of students would obtain the same qualifications. On top of that, WBL students are advantageous being able to earn both money and experience during learning whilst FT on campus students do not.
	Professional status upgrade	Different professional bodies have different criteria for professional registration. However, educational and training requirements are the two main areas which any PB would be concerned. The higher the educational qualifications one can have bigger the chances of being professionally registered.
	Mentor at workplace helps	An employee who has higher qualifications would be more academically sound than an employee with less or no academic qualifications in WBL which could affect the level of support needed from the mentor. This was triangulated at interviews with academics who revealed that some students who were recruited through APL scheme have struggled to cope up with academic rigour and needed more mentor support at the workplace.
	Curriculum relevant to work role	Depending on the relevancy of educational background to the current employment, the extent of tailoring of learning contract could vary. Ex: a Masters student with a relevant Bachelors degree as background qualification and working in the same field, it is likely that the student's contract is fully tailored to work place whereas a Masters student with a non-relevant Bachelors degree or without a degree will have to take up basic academic modules in order to fill the knowledge gaps.
	Effective monitoring mechanism in place	The students with lesser qualifications should be monitored on their progress than who are with higher qualifications due to their academic experience, maturity, knowledge and self-learning capability. Employers are concerned about students' progress and have set up regular reporting mechanisms on individual students' progress.
	Difficult to adjust to online learning	Migrating from conventional face-to-face learning to online WBL could be challenging for most of the students if this is their first such academic experience. Those who have previous academic experience irrespective of the mode of delivery could have some exposure to online learning technologies.
	Benefited from APL at enrolment as a selection criteria	APL only comes into consideration if the student does not possess required level of academic qualifications. In such a scenario, student may be asked to submit a profile which should include other relevant/non-relevant academic/non academic qualifications, work experience and references. The university would evaluate the profile to compare and align with selection criteria case by case on the basis of pre-set standard benchmarks. During interviews this was highly appreciated by students who had benefitted to follow Masters Programmes without a basic degree.

Table 6.4 Triangulation of correlations of Spearman Brown analysis contd.

Difficult to adjust to online learning	Learn anytime	In WBL, preference for anytime self-learning is correlated with time taken to get adjusted for online learning. This was further proved during interviews that those students who are used to face-to-face learning and did not prefer self-learning found it very isolated.
	Prefer self-learning	
	Prefer inclusion of some face-to-face sessions	The migration from face-to-face learning to online WBL needs a lot of skills, motivation, and self-discipline which is a challenge for first-time learners. It was triangulated in the interviews that many students feel the absence of physical community and prefer inclusion of some face-to-face sessions like induction programmes.
	Professional status upgrade	The 'Professional status upgrade' could indirectly correlate with adapting to online WBL where quick adaptors could complete the programme faster than others as a result of which they could then complete their professional registration.
Effective monitoring mechanism in place	Curriculum relevant to work role	Relevance of curriculum to work role could correlate with the presence of an effective monitoring mechanism by the university because failing to progress through the programme could affect the work organization as well as the individual student's progress. More relevant the curriculum to work role, the responsibility of monitoring the same shifts from university towards workplace and vice versa.
	Mentor at workplace supports	Mentors should be helpful to monitor students' progress against the learning contract as a supplementary to the university's monitoring mechanism. Mentor could support the student by giving inputs to the study programme, support in submissions and also monitoring student's progress through a formal mechanism. This was triangulated at interviews with the employers who commented about their routine progress monitoring schedules.
	Professional status upgrade	Effective monitoring mechanism will lead to timely completion of the WBL programme which should eventually enable upgrading of professional status early.
Professional status upgrade	Personal development through knowledge and skills	The knowledge and skills gain from this qualification would definitely add a lot of value to individual students for upgrading of their professional registration.
	Curriculum relevant to work role	When the programme curriculum is relevant to the work role, professional bodies would assess learning more closely towards practical and professional aspects than academic and theoretical aspects.

Table 6.5 Triangulation of correlations of Spearman Brown analysis contd.

Likelihood of continuing WBL	Personal development through knowledge and skills	Student's personal view about the programme and its benefits could decide whether to continue WBL for further qualifications or not. Most students during interviews mentioned that they were quiet happy about their learning experience especially with the opportunity of working and learning simultaneously which could decide them to follow further WBL qualifications like professional doctorates for their personal development..
Benefitted from APL at enrolment	Mentor at workplace helps my studies	APL is a key concept in WBL where more flexibility has been adapted in enrolments with compared to on campus programmes. In order to support these students with the gaps in knowledge, academic skills and theoretical background, mentor support at workplace, an effective monitoring mechanism on their progress and also special supportive initiatives from students' union would be helpful.
	Effective monitoring mechanism in place	
	Student services helpful	
Curriculum relevant to work role	Tutor expertise in delivering online programmes	The more the curriculum is relevant to the workplace, this can sometimes mean it is out of the periphery of the tutor's expertise in the subject and thus the mentor and student have more control over the tutor. However, the tutor's online tutoring experience is key in setting up benchmarks to maintain quality academic standards.
	Response quality	The less the curriculum is relevant to the work role and the more generic it is, the quicker the response time as tutors would be more comfortable with the content than if it was fully tailored to the work role hence the quality of the response would be better.
	Main employment	Engineering learning contracts are almost 100% tailored to work role as opposed to library or records management related employments in the study.
	Benefitted from APL at enrolment	Students who have been selected for Masters without a first degree through APL could cope with the programme due to its curriculum being tailored to day to day work activities.

Table 6.6 Triangulation of correlations of Spearman Brown analysis contd.

Quality of learning material Quality of learning material	Curriculum relevant to work role	Quality of online learning materials is important on learners' output and satisfaction in online WBL hence academics need to pay their highest attention on improving study materials. When the curriculum is relevant to learner's work role, the amount and quality of study material online is less as learning contract is more under the control of student.
	Professional status upgrade	Quality study materials enhance quality of student learning hence upgrading of professional registration.
	Effective monitoring mechanism in place	In order to maintain the quality of study materials being delivered by academics, it is necessary to deploy an independent panel which consists of online teaching experts as an effective monitoring mechanism.
	Mentor at workplace supports	Mentors' inputs to the curriculum enhance the quality of study material although not much involvement from mentors is being encouraged by the university at the moment whilst employers prefer to be involved.
	Finance helpful	Additional financial support to upgrade online material could help academics to outsource their teaching content to online content development professionals as LTech staff capacity does not seem sufficient to cater to the entire university.
	Benefited from APL at enrolment	There are two types of APL as APCL and APEL. The difference between APCL and APEL is students who get enrolled through APEL would only have extensive work experience in the field as opposed to APCL considerate students who would have academic qualifications not relevant to their current field of study. In this context, APCL students could have some exposure to online study material as opposed to APEL students who could experience them for the first time in life. This could lead to different levels of acceptance and criticism on quality of learning material by two types of students.
	Highest educational qualifications	The study results show that quality learning materials are a key element in WBL as the learning takes place always distantly in online mode. 'Highest educational qualifications' of the student could correlate to assess the quality of learning materials as those students may have experience of other online materials in their previous studies to compare with current materials. A first time online learner wouldn't know what is expected out of online study materials and would accept what is being delivered. This was highlighted at student interviews as given in the section 5.2.1 (a).

Table 6.7 Triangulation of correlations of Spearman Brown analysis contd.

Quality of learning material	Main employment	It was observed in the study that engineering and IT programmes are without much online content on the eLP with compared to library and records management programmes.
Tutor expertise	Response quality	All three factors relate to academics and for the Quality of Service (QoS) of the University in distance WBL delivery. The online distance WBL standards and benchmarks set up by the university would decide all three factors and also the focus and approach of the university towards this mode of HE delivery. The interviews with the academics revealed many bottlenecks they face in this exercise which should be addressed by the management in order to improve the current situation.
	Quality of learning material	

6.4 Factor Analysis

The factor analysis was used to identify the hypothetical grouping of the dataset among the items in the questionnaire in terms of the main categories that emerged from the qualitative analysis: 'quality', 'support' and 'access'. This is an exploratory and parametric method of data analysis which gives a strong insight of the data set in terms of patterns and grouping tendencies.

For the purpose of factor analysis, the dataset was tested for sampling adequacy and the results of the test indicated that the dataset is suitable for factor analysis [Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO = 0.54, df 596, $p \leq 0.05$)].

Tables 6.8-6.11 below show the summary of factor analysis performed on the dataset collected from the student questionnaire. The bold and individually coloured figures in the table indicate the most contributive items in each group referred to as a Factor. The total Variance explained by the solution is indicated separately for each group. According to the table the first factor explains 15.70% of the total variance of the dataset and the following items indicated higher loading along the first factor.

- I have benefited from the Accreditation of Prior Experiential Learning (APEL) as a selection criteria in my enrolment – **support/access**
- I have benefited from the Accreditation of Prior Certified Learning (APCL) as a selection criteria in my enrolment – **support/access**
- What is your highest Educational qualification? - **quality**
- There is an effective monitoring mechanism to ensure I progress through my programme in a timely manner - **support**
- My mentor at my workplace supports me in my studies - **support**
- My curriculum is very relevant to my role, duties and responsibilities at workplace – **support**

By looking at the questions, it is evident that the **support** category has emerged as the dominant parameter with **access** category contributing two questions and **quality** one question. In regard to WBL, APL, curriculum tailoring and workplace mentor support have been identified by the students as major support factors which contribute towards their decision to enrol for WBL.

It was clear through the interviews with the WBL students who did not have a Bachelor's degree prior to embarking on Masters level programmes that without APEL consideration they could not pursue WBL. This would not have been the case in traditional

university enrolments where formal academic qualifications are prerequisites for enrolment. The learner's profile which includes any other educational qualifications, work experience, nature of work, level of responsibilities at workplace, number of subordinates report to the learner and references would be evaluated to assess the learner for eligibility for HE. This scheme of APL has provided an alternative access path to HE.

The highest educational qualification could impact on the learners' current learning. More relevantly qualified learners will have a better chance of performing than those who are without such a background. This was evident from academic interviews where they did mention about some students who enrolled through the APL scheme struggled to cope with the academic rigour in the programme.

Monitoring mechanisms imposed by the university as well as workplaces help to push WBL students towards their goals. The biggest challenge in distance WBL is self-motivation and self-dedication which go hand in hand with the maturity of learners. Even mature students with all other work, family, social commitments could go off track in distance mode which may be why there has to be a proper monitoring mechanism to guide them hence the need for same has been given top priority by students.

It was observed that 75% of u/g and 77% of p/g WB learners do not have a mentor at the workplace. This is mainly due to the fact that some of these programmes are not formal WBL programmes (except for BSc Librarianship and MSc Professional Engineering) so there is no expectation that there will be a workplace mentor. However, the absence of a workplace mentor is a major concern in terms of employer support for the successful implementation of WBL programmes. The main issues in assigning a mentor for the employee within the company are non-supportive employers due to professional jealousy, profit making oriented company policies, non-availability of experts in the company and time limits. It was observed that the minority of learners who have been allocated a mentor at workplace are being well supported.

Table 6.8 Factor analysis - Rotated factor matrix

Rotated Factor Matrix												
	Factor											
	1	2	3	4	5	6	7	8	9	10	11	12
% variance explained	15.697	9.241	7.516	6.425	5.582	5.205	4.711	4.361	3.931	3.585	3.300	3.067
Cumulative %	15.697	24.938	32.454	38.879	44.461	49.666	54.376	58.737	62.668	66.253	69.553	72.619
I have benefited from the Accreditation of Prior Experiential Learning (APEL) as a selection criteria in my enrolment	.862	.163	.169	-.047	-.101	-.030	-.069	-.091	-.070	-.018	.012	.021
I have benefited from the Accreditation of Prior Certified Learning (APCL) as a selection criteria in my enrolment	.861	.201	.143	-.001	-.054	-.046	-.045	-.081	-.047	.082	-.022	-.114
What is your highest Educational qualification?	.773	-.023	-.010	.016	-.046	-.077	.124	-.066	.066	-.069	.227	.141
There is an effective monitoring mechanism to ensure I progress through my programme in a timely manner	.734	.122	.076	-.025	-.037	.207	-.003	.044	.144	.135	.008	-.102
My mentor at my workplace supports me in my studies	.609	.204	-.155	.042	.121	-.194	.250	-.025	.001	-.253	.131	.272
My curriculum is very relevant to my role, duties and responsibilities at workplace	.438	.412	.179	-.224	-.080	-.031	.058	.271	-.017	.130	.400	-.113

Table 6.9 Factor analysis - Rotated factor matrix contd.

cat17 (module tutors' knowledge and expertise high quality)	.093	.870	-.068	.069	.023	.010	.013	.055	.048	.117	-.019	.190
ca23 (quality of learning materials high)	.310	.762	.238	.075	.023	-.172	-.086	.085	-.026	-.012	-.062	-.066
cat16 (Module tutors' feedback timely and responsive)	.109	.759	.036	.057	.141	.080	.130	-.068	.050	.055	-.046	.029
20.1 The following university services are supportive and responsive - IT	.019	.097	.770	.038	-.030	.125	.171	-.033	.074	-.118	.022	.122
20.3 Finance	.206	.046	.676	-.071	.130	.209	.094	.111	.018	.144	-.119	-.063
20.2 Library	.030	.101	.580	.181	-.049	.198	-.204	.105	.061	.413	.078	.106
20.4 Student services	.381	-.086	.573	.028	.113	-.124	.017	-.180	-.310	.120	-.097	.154
10.1 The main reasons why you have chosen online WBL - I can learn at my own pace	-.066	-.026	.156	.861	-.169	-.102	.137	.038	.060	.049	.087	-.110
10.2 I prefer self-learning	.113	.127	-.077	.826	.095	-.029	-.227	.021	.017	.113	-.020	-.169
10.3 I do not need to go to university for studies	-.048	.071	-.015	.627	.003	.195	-.122	.171	-.168	-.129	-.199	.221
From where do you access your online programme/s?	-.091	.068	-.052	-.035	.854	.158	-.039	-.046	.064	-.029	.152	.032
Who is sponsoring your studies?	-.050	.087	.108	-.031	.817	-.106	.049	.005	.121	-.020	-.119	-.092
What is your gender?	-.041	-.025	-.106	.168	-.080	-.751	.039	.096	-.066	-.391	-.047	-.145
On average, how many hours a week do you spend on your main employment	-.109	-.090	.275	.125	-.012	.733	.097	.104	-.067	-.142	-.149	-.016

Table 6.10 Factor analysis - Rotated factor matrix contd.

I still prefer the inclusion of some face-to-face sessions in the programme because I miss the classroom environment	.005	.149	.152	-.123	-.071	.124	.799	.028	-.040	-.057	.016	.041
It was difficult to adjust to online learning initially	.299	-.119	.146	-.141	.108	-.273	.656	.050	-.212	.306	.095	-.003
I would like the inclusion of learning elements (Eg: quizzes, animations, graphics, audio and video clips, simulations, illustrations, diagrams etc.) to aid the understanding of subject content	.114	.008	.310	-.153	-.173	-.265	-.386	-.180	.021	.088	.284	.185
The programme leader is very supportive and accommodating	-.088	.028	-.025	.035	-.043	.046	.144	.797	.154	4.227E-5	-.020	-.004
10.4 I can learn anytime when I am free	-.304	.079	.072	.466	-.034	-.005	-.157	.613	-.058	-.008	.053	.071
My employer has supported my studies	-.422	.062	-.100	-.111	-.194	.189	-.029	-.464	.262	-.369	.189	-.103
This programme will help me with my personal development through increased knowledge and skills	.035	.061	-.085	-.059	.133	.054	-.086	.133	.823	.083	-.072	-.088
I am likely to continue education in distance / online WBL mode after this programme	.125	-.128	.183	.002	.259	-.057	-.230	-.111	.632	.009	.097	.413
The ELP is very user-friendly	-.081	.242	.409	.084	-.104	-.185	.188	-.013	.474	.235	-.069	-.102

Table 6.11 Factor analysis - Rotated factor matrix contd.

Online discussions and chat provided in the ELP help me to share different views posted by others, as if I were in the physical classroom	.077	.189	.103	.079	-.103	.141	.007	.081	.089	.765	-.021	-.012
Where do you usually live?	.156	.064	-.048	.123	-.104	.248	-.181	.329	-.169	-.463	-.033	-.187
What is your age?	.024	-.274	-.214	.080	.073	-.019	-.037	-.172	-.101	.007	.793	-.013
What is your main employment?	.276	.352	.161	-.122	-.134	-.124	.027	.163	-.015	-.245	.524	-.008
After completion of this programme, my professional status should be upgraded and more employment prospects should be opened up	.350	.025	.007	-.156	.223	-.083	.292	.290	.268	.216	.475	-.051
An Induction at the beginning of the programme made me/will make me comfortable for using the Blackboard E-Learning Portal (eLP)	.011	.154	.135	-.092	-.091	.084	.028	.039	-.029	.077	-.044	.893

The tailoring of the learning contracts to learners' role and responsibilities at workplace is a radical change in HE. This is a major attraction for employers and employees for this mode of learning as the benefits they get out of it are significant. One benefit is being able to apply theory and practice simultaneously so that both workplace and students' learning benefit at the same time. Whilst the employee continues to be at his/her workplace, a university qualification could be achieved in parallel which makes WBL more feasible and popular. However, from the university's point of view the tailoring is a very administratively and time-wise costly affair. It may be feasible for MSc Professional Engineering type of programmes which have a limited number of students but not for other WBL programmes which are no different than a typical DL programme in terms of student numbers.

The second factor explains 9.24% of the total variance and the following items indicated higher loading along the second factor. Questions 16, 17 and 23 requested students to assess tutors and modules of the last four WBL modules they undertook in terms of quality. For the clarity of quantitative analysis in the SPSS tool, those 4 preferences were amalgamated into one category in each question by averaging them out as cat 16, cat 17 and cat 23.

- cat16 (Module tutors' feedback timely and responsive) – **quality**
- cat17 (module tutors' knowledge and expertise high quality) - **quality**
- cat23 (quality of learning materials high) - **quality**

The quality factor emerged as the second prominent factor in terms of online WBL. WBL can happen in virtual environments where students are geographically dispersed and face-to-face meetings are either rare or none. Students depend almost entirely on the VLEs for learning in this situation. In such a scenario the online learning materials play a vital role compared to a face-to-face situation where students are privileged to contact tutors/colleagues face-to-face for assistance. Not only the quality of learning content helps students but also the quality of online tutoring in terms of timely responses for student queries and being accommodative during student difficulties play an important role in WBL delivery. The tutors' subject expertise and relevant experience in online tutoring would always benefit WBL students. A standard online response time of at least within 48 hours has to be maintained for student queries. When questioned about their four most recent modules, the survey showed that for their most recent module, 78% (plus 18% neutral) of students agreed that the online learning material were of high quality and for

their second module there was a 75% plus 10% neutral agreement rate. When questioned about the structure of the content 67% of students prefer inclusion of multimedia enabled learning elements like quizzes, animations, graphics, audio and video clips, simulations, illustrations, diagrams etc. to aid understanding with a further 13% being neutral on this issue. Surprisingly, 18% of students either do not like the inclusion of them or can see no difference in having them. The reason may be quality is subjective and for some students, this could be their first online learning experience thus they may have little to compare their experience against. Another reason could be some students studying a Masters degree may not appreciate online quizzes, and videos and they may expect something more scholarly and similar to their degree experience.

The next factor explains 7.52% of the total variance and the following items indicated higher loading along the third factor.

- The following university services are supportive and responsive - **support**
 1. IT
 2. Finance
 3. Library
 4. Student services

This indicates as to how university support services are important for WBL students being away from the university, academics and peers. It also indicates that the systems and services have to be in place in order to cater distance students before a university/institution embarks on online WBL. IT services are the key support which allow online activities like accessing VLE, DTA, emails, submissions, Skype communications and library access. Students had mixed comments regarding IT support many of which were positive but there had been incidents reported by the students where particular IT helpline operators were either not helpful or not capable of handling the issue or not available on chat services although advertised in the web as ‘available 24X7’ and the students were left helpless. The university has to take necessary measures to address this issue for the benefit of distance students who access the systems around the clock.

The library services were found to be exceptionally good for many. There were suggestions though that increasing the availability of eBooks would be more beneficial to reduce difficulties of posting books back and forth.

The finance department was cited as not helpful by many students for a variety of reasons: A key factor being students felt that financial matters were dealt in an

unhelpful/unfriendly and an inflexible manner. Some students felt that students' financial difficulties were not considered fully, and the current rules and regulations were very rigidly applied. The University could consider a better customer focus in terms of how it communicates with students with regards to financial matters.

Student Union activities were of no importance to distance WBL students; this is most likely due to the fact that they are being away from the university. However, this brings up a question of whether the Student Union has been able to cater for distance WBL students' requirements and attract these students to the union's activities.

The next factor explains 6.43% of the total variance and the following items indicated higher loading along the fourth factor.

The main reasons why you have chosen online WBL –

- I can learn at my own pace - **access**
- I prefer self-learning - **access**
- I do not need to go to university for studies – **access**

The importance of easy and flexible access to programme content, programme leader, tutors, mentors at workplace, peer students, university services in delivery of WBL programmes has been highlighted with this higher loading of factor. All reasons expressed by students justify today's difficult economic climate where FT education is not affordable and also multi-tasking routines of present day life.

Learning at their own pace is beneficial for those who have embarked on p/g level through APL without a basic degree.

Self-learning or independent learning and being information literate are high level skills one should have which get developed with a high level of academic maturity. The 'spoon feeding system' in early stages of education make students dependent on teachers which was apparent in u/g students' response for self-learning preference which was lesser than postgraduates. It is not only maturity that has an impact on self-learning ability but also one's personality, level of academic skills and knowledge, self-motivation, dedication, commitment and desire to achieve tasks. Self-learning is learner-centred as opposed to teacher-centred traditional on campus education therefore self-learning is more appropriate for WBL where the employee has more control over the learning contract and the tutors' role is just to guide them to achieve students' learning outcomes.

The venue independency is a big advantage for learners with their FT work schedules. This is a saving for them as commuting to university is a waste of both time and

money if the purpose can be served at the workplace. The other advantage is the ability to deliver a desired university programme remotely which is otherwise would be out of question due to geographical dispersion. Many students from all over the world have been able to pursue WBL due to this.

The next factor explains 5.58% of the total variance and the following items indicated higher loading along the fifth factor.

- From where do you access your online programmes/s? - **access**
- Who is sponsoring your studies? **support**

Access is the most important parameter for distance WBL students as their learning is very much dependent on technology based interfaces. Reliable, fast and easy to access connections to Internet helps the students progress successfully through their programme. The results show that most of the students access the VLE from their homes during out of work hours but a significant percentage of students access it from their respective workplaces as well (see Table 6.12).

Table 6.12 Locations of students accessing programmes

Access place	Frequency	%
Home	22	30.6
Workplace	2	2.8
Home and Workplace	39	54.2

This can be explained in various ways. Those who access it only from homes could

- either have more reliable, speedy connections at home than at workplace
- and/or they find it comfortable doing their studies in the comfort of their own home
- and/or due to work commitments there is no extra time to access their studies at work
- and/or due to unsupportive employers/ company policies that do not allow them to access study content at work.

The support of employers in terms of sponsorships is a bonus for employees. On top of being able to study and work at the same time, if the employees are sponsored by the employers WBL will grow in future without any doubt. However, due to current economic

recession, not many employers are able to sponsor their employees. The employers have to do cost-benefit analyses to assess whether it is worth investing on WBL or traditional outbound training for their employees. It was further clarified during interviews that engineering and library science areas had more sponsored students than other fields.

The next factor explains 5.21% of the total variance and the following items indicated higher loading along the sixth factor.

- On average, how many hours a week do you spend on your main employment?
access

Table 6.13 Hours spend at work

<i>No. of hours</i>	<i>Frequency</i>	<i>Percentage</i>
0 - 10 hrs	6	8.3
11 - 20 hrs	9	12.5
21 - 30 hrs	9	12.5
31 - 40 hrs	34	47.2
41 - 50 hrs	12	16.7
Above 50	2	2.8

As shown in Table 6.13 above, the majority of WBL students (63.9%) work between 31-50 hours a week which is within the 48 maximum working hours limit in the UK (NIDIRECT, 2013). The concern here is how many hours they occupy for studies with this kind of FT work and also whether the employers offer them free study hours and study leave for exams. The majority of students at interviews mentioned that it is hard work managing time and their study times are mostly confined to evenings and weekends.

The next factor explains 4.71% of the total variance and the following items indicated higher loading along the seventh factor.

- I still prefer inclusion of some face-to-face sessions because I miss the classroom -
access
- It was difficult to adjust to online learning initially – **access**

Access has been given prominence in the seventh factor. Whether 100% online delivery of WBL is feasible or whether it should be blended learning where some percentage of the delivery is on campus is debatable and depends on a number of factors.

One factor is the nature of the subject discipline as it was observed during interviews that not all programmes can be successfully delivered 100% online due to the hands-on components involved. Most students felt they miss the physical face-to-face meetings with academics and peers and this was not totally replaced by technological tools like online chats, video conferencing etc. The traditional mind-set about education also has an impact on this. The on campus induction programmes organized at the beginning and before the final project were highly appreciated by students although not all could make it due to their geographical dispersion, work and family commitments, and financial difficulties for travel, and accommodation.

A student recently graduated from sixth form or secondary school and attending their first university WBL programme in distance mode could find it hard to adjust as they would be accustomed to face to face learning. This also applies to p/g students who had experienced on campus u/g education. Therefore, academic institutions have a responsibility to make the online WBL students feel comfortable when they take up their programmes. Friendly welcoming induction programmes, interactivity in learning material and timely and supportive responses to student queries could make a significant difference to their learning experience.

The next factor explains 4.36% of the total variance and the following items indicated higher loading along the eighth factor.

- The programme leader is very supportive and accommodative - **support**
- I can learn anytime when I am free - **access**

The programme leaders are the caretakers of WBL programmes and play a key role in the entire process. This includes programme planning, selecting module tutors and coordinating with them, coordinating with employers, professional bodies and the university including top management and support services, being the single point of contact for students as well as other stakeholders. The programme leader's support is vital for students in that sense and all the students in their responses have acknowledged it positively.

The author however believes that the essence of online WBL is all about its flexibility in terms of time, venue and tool and this factor of 'learning anytime I am free' deserves a higher loading position than this. Online WBL is all about independent learning when and where it permits using any IT tool like desktop PC, laptop, palmtop, e-Reader, and smart phone. The advantages this gives to learners should not be underestimated.

The next factor explains 3.93% of the total variance and the following items indicated higher loading along the ninth factor.

- This programme will help me with my personal development through increased knowledge and skills - **quality**
- I am likely to continue education in distance online WBL mode after this programme - **quality**
- The eLP is very user-friendly – **quality/access**

The quality factor has been given prominence in the ninth factor whilst access to the eLP has also been emerged. The combination of knowledge and skills provided by the university and the workplace respectively can enhance the student's personal development, career development opportunities and professional status. A university qualification together with the same number of years of work experience provides the learners with an advantage over conventional university qualifications. The recognition of WBL programmes by professional bodies further enhances their chances of being professionally recognized and represents a further advantage of WBL.

Whether the student will pursue further education in WBL mode will partly depend on their learner experience in the current delivery. It also depends on the employers' work requirements, directions/guidance/encouragement of professional bodies, and other similar reasons why employees selected WBL the first time round. Only 29.1% of students have indicated they would not continue with WBL for another qualification.

VLEs are learning management systems (LMSs) which handle learning material including multi-media tools, communication tools, assessment tools, and notices. If the VLE does not provide enough user-friendliness and flexibility it can negatively affect the learning experience. The technical incompatibilities, bandwidth issues and inappropriate query management have to be dealt with due care in order to make the distance learners' life easier. Only 11.1% of the students feel that the eLP is not user-friendly with their limited usage of it but the majority of academics' responses were negative. This difference highlights their different levels of use of the VLE. The students interact with the 'end results' while the academics use the management side of it to set up and manage the students' interaction with the material and associated activities.

The next factor explains 3.59% of the total variance and the following items indicated higher loading along the tenth factor.

- Online discussions and chat provided in the eLP help me to share different views posted by others, as if I were in the physical classroom – **quality/access**

Online synchronous and asynchronous communications allow learners to clarify, share and feedback on subject matter by accessing academics, peers and university administrators. The low cost tools for communication like emails, discussion boards, and chat rooms are popular among learners but the interviews revealed that not many students are interested in joining or contributing to those sessions due to various reasons. Some of the learners use the online media to collaborate in group activities which makes them becoming a part of community. It might not be comparable with the same physical bond or experience as on campus learning but it is a compromise for other advantages in distance WBL. However, the asynchronous communications have proved more effective as online login times are often different for individual students. The quality of programmes in terms of keeping the learners active and motivated can have an impact on how academics design online programmes using those online communication tools above.

The next factor explains 3.30% of the total variance and the following items indicated higher loading along the eleventh factor.

- What is your age? – **quality/support/access**
- What is your main employment? - **quality/support/access**
- After completion of this programme, my professional status should be upgraded and more employment prospects should be opened up – **quality/support**

Age is a factor which could affect the level of **support** needed, **quality** of outputs and also **access** options. Maturity generally goes hand in hand with age so there could be a relationship of age and **quality/support/access** parameters. Also, the level of technology adoption, life and work experience can also vary with age and have an impact.

Similarly, employment has an even larger impact on one's WBL process in terms of employer/mentor/peer **support**, **quality** of learning contract/submissions/tailoring and facilities for **access** of learning at workplace.

The third component under this factor is **support/quality** related. The quality of learning and performance directly affects the future applications and success of WBL qualifications. A supportive environment at the workplace can help students achieve high quality learning outcomes.

The final factor explains 3.07% of the total variance and the following items indicated higher loading along the twelfth factor.

- An induction at the beginning of the programme made me/will make me comfortable using the Blackboard E-Learning Portal (eLP) – **quality/access**

The use of VLEs as the interface between learner and the learning process is a challenge for a first time user. The technicality of the VLE, the navigations in it, communication options, and submission choices should all be taught/guided through. The on campus induction programme has been a successful platform for this task although not all the students can attend it.

The **plot diagram** shown below as Figure 6.10 further confirms the grouping tendencies explained above using the factor analysis table.

The first group q29, q30 (APEL and APCL consideration) and q4 (students' highest educational qualifications) have a straight forward relationship in selection criteria for enrolment. When students enrol through an APL route rather than through a conventional enrolment against minimum required qualifications, the university has a bigger responsibility to monitor those students' progress compared to conventional students (q21). Q18 questions about mentor support at the workplace also links to monitoring of the students' progress and this can help their progression through the programme. All these can be placed within the **support** category whilst APL consideration falls into the **access** category and educational qualifications fall under the **quality** category.

The next question q5 is about the main employment of students and relates directly to the mentor support at the workplace question above. It was observed through both qualitative and quantitative data that most engineering and some library students have mentors at the workplace but overall this is a scarce resource. The next q24 which is about relevancy of study programme to the student's work role directly relates to the previous question where engineering programmes were found to be tailored one to one to the work related activities whilst other programmes deliver set modules and have freedom to choose work related activities in assessments only. Question 25 which loops with the above two considers the future benefits of WBL qualifications which again links to the employment related questions above hence all questions have **quality** characteristics.

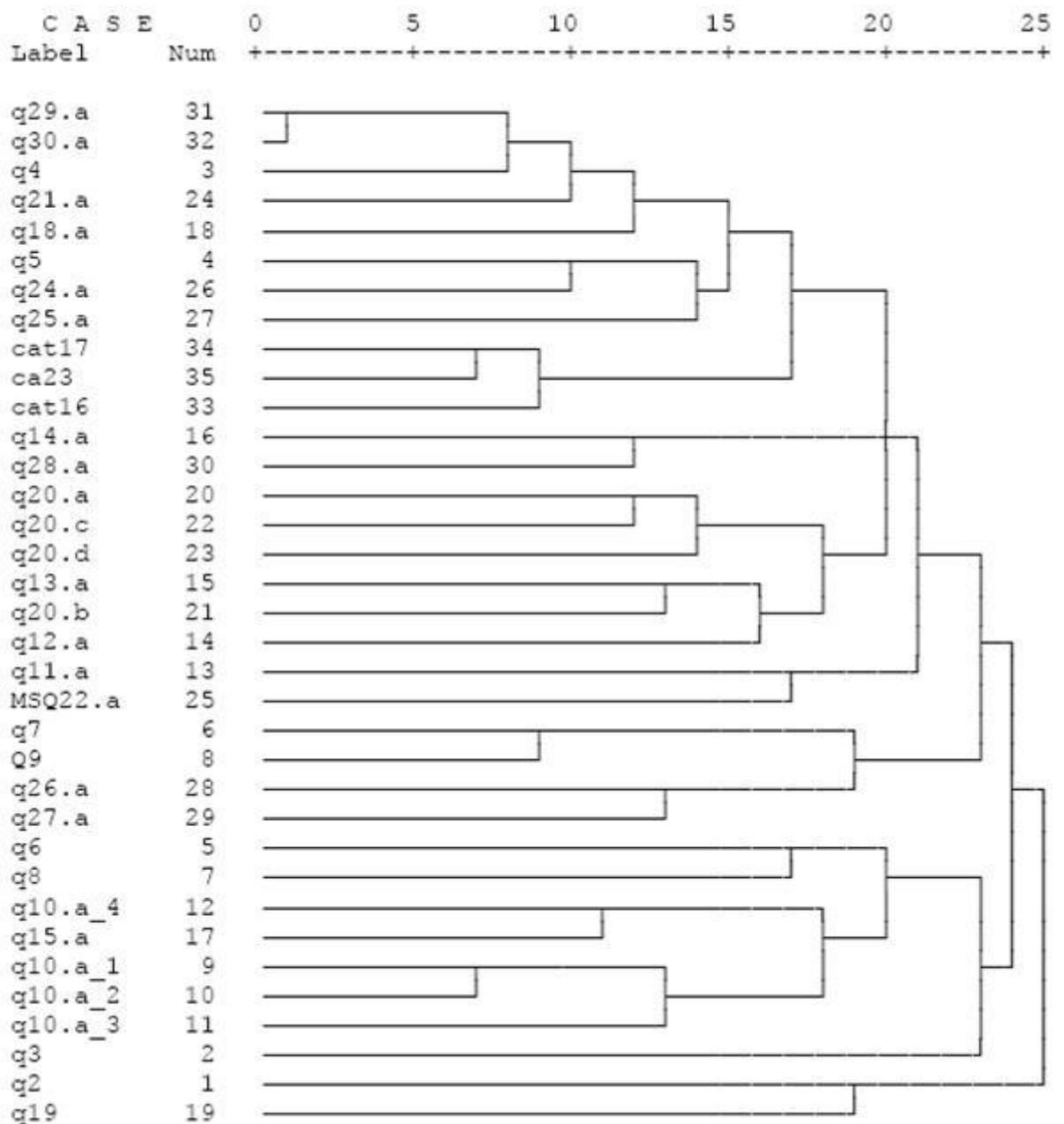


Figure 6.10 Dendrogram using Average Linkage (between groups) - Rescaled Distance Cluster Combine

The next set of questions come in the same loop (cat16, cat17, cat23) and are very important for the **quality** of WBL delivery. Timely response to student queries by academics, their subject expertise, experience and skills to deliver modules online, and the quality of the online material are all key elements for a quality WBL programme.

Interestingly, the next loop which consists of q14 (students' preference for blended learning) and q28 (initial difficulties to get adjusted to online learning) link to **access** parameter which relates to the students' previous academic experience as well as the impracticality of 100% online delivery for these type of professional disciplines.

In the next loop, **support** parameter dominates in q20a, q20c and q20d which have some characteristics of **access** to university IT, Finance and Student Services. In the

adjoining loop, q13 (use of online chat and discussion boards for communication) and q20b (university library services) have **support** and **access** characteristics as well. In the same question 20, the separation of loops between q 20b with other three parts (q20a, q20c and q20d) was evident in student responses where 100% agreement for good library support as opposed to variable (plus-minus) responses to other services (IT, Finance, NSU). The other question which falls into the same loop is q12 (eLP is user-friendly) which also links to online chats and discussion boards for student communications.

The inclusion of multi-media elements in learning materials (q22) and introduction of Blackboard eLP in the induction programme (q11) would help students to progress in the programme better. This loop has a direct relationship with the previous loop of eLP and chat/discussion board related questions which has caused the loop to close together with those questions. This loop contributes to **quality** and **support** parameters.

In the next loop, q7 (sponsorships) and q9 (location of accessing learning interface) are considered. Whilst q7 is a matter of employer **support**, q9 is mainly an **access** related question on whether the student is allowed to spend time on individual learning at workplace by the employer. The loop continues with q26 (future benefits) and q27 (student's likelihood of continuing WBL) which relates to the **quality** parameter. Student's outputs mainly depend on the **quality** of the programme delivery and **quality of support** which eventually leads to benefits after completion of the qualification. It also leads students to think about continuing further learning for example towards professional doctorates.

Item Q6 (Hours spend on main employment) and q8 (location of residence) both affect the free time available for studies. If the student is overburdened at work and lives very far from workplace/university it has an adverse effect on their performance. Both these have a relationship with the **access** parameter. The loop continues with q10.4 (possibility to learn anytime - **access**) and q15 (support from programme leader – **access/support**). The next three questions in the loop, q10.1 (learn at own pace), q10.2 (preference for self-learning) and q10.3 (no need to commute to university); all relate to the **access** parameter which makes this loop gather **access** related factors. The loop's closing factor which is q3 (gender of the student) could have an indirect relationship where female students have a lesser number of working hours (as found in the CART analysis – Section 5.5) and the different family/social commitments which could depend on gender and affect learning anytime and self-learning. Questions q8 and q10.3 have an obvious relationship where the location of residence affects the ability to visit the university.

The age of students also links to the above loop externally which definitely has a relationship with all the factors in the questionnaire but this is difficult to interpret as there is no limit to human capabilities compared to age. The last factor which links to the entire loop from outside independently is the various methods of employer support which are key to the WBL experience.

The dendrogram (Figure 6.10) illustrates the inter relationship among the questions selected in the survey and the appropriateness of them for this study. Without any prior definitions the dendrogram has categorized the relevant and inter-related factors into loops which ultimately link with each other as one whole loop. The relationships (loops) that have emerged through the dendrogram have a one to one match with previously analysed factors and represent a further method of triangulation and cross analysis that has been used in this research.

6.5 Classification And Regression Tree (CART) Analysis

Classification And Regression Tree (CART) analysis was carried out as a data reduction technique. The analysis as shown below condenses the most significant relationships into a small number of groups.

The CART analysis produces a tree as shown in Figure 6.11 in which the parental node (students' age) is split into two child nodes based on 'Relevancy of curriculum to the work role'.

Node 0 – Consists of students' age

Node 1 – Agreeing for the 'Relevancy of curriculum to the work role'

Node 2 - Disagreeing for the 'Relevancy of curriculum to the work role'

As shown in Figure 6.12 below, 43% of postgraduate students have taken up WBL at the age range of 21-30 years. This is an unexpected high percentage which may be an indication of the current difficult economic climate where FT commitment for education is not affordable for many just after school at young age. 52% are in the age range of 31-50 years which is anticipated for WBL but interestingly there are 2 students in the age group of 51-60 years and one in the age range of 61-70 years as well. The rapid adoption of technology in delivering WBL programmes is another factor which motivates young employees to take up WBL.

Dependent Variable: What is your age?

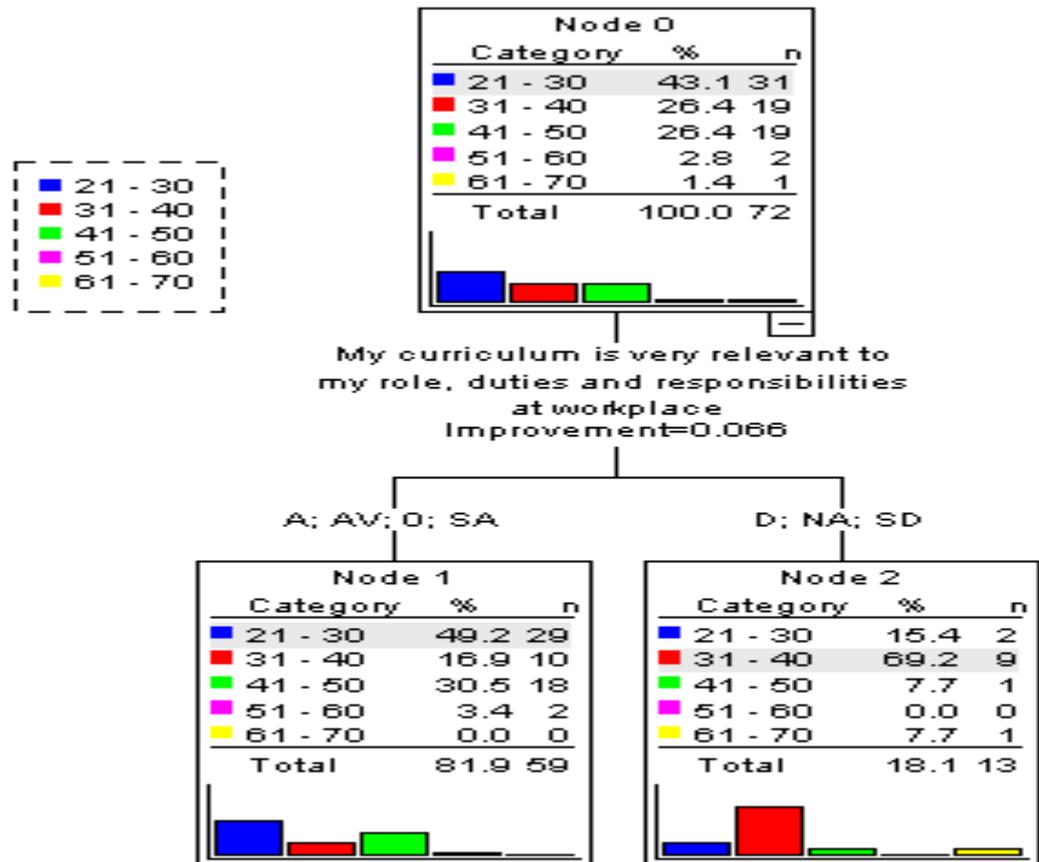


Figure 6.11 Association between age, and relevancy of curriculum to work role

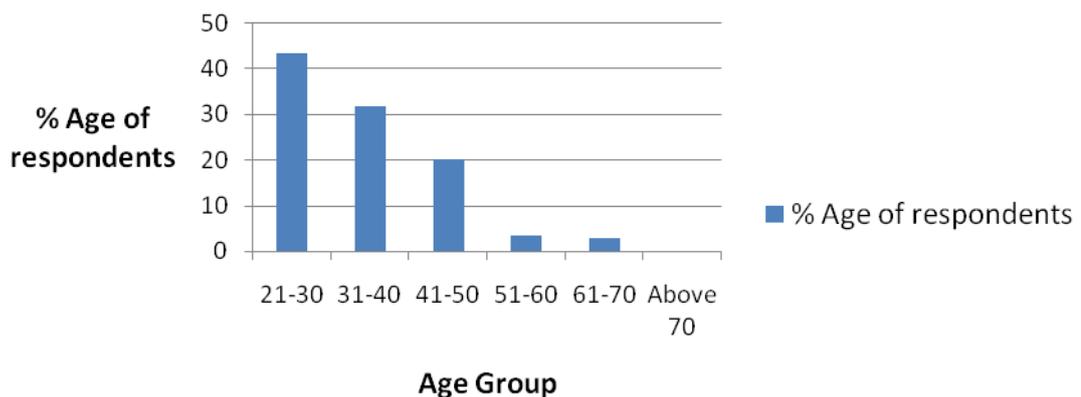


Figure 6.12 Age distribution of postgraduate student

Surprisingly, only 8% of u/g work-based learners were aged between 21-30 (see Fig. 6.13 below) and 92% were aged between 31-50 as opposed to 43% and 52% of postgraduate WBL students respectively. This explains the fact that among the workforce, there are many employees without higher academic qualifications who are still willing to obtain a degree qualification even during the later stages of their career. Also, people may

reach a work situation where they cannot progress any further without additional academic qualifications which will inevitably come later in their career, hence the older age groups.

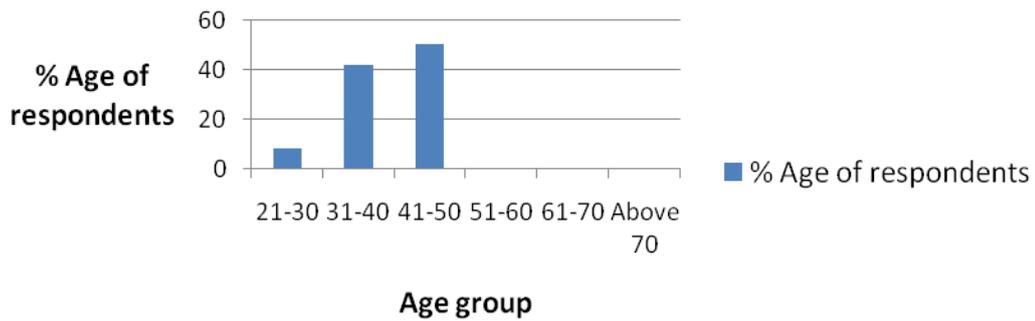


Figure 6.13 Age distribution of u/g students

The qualitative data shows that u/g degrees are not tailored to the students' workplace activities as much as they are in the p/g degrees. This is supported by the CART analysis (Figure 6.11). U/gs who are mainly between the age gap of 31-50 either disagree (D) or strongly disagree (SD) with the fact that their curriculum is very relevant to the work role and responsibilities whereas p/gs who are mainly in the age gap of 21-30 either agree (A) or strongly agree (SA) for the same fact. Therefore, quantitative and qualitative triangulation is proven here.

Dependent Variable: What is your gender?

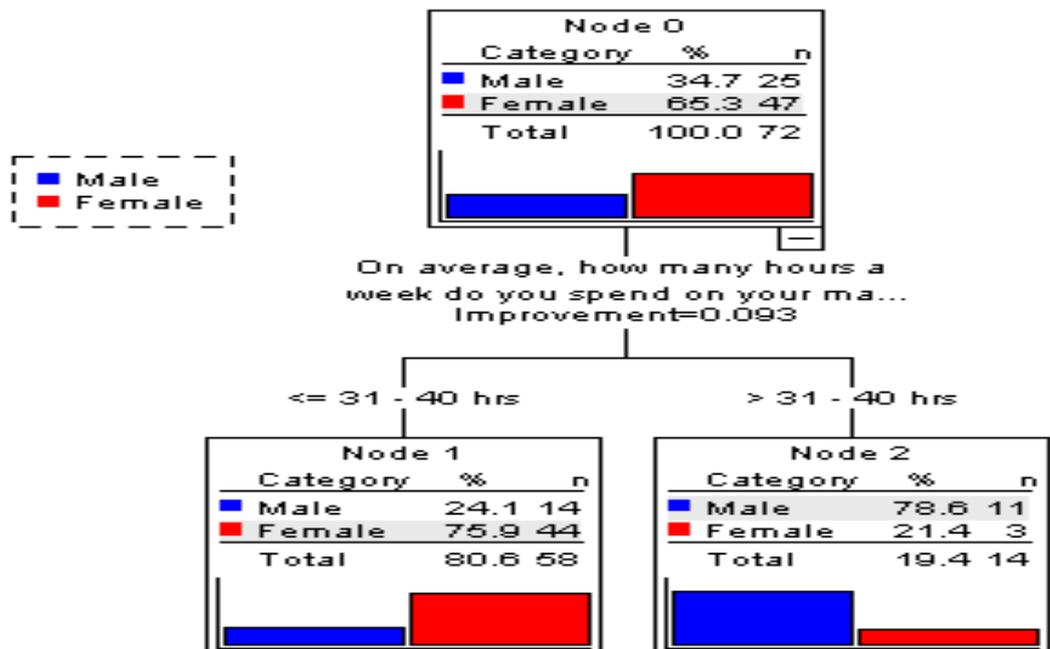


Figure 6.14 Association between gender and hours of work per week

The CART analysis produces a tree as shown in Figure 6.14 in which the parental node (students' gender) is split into two child nodes based on 'number of hours students spend on their main employment'.

Node 0 – consists of students' Gender

Node 1 – Less than or equal to 31-40 hours

Node 2 – Greater than or equal to 31-40 hours

75.9% of females work < 31-40 hours due to their maternal, family and other commitments whereas 78.6% males work > 31-40 hours. This could have an impact on the number of hours both males and females can devote to their studies. However, there are other external dependencies for individual students. Irrespective of students' gender, these dependencies include their civil status, academic capabilities/skills, width and depth of involvement on family commitments, the time spent on travel, how much support they get from others like employer, university, peers, and family.

At the interviews, it was noted that the number of working hours depend on the type of profession and in general high calibre jobs (executive level) require employees to work extra hours due to the level of responsibility whilst other jobs entertain over-time payments which makes employees encouraged to work extra hours. Also, there are gender specific learning characteristics exist which can have an impact on their leaning hours. The differences between men's and women's learning styles were researched by Perry in 1968 (Lieb, 1991) in his study of u/g New England college students (male). From this study he determined that young men pass through a developmental sequence in their thinking modes.

Perry's "Developmental Process"

1. Male students see the world as black/white, right/wrong--they are convinced there **IS** one right answer
2. Male students see there is diversity of opinion, but feel that authorities that describe diversity are poorly qualified, or just "exercising students" so students will be forced to find the "right answer" themselves
3. Male students begin to feel that diversity is temporary. They feel that maybe the "right" answer just hasn't been found yet
4. Male students understand that diversity is a legitimate state, but they would still prefer to know what is "right"
5. Male students see that everyone has a right to his or her own opinion
6. Finally the male student develops a personal commitment to the relativistic world.

Nearly 20 years later, Belenky et al. (1986) wondered how women fit into this "male" scale (if at all). In their study they discovered that women indeed do have different "ways of knowing." Unlike Perry's developmental stages, Belenky et al. chose not to describe the way women think in a staged sequence, although women do move from one style of thinking to others as they mature and gain life experience. In outline, Belenky et al. found that women have the following possible "ways of knowing."

Belenky et al.'s "Women's Ways of Knowing"

1. Silence: women students feel mindless and voiceless, subject to whims of external authority
2. Received knowledge: women students feel they can receive knowledge, but not create it
3. Subjective knowledge: truth and knowledge are private and subjectively known or intuited
4. Procedural knowledge: women students are invested in learning and applying objective procedures for obtaining and communicating knowledge
5. Constructed knowledge: women students view knowledge as contextual and can create knowledge found objectively or subjectively

All in all, learners' individual motivation, dedication and commitment decide their performance leaving gender and number of hours of work per week as secondary factors.

The CART analysis produces a multi level tree as shown in Figure 6.15 in which the parental node (number of hours of work per week) is split into two child nodes based on 'students' main employment' which again splits into two nodes based on 'employers' support'.

Node 0 – consists of number of hours students spend on their main employment

Node 1 – consists of professions in engineering and IT fields

Node 2 – consists of professions in all fields being considered in the case study

Node 3 – consists of employer support in all possible ways except for fully sponsoring

Node 4 - consists of employer support in fully sponsoring

Dependant Variable: On average, how many hours a week do you spend on your main employment?

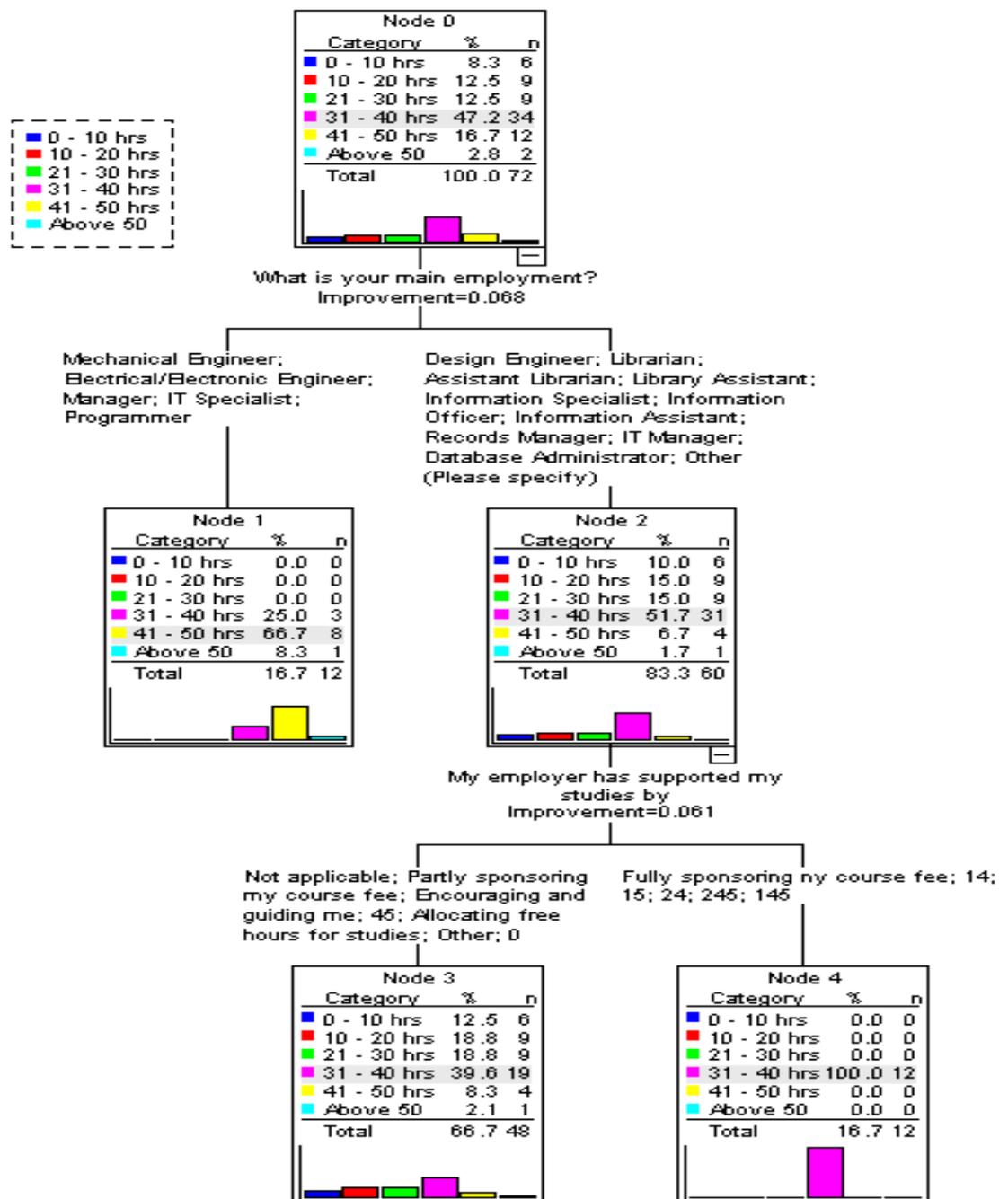


Figure 6.15 Association between hours of work per week, main employment and employer's support

Out of all employees, only 19.5% work > 40 hours per week. The first classification shows that some professions have more working hours, i.e. mechanical and electronic/electrical engineers, managers and IT specialists (75%) work > 40 hours per week (16.7% of whole cohort) whereas design engineers, IT managers, database administrators and all library and records related professionals (91.7%) work < 40 hours a

week (83.3% of whole cohort). Although this relationship cannot be explained in a straight forward way due to the small numbers of data in the engineering and IT programmes, the fact still remains that high profile jobs and some areas of work demand more work than others.

The quasi-public environment that library staffs often work in is normally highly structured and regulated and therefore there are often safeguards against working long hours plus the patterns of library openings often lend themselves to part-time working. This differs from engineering in private environments, with fewer controls over working hours. Also, many ILM students are currently in non-professional or semi-professional roles and are not chartered which is why they are doing the course. This means their usual working hours are likely to increase once they reach an appropriate level. Further classification between the majority of those who work < 40 hours per week (83.3%) and their employer support illustrates an interesting relationship. Around 20% of all employees who are fully sponsored by employers work only 31-40 hours per week whilst around 50% of students with lesser support from the employers also need to work above 31 hours per week.

It was also noted during interviews that 100% of engineering students are fully sponsored by employers through the Graduate Development Program (GDP) and they also have to work extra hours due to the project nature of their jobs. The important fact here is all the engineers are from private sector companies whereas most of the library related public sector employees are being supported by their employers in various ways if not with sponsorships due to government budgetary constraints.

As noted in the single node tree below on sponsorships for students (Figure 6.16), only 26.3% of employees have been fully/partly sponsored by employers. This needs to be increased if the WBL is to prosper. Either the government should intervene into this to assist potential WBL employees or the universities should get together with employers to find ways and means to support employees.

Dependent Variable: Who is sponsoring your studies?

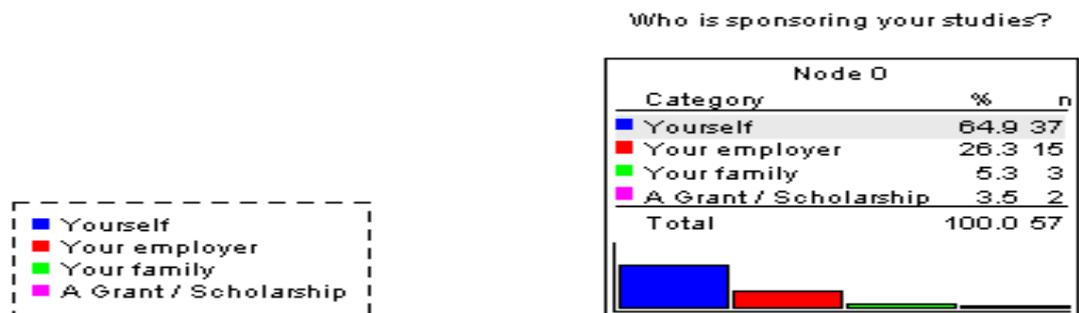


Figure 6.16 Sponsorships for studies

The interesting fact that emerged at interviews was it is very difficult to convince donors to give student grants for WBL programmes compared to conventional qualifications. This is shown in Figure 6.16 (only 3.5%). Also, a high number of the self-financed learners (70.2% self and family sponsored) make up the same high % of dropouts indicating dropouts often occur due to financial difficulties.

The CART analysis produces a multi level tree as shown in Figure 6.17 below in which the students' residence parental node is split into two child nodes based on 'students' main employment'.

Node 0 – consists of students' residence

Node 1 – consists of professions in engineering, library and IT fields

Node 2 – consists of professions in all fields being considered in the case study

The above classification (Figure 6.17 below) shows that 72.2% of WBL students are based in the UK. Another factor shown in the classification is in Library, Information Science and Records Management related professions where a significant portion of students are based outside the UK (34.7% of 68.1% in those categories of students) whereas all the engineering students are based in the North East of the UK. These statistics support the evidence provided by the interview data that engineering WBL still needs some on campus face-to-face meetings with academics. Engineering students use their close proximity to the university to visit the programme leader and module tutors to discuss learning contracts and module submissions. The hands-on nature of the engineering discipline tends to require this.

At the same time, 48.6% of students from rest of the UK (outside North East) and 27.8% of students from rest of the world justify that WBL can be still delivered effectively using online learning technology. It was apparent from both student interviews and questionnaires that the majority of students were satisfied about what they receive online from the university. This is surprising given the interview data also suggests there are areas for improvement in the provision of these online programmes. However first time learners may not have had anything to compare with in terms of quality of online WBL and learners' time constraints and motivation to achieve only the mere qualification may also drive their perceptions in this regard.

Dependant Variable: Where is your residence?

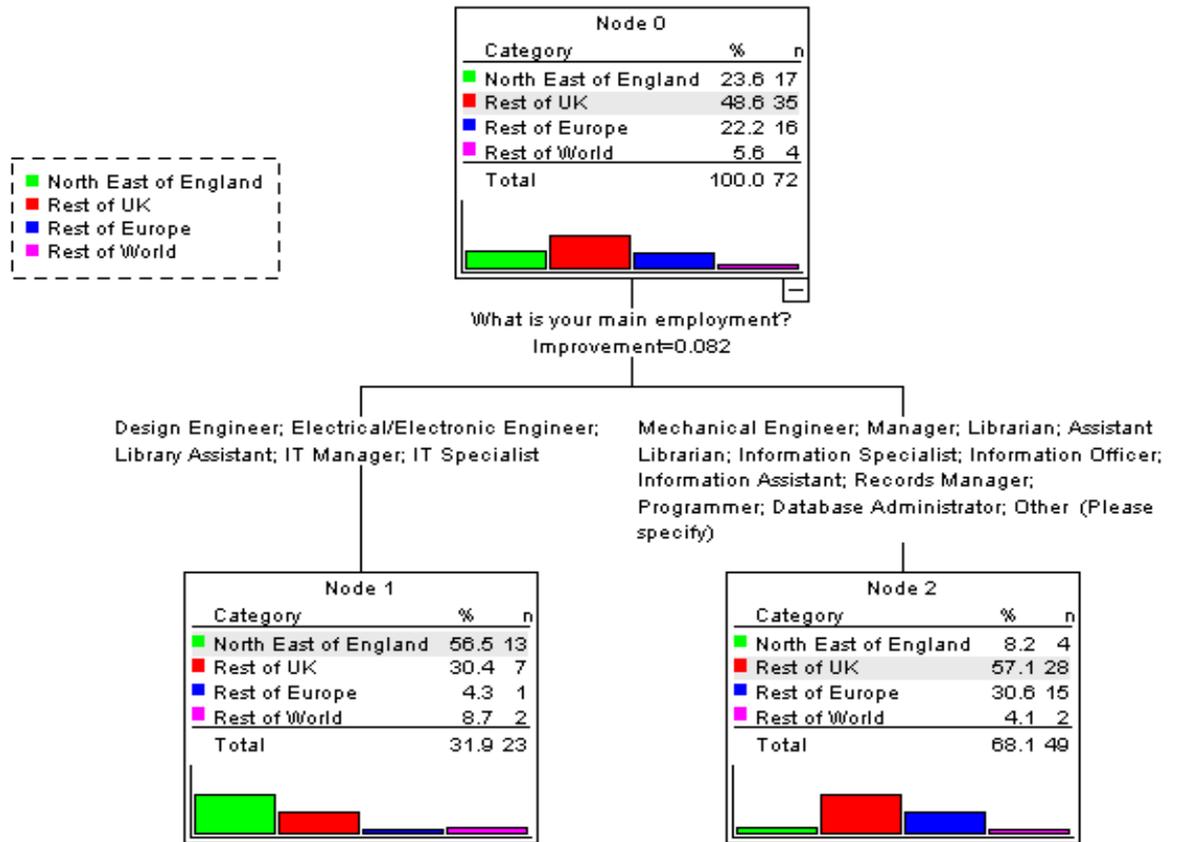


Figure 6.17 Association between residence and main employment

The dominance of accessing online WBL programmes from home (91.7%) (Figure 6.18 below) clarifies the students’ preferred learning styles, venue, time and pace of study. Other contributing factors may be that there is no time to study at the workplace due to their work responsibilities, non-supportive employers who may not allow learners to study during working hours and even company IT policies which restrict or stop access to the online university systems from within the organisation.



Figure 6.18 Location of accessing online programmes

6.6 Conclusion

The results obtained from the statistical analyses of data using different quantitative analysis techniques have been used to compare, support and justify the qualitative outputs that emerged from the interview data. Considering the unequal stratified distribution of data from the selected programmes in the representative samples, it is impractical to make general conclusions from this data. The ‘internal’ triangulation between qualitative and quantitative outputs as well as triangulation among the different quantitative techniques has produced various insights into the delivery of WBL within the FEE of Northumbria University. In addition, the collected quantitative data proved to be comprehensive as parametric and non-parametric, data reduction and exploratory quantitative analytical techniques produced triangulation among themselves which were cross validated in the interviews with the stakeholders included in the study. The use of classification and regression tree analysis indicates that these analytical techniques are well suited for the data set with heterogeneous variables and are effective in combination with the other data analysis techniques applied in this study.

7. Triangulation with Literature

7.1 Introduction

In mixed methods research, the qualitative and quantitative data are analysed individually and the outputs of each triangulated to evaluate and extract relationships, commonalities and confrontations that emerge from the data. In chapter 6, ‘internal’ triangulation was carried out between interview and questionnaire data captured in the study from the case study and survey methodologies. Eight themes and three sub themes emerged from this analysis of the qualitative and quantitative outputs. This chapter begins by categorising the themes and subthemes under the three parameters that have been identified as strongly influencing the effectiveness of WBL delivery: quality, access and support. It then examines if these outputs triangulate ‘externally’ with the findings from the literature reported in Chapter 2. Together these inform the main outcomes from this case study of five WBL programmes in the disciplines of Computing, Engineering and IS and the data gathered from the key stakeholders in the process: the learner, university, workplace, and PB.

7.2 Triangulation between Categories and Themes

Qualitative and quantitative data analyses have resulted in outputs in narrative, code and statistical form. Collating and triangulating these different forms of data provides insights into the relationships, similarities and differences from these research findings. Triangulation is achieved not only between qualitative and quantitative outputs but also between the different quantitative analysis techniques: frequency analysis, factor analysis, CART analysis and Spearman Brown correlations. Tables 7.1 and 7.2 show the independent themes/sub themes that emerge from the qualitative analysis together with those from the quantitative factor analysis respectively and how those themes can be encapsulated inside 3 main categories namely quality, access and support.

Table 7.1 Qualitative outputs

Quality	Support	Access
• Quality of online content	• Tailoring of learning contracts	• Use of VLEs
• Use of technology in Learning	• University support	• Student isolation
• Equality of Online WBL standards across the board	• Employer Support	• Effectiveness of Delivery Mode
	• Professional Body support	• Accreditation of Prior Learning (APL)

Table 7.2 Quantitative outputs

Quality	Support	Access
Factor 2 (learning content, Tutor expertise, Tutor online response)	Factor 1 (monitoring, mentor at workplace, tailoring)	Factor 1 (Accreditation of Prior Learning (APL), Highest Educational Qualifications)
Factor 9 (future benefits, likelihood of continuing WBL Learning)	Factor 3 (University services)	Factor 4 (learn at own pace,, venue flexibility, self learning preference)
Factor 10 (use of technology)	Factor 5 (sponsorships)	Factor 5 (location of access)
Factor 12 (Need for an Induction)	Factor 8 (programme leader)	Factor 6 (hours at work)
	Factor 11 (professional status)	Factor 7 (preference for blended learning, adaptability to online learning)
		Factor 8 (Time flexibility)
		Factor 9 (eLP user-friendly)

Table 7.3 shows how the different themes and categories that emerged from the qualitative analysis and the higher loading factors identified quantitatively through factor analysis relate to one another. All 12 factors from Table 7.2 can be placed within three major categories quality, access and support which coincide with 11 themes/sub themes in the qualitative side (Table 7.1). The only exceptions are factors 5 (location of access) and 6 (hours at work) categorized under access in the quantitative side which relate to the theme ‘Employer support’ under the support category in the qualitative side whilst factor 9 (future benefits and likelihood of continuing WBL) under quality relates to the theme ‘Effectiveness of Delivery Mode’ under the access category.

As already mentioned in chapter 4, the qualitative data were gathered from interviews conducted with all stakeholders including students whereas the quantitative data was only gathered from students. The key stakeholder in WBL delivery is the students, and how students benefit and are satisfied with the process has a major impact on the effectiveness of the WBL programmes. The triangulation process helped to cross check students’ responses to the online questionnaire with interview responses across all the stakeholders. The coincidence of quantitative factors against qualitative themes under the quality, access and support parameters in Table 7.3 shows that the effectiveness of WBL depends on these parameters supported by data from two different methodologies.

Table 7.3 Triangulation between outputs of qualitative and quantitative data analysis

	Qualitative		Quantitative	
Access	• Accreditation of Prior Learning		Factor 1 • Accreditation of Prior Learning • Highest Educational Qualification	
	• Student isolation		Factor 4 • Learn at own pace • venue flexibility • self learning preference	
	• Effectiveness of Delivery Mode		Factor 5 • location of access	
	• Use of VLEs		Factor 6 • hours at work	
			Factor 7 • preference for blended learning • adaptability to online learning	
			Factor 8 • Time flexibility	
			Factor 9 • eLP user-friendly	
	Quality		• Quality of online content	Factor 2 • learning content • Tutor expertise • Tutor online response
			• Equality of Online WBL standards across the board	Factor 9 • future benefits • likelihood to continue online/WBL
• Use of Technology in Learning		Factor 10 • use of technology		
• Tailoring of learning contracts		Factor 12 • Need for an Induction		
• University support		Factor 1 • Monitoring • mentor at workplace • tailoring		
Support	• Employer support	Factor 3 • University services		
	• Professional Body support	Factor 5 • sponsorships		
		Factor 8 • programme leader		
		Factor 11 • professional status		

7.3 Triangulation with Literature under Themes/Sub Themes

How the findings of the study in chapters 5 and 6 above through qualitative and quantitative analyses triangulate with literature and the current field of WBL under each theme and sub theme are discussed below.

7.3.1 Use of Technology in Learning

The high demand from students for inclusion of technology in the delivery of online WBL and the failure to satisfy this demand as per students' expectations due to issues and challenges which academics face in adapting to technology are the major outcomes identified in the study under this theme (Liyanage et al., 2013a). It was highlighted in the report to HEFCE by NUS (2010), that there was dissatisfaction that the type of technology used in HE is increasingly outdated. Richmond (2009) meanwhile suggests that ICT will not replace academics, but will rather redefine their roles as 'facilitators' and developers of educational multimedia. He further elaborates the role of faculty when so many instructional opportunities are available via the internet as saying "*I predict the development of groups of faculty, some perhaps in private organizations that will be primarily responsible for the development of online applications. Other faculty will assume the roles of facilitators to assist students in learning to use the online materials and helping their institutions identify the most effective online solutions for their programs.*" Hrabowski (2009) sees student use of ICT as a way for access to be expanded to and beyond the present reach of universities. "*New technologies will play a central role in extending HE's reach, not only making postsecondary education more accessible, but also improving how we teach, learn, and do business.... Online instruction has enormous appeal to growing numbers of students who not only are juggling work and family obligations, but also are deeply concerned about reducing their energy consumption and related costs. Some also argue that new technologies can make students' learning experiences richer, serving as a catalyst for more critical thinking and reflection....*" The above quotes in the literature show how the current context in using technology in learning coincides with the outputs of this research study and the critical importance of using technology in delivering online WBL.

Technology enabled learning (TEL) is an emerging area of new HE paradigm which needs to be thoughtfully adapted without damaging the pedagogical value of HE. The definition for TEL, according to UCISA Survey 2008 (Jenkins et al., 2010), reads as follows:

“Any online facility or system that directly supports learning and teaching. This may include a formal VLE, an institutional intranet that has a learning and teaching component, a system that has been developed in house or a particular suite of specific individual tools.”

This definition was retained for the UCISA Survey 2010 (Browne et al., 2010), which again focused on institutional engagement with technologies in support of learning and teaching activities. The 2010 Survey followed a year after the publication of HEFCE’s revised strategy for e-learning (HEFCE, 2009), which challenged institutions to employ technologies to enhance learning, teaching and assessment activities. Moving beyond capital investment in learning technologies, both the HEFCE strategy and JISC’s publication on *Effective Practice in a Digital Age* (JISC, 2009a) emphasised new priorities for the sector, most notably in engaging academics in the use of technologies, highlighting the need for investment in staff development and pedagogic skills in order to maximise the benefits of TEL tools. These documents set the context for the 2010 Survey, which invited institutions to reflect on the degree to which they had embedded technologies and engaged staff in their use. The Survey also addressed the evolving challenges facing institutions, particularly the rise of student controlled tools. As UCISA’s ‘*Top Concerns for 2008–09*’ (UCISA, 2009) revealed, Web 2.0 and the interaction between personal devices and institutional platforms represent key concerns for IT Directors, with e-learning in general remaining a top 10 issue.

An interesting quote from the survey illustrates how the use of technology is developing within a selection of providers (ofsted, 2009) where a principal at one of the colleges was quoted as saying: *‘At a recent staff meeting I explained to everyone that we had no choice other than to embrace the new technology. If we didn’t, they wouldn’t have a job in five years’ time. It wouldn’t be me putting them out of work, it would be the students. They would refuse to be taught in any other way.’* This clearly shows the need for academics to adapt to technology.

The UCISA Survey 2010 Report reflects the progress that the HE sector has made in addressing these challenges which can be summarised as follows:

1. *Enhancing the quality of learning and teaching* is consolidated longitudinally as the primary driver for considering using TEL, as are the other leading drivers from the 2008 Survey – *Meeting student expectations* and *improving access to learning for students off campus*.

2. *Teaching and learning* and *Library and learning resources* are the leading internal strategies influencing institutional TEL development whilst National Funding

Councils remain the leading external strategies informing institutional thinking on TEL developments.

7.3.2 Quality of Online Content

The extent of the use of technology to improve the quality of online content is vital for the delivery of online WBL. This was emphasised by students in both the qualitative and quantitative data which indicated how satisfied they felt about the online delivery and associated resources. The main criticism against the quality of the online content was its *'boring flatness'*. This should be addressed to ensure the content is converted into interactive activity-rich learning material.

In the literature, the same issue has been brought up many times indicating the importance of maintaining quality online content. Davies and Ryan (2010) found in their study that the benefits of producing the material online meant that trainees and their mentors could access the materials at any time and work with them at a pace that best suited their needs. They were conscious of the fact that the materials needed to be presented in a format that enabled both trainees and mentors to work with them irrespective of their preferred learning styles. Making the materials as interactive as possible was also a priority as they became aware that trainees' needs were very much based on a 'needs to know basis' i.e. they would engage more effectively when their learning had a direct relevance to their work.

The National Education Association and Blackboard Inc. examined case studies of six HE institutions that provide Internet-based degree programs to ascertain the degree to which various measures of quality identified in previous studies were actually being incorporated into the policies, procedures, and practices of institutions that have DE learners (IHEP, 2000). The result was a list of twenty-four benchmarks that they deemed essential to ensuring quality in Internet-based education. These benchmarks were grouped under the categories of institutional support, course development, teaching/learning, course structure, student support, faculty support, evaluation and assessment.

Assessment as mentioned above is one of the criteria which can measure quality of content. One way to obtain meaningful results is to design more effective assessment methods. According to Driscoll (2001), *"Assessments are the foundation of effective instructional practices and return-on-investment studies. The power of tests and assessments will become exponentially more important with the advent of content management systems and learning management systems."* Indeed, data from assessments should help drive the development of solid content and advanced instructional practices. As Moore (1999) noted: *"One of the few generalizations that can be made about any DE*

programme (whatever the communications media used and the content level) is that a good monitoring and evaluation system is likely to lead to a successful programme, and a poor system is almost certain to lead to failure."

The results from this study show that in general there is much to improve in study material in terms of online interactivity, an issue endorsed by both students and academics. However staff time to develop materials was a concern in all settings including the Office for Standards in Education's VLE review (Ofsted, 2009). The UCISA 2010 report (Browne et al., 2010) states that centrally supported use of plagiarism detection, e-submission and e-assessment tools are now pervasive across the sector. It further reports that Wiki, blog, e-portfolio and podcasting tools are also well established since the 2008 Survey.

7.3.3 Use of Virtual Learning Environments (VLEs)

VLEs in their current form, started to be introduced in educational settings around the year 2000. Their increased use was encouraged in the UK Government's strategy paper "Harnessing technology – transforming learning and children's services" (DfES, 2005). In online delivery of WBL programmes VLEs act as the interface between students and academics, peers, the university and the learning content. Meaningful use of VLEs is critical for the success of WBL programmes and the university is responsible for ensuring the same. There was negative feedback about the user-friendliness of the eLP at Northumbria University not strongly by students but mainly by academics who are the advanced users of the VLE.

Lack of staff engagement with the Virtual Learning Environment (VLE) was highlighted in the HEFCE survey (2010) as many participants remarked that "*VLEs are only intermittently updated by academics and do not contain useful and effective content.*" They further commented as "*Virtual Learning Environments are often poorly run and students are not always offered training to understand how to use them. A common complaint encountered during the project was how variable the extent and use of VLEs and Blackboard functions were, and how these often lacked the information students wanted. In part, this seems to be due to academics withholding some information over concerns that if students are given 'too much', they would lose their motivation to attend lectures and seminars, and so lose the benefits that attending these bring. Student views on the matter suggest this is not the case, but it is a conflict that must be resolved.*" This point of view of academics is rationale in order to maintain student attendance in the classes in face-to-face mode but in online WBL it is not the case which needs to be rationalised by academics.

The best VLEs reviewed in this survey allowed learners to reinforce their routine work, or catch up on missed lessons. In those best cases the material offered was fun and helpful and was being used well by learners. In the least effective examples, documents had been dumped on the system and forgotten. Over three quarters of providers who had a VLE had aspects that were good, but only three providers had VLEs that had a structure that covered the whole of their provision and no provider had a VLE that gave comprehensive cover in every one of their subject areas (2010).

WBL providers saw potential in VLEs, but use was limited, partly due to the perceived high development costs for small providers. Although *Blackboard (Classic and Web CT)* remains as the most used enterprise or institutional VLE, its usage has declined since 2008 (Browne et al., 2010). *Moodle* has increased in usage as an enterprise solution and remains the most commonly used VLE platform at a devolved level within faculties and departments. Adoption of other open source platforms is negligible across the sector (Liyanage et al., 2013b).

7.3.4 Equality of Online WBL Standards across the Board

One of the main findings of the current study is the inequality of standards in certain aspects of delivery process. As mentioned above, this was seen among modules, tutors, and programmes. One can argue that this exists even in face-to-face system but as far as online WBL is concerned, distance student support is much more critical than face-to-face. The online content and online tutor support in particular should maintain equality and quality as much as possible in order to benefit the distance WBL. This helps to create better recognition and trust about the university among its stakeholders. Students had so many negative comments regarding this saying the quality standards are very different from module to module and from tutor to tutor which needs to be brought up for the attention of all parties concerned.

The study conducted by the University of Manchester (Manchester, 2009) on ‘Student views about online learning’ revealed the same discrimination among their courses. Conversely, students are confused and disappointed by the lack of material found in other courses. Most of the adverse comments that they have received referred to the randomness of provision.

“It depends on the lecturer. If they actually put something up there it would be good”

“Only 50% of my lecturers use it”.

It was observed in the same VLE review (ofsted, 2009) that there was no consistency in those sector subject areas found to be well populated with material. The

common factor in effective VLEs was the enthusiasm of the subject teacher; that is enthusiasm for the subject and teaching and learning as much as any competence in computing. The more successful providers had provided their staff with a general introduction to the concept of VLEs, and then offered individuals encouragement in their curriculum area with more specialist detailed help when needed.

The different standards being practiced in online teaching was further explained in the literature. A clear majority of respondents believe that online instructors' participation in the online course discussion threads is essential (Mandernach et al., 2006). Interestingly, while the majority of respondents supported university mandates to prompt this interaction; even those opposed to regulated participation seemed to support the necessity of an instructor's active participation in the online course. Rather, the argument was not that instructors shouldn't participate, but that this participation shouldn't have to be regulated by the institution (Liyanage et al., 2012). This sentiment was summarized by one instructor, who stated,

“Instructor interaction is obviously a key factor in an effective OL experience. As such, my opposition to regulation is based not on a theoretical disagreement with the need for instructor participation; rather, it is a philosophical argument about the role of the university in policing and mandating instructional expectations of those they have endorsed and hired as experts to teach the course.” From the point of view of academics this may be fair not to be policed by the University for the quality of delivery but without such a monitoring mechanism in place, maintaining of quality at the level of expectation is also arguable.

The faculty concerns about institutional standards for an instructor's participation in online discussion threads can be categorized into three distinct trends. These are surfaced in the content analysis of the instructors' rationale used to support these positions: university regulation, instructor freedom, and instructional quality. It is very important however, to strike the balance between those three parameters without compromising the most important parameter which is 'instructional quality'.

The dominant faculty concern with regards to mandating an online instructor's participation in discussion threads is that this type of scrutiny is an inappropriate level of supervision and regulation. The driving argument is that an instructor's interaction in course discussion threads should not be reduced to a simplistic mandate or universal standard that is imposed upon instructors. Rather, faculty who were opposed to the university establishing standards of participation believe that university regulations should more broadly address instructional effectiveness, but not evaluate the activities an

instructor engages into meet this higher goal. This scenario was observed in the current study where tutors were aware about the international standards of online tutoring, for example maximum 48 hours of response time for student queries, but there was no such regulatory measures being imposed.

This concern is particularly problematic as universities attempt to set benchmarks to guide effective online education. The challenge in establishing instructional best practices solely focusing on student learning outcomes is those faculties are not solely responsible for what students learn; and, thus, cannot be evaluated solely on the learning demonstrated by their students. Faculty evaluation systems are derived from a complex equation balancing instructional best practices with available resources, institutional climate, accreditation expectations and a host of other contributing factors. Central to this issue, faculty evaluation systems are designed to help the university ensure the effectiveness of their faculty. Leaving the option of participation in online discussion threads to the discretion of the instructor exposes institutions to a variety of problems in maintaining and monitoring the academic quality of online courses. As a consequence, it becomes particularly challenging to ensure continuity of academic and intellectual standards across various sections of a given course, to handle student complaints about absent instructors, and to address differing standards between face-to-face and online courses.

There were variations observed in the design of programmes across disciplines from the selected programmes for the research as follows:

1. BSc Librarianship
2. MA/MSc Information and Library Management
3. MSc Records Management
4. MSc Information and Communication Technology
5. MSc Professional Engineering

The first 3 programmes are from the same subject cluster (ICM) primarily taught by the same staff, and therefore tend to attract similar students, and contain more or less similar subject content. The design of programmes had therefore adopted almost common approaches where there is less tailoring of content to individual students' work place activities due to the large number of students but their final projects are strongly linked to their workplace and thus can benefit the workplace.

Unlike the above programmes, MSc Professional Engineering which is accredited with engineering discipline based institutions under the Engineering Council of UK

(EngCUK) has taken a different dimension to the design of the programme. The intake of students per batch is limited to a maximum of 5 at the moment which gives an opportunity to fully tailor the programme to match the student's work role. In this way, programme design varies from student to student and across the different engineering disciplines such as electrical, mechanical, civil, mining, material, and so on. One tutor comments "*The tailoring concept is great but when numbers are high it would be difficult with the time and resource limitations. Another important aspect of this would be quality control because students' tailor made curricula have to be equally balanced/standardised according to the programme benchmark levels*" which is a reminder to be cautious in terms of the quality of design.

The fifth programme in ICT is not directly linked to any PB nor with employers so the design of the curriculum is very similar to any other IT postgraduate degree.

7.3.5 Tailoring of Learning Contracts

Application of the tailoring concept in WBL has been viewed by the students as being extremely helpful whilst academics and the university had their concerns on the difficulties in terms of administrative and financial overheads. It was observed that programmes with lesser number of students can effectively apply tailoring and the same concept is more appropriate for engineering type of highly practical-oriented disciplines. This was endorsed by engineering students at the interviews "*mainly all my modules were based around my work role and I believe that in WBL you need to be able to reflect on what you did and try to see better ways of doing it in future*".

Garnett (2007) describes in his paper that WBL programmes are negotiated between the partners and the individual learners and are critically derived from the needs of the workplace and of the learner rather than controlled by the disciplinary curriculum. Thus WBL not only challenges the structures of the university to be flexible in terms of mode of delivery but also can be seen as challenging its traditional epistemological structures. This is particularly true when considering work-based knowledge claims, for example, in the context of accreditation of prior experiential learning (APEL), accreditation of in-company training or work-based projects. For WBL programmes to be genuinely work-based and learner-centred, they typically commence with a structured review and evaluation of current learning. This challenges the educational institution to move beyond traditional concepts of APEL to formally recognized, learner-defined learning for possible inclusion in a future WBL programme. Further, awarding general credit for a wide range of experiential learning greatly empowers the individual learner (Garnett, 1998). Such a programme would require the university to support at least one

major WBL project designed not only to meet the academic standards of HE and the development needs of the individual but also to have some relevance to the organizational partner (Garnett, 2005). The structural capital of the educational institution must allow it to assess the learning outcomes of the negotiated programme with respect to a transdisciplinary framework of standards and levels. Supporting and assessing WBL requires staff with a particular range of knowledge and skills (Boud and Costley, 2007) and part of the role of the structural capital of the HE provider is to ensure that such staff are developed and made available as required.

In the study published by the Scottish Executive Central Research Unit (Glass et al., 2002), employers were asked to place a value on WBL tailored specifically to their needs or more general, industry-wide training. Their responses outlined that WBL that provides employer-specific skills is considered to be clearly more effective than industry-wide training by employers hoping to benefit from:

- increased employee productivity (70%)
- improved quality of products and services (69%).

This was also highlighted by an employer saying *“The benefit of this course is the participants are doing real life projects and it’s a part of their job. If you are going to depend on someone who comes with an MSc certificate from somewhere, you cannot really check his/her practical capabilities before recruiting”*.

7.3.6 Student Isolation

Student isolation is one of the commonest issues in DL particularly in traditional print based DE system. However, the modern online WBL has used technology effectively enabling interactive engagement with content, academics and peers so that students should not be isolated as previously. How far this effort has been successful was revealed in the study. Students were still feeling isolated in many cases which was endorsed even by academics and employers. This was further confirmed in the study with WBL students at Middlesex University (Inceoglu and Shukla, 2011, 35) which showed that for most WBL students, engagement in terms of experiencing a sense of belonging or community with their particular HEI is relatively weak. This can be attributed in large part to their physical and social isolation from the campus as well as their own perceptions of themselves as older students for whom ‘university life’ is not relevant.

However, Edge Hill University’s SOLSTICE project, which aimed to develop an integrated e-learning strategy, has also produced research of some positive relevance, including 2008’s *'Mode Neutral' Pedagogy* paper (Smith et al., 2008). This argues that

students should play a key role in shaping and constructing their understanding of knowledge via engagement with other learners and interactive ICT media rather than passively learning it through traditional methods. While it suggests that students should have ‘ownership’ of their learning, it also says this should nonetheless take place via a structured framework, in the form of a virtual learning environment (VLE), and ‘empowering’ lecturers.

This active involvement has been evidenced in the Middlesex University study (Inceoglu and Shukla, 2011, 26) which reduced feelings of isolation by filling the void in social relations arising from the DL nature of the WBL programme, as one learner stated: *“I think it is the nature of the course. You are kind of ‘flying solo’ it feels like that. I had a work colleague who completed her Masters two years ago and she was quite good, so I did have support. And I had my line manager... So I think people who go on to this course need to be fairly grounded and have contacts already in the workplace or wherever for support.”*

Students’ use of non-centrally supported TEL tools is also on the rise which could significantly contribute to supplement the issue of student isolation. This is particularly true for social networking and blog tools, which are widely used by students.

7.3.7 Effectiveness of Delivery Mode

The delivery methods were discussed between online and print-based, distance and face-to-face, FT and PT, and advantages and disadvantages were analysed. Online delivery of programmes obviously stand out as the most effective for WBL students considering the work-based nature of study and hence their inability to attend university-based FT programmes. However, there were many comments indicating the need for blended learning by students who felt that they miss the ‘community feeling’ and face-to-face support from tutors time to time. In the study, it was observed that those WBL students who live close to the university or at least at a fair commutable distance used to visit the University for induction programmes and pre-project meetings and also time to time to meet and discuss course related matters with academics face-to-face.

It was argued in the *Higher Education in a Web 2.0 World* (HEWEB, 2010) that whilst ICT was an important development, many students still found conventional methods of teaching to be superior, but that staff needs to develop their own ICT skills to meet the requirements of their students. Research conducted in Denver, Colorado, showed that 85% of e-learners reached an equal or even better learning level compared to campus students (Favretto et al., 2009).

The academics who have undergone their HE in face-to-face mode who participated in the current study mostly were still supporting the face-to-face mode as superior to online mode and considered online mode as ‘second best’ to face-to-face mode. However, the majority of 1,002 students who responded to an e-college.com survey said they chose the online format because of the flexibility and convenience of the programme (Strother, 2002). Comments included: *“I love that I have the flexibility to continue to hold a FT job.”*, *“To study any time that best suits my busy schedule.”* *“I travel extensively.”* *“I was able to work with my instructor, receive tremendous technical support at all hours of the night and gain the same quality content and evaluation as my peers taking the same class on campus.”* The survey has reported that 75% of those online students were employed and 68% of the learners worked more than 30 hours per week. This fact makes this study particularly relevant for corporate trainers who seek to fit e-learning into an already demanding work schedule. These statistics almost align with the data gathered in the current study as elaborated in the chapters 5 and 6.

Corporations are beginning to gather more data on how their trainees feel about the use of e-learning technologies. For example, the following results were obtained from an ASTD-Masie Center study (ASTD, 2011) involving the experiences of more than 700 e-learners:

- only 32% of individuals take up voluntary courses and this only increases to 69% when the course is mandatory
- 87% preferred to take digital courses during work hours.
- 52% preferred e-learning in a workplace office area.
- 84% would take a similar e-course if offered again.
- 38% said they generally preferred e-learning to classroom training.

The use of tools to supplement other forms of learning is still the primary approach, with web dependent usage gaining little ground since the last survey in 2008 (UCISA, 2009). Fully online course delivery remains a very small component of TEL usage across the sector.

7.3.8 Accreditation of Prior Learning (APL)

Application of APL in WBL is a very innovative concept which has taken care of highly skilled professionals who are without paper qualifications (APEL) and also people who like career changes with non-relevant qualifications (APCL) for a particular WBL programme. This has been viewed as ‘tremendously helpful’ by students whilst academics

and the university had their concerns on the administrative difficulties to standardise on case by case basis.

The University of Derby's *Project on e-Accreditation of Prior Experiential Learning* (Malone, 2009) also discussed how ICT and DL could be used to assist work-based and mature learners, allowing them to self-assess their prior experience as part of their application process, and streamline their entry into university education.

As 70% of the workforce for 2020 has already left compulsory education it is clear that HEIs need to offer prospective students ways of accessing HE level skills that will suit them and fit their lives. The Teesside University's Work-based Studies degree programme is designed for employed learners. The programme uses the APL process to 'Accredit Prior Learning', taking into account both experiential and certificated learning (Helyer and Hooker, 2007). Leitch (2006) wants to put Britain in the top 8 most productive countries in the world, and proposes to do this by increasing qualification levels in the next 13 years. There must be a link between qualified staff and increased productivity, but it is not the only link and in fact it under-sells the experiential learning staff may have gained which does not carry a qualification but enhances their work performance. This could be articulated by the APL process, where previous learning is evidenced to gain advanced standing on to an award. If HEIs are to be led by Leitch's focus on new study, then ultimately qualifications have to be better; more holistic with a remit to improve the many facets of the student; it is also vital to improve and include how we acknowledge, develop and validate existing skills, knowledge, experience and work-practice. However, placing all of the emphasis on the qualification and none on learning via experience seems short sighted. A qualification does not automatically bestow capability, awarding a certificate does not bring vital experience. An employee may hold a degree for twenty years and never use the skills they learned whilst studying. They will not be of more use to the workforce than someone who has no qualifications but has worked in a certain sector at increasingly sophisticated levels for those same twenty years. The first person would, with the review's emphasis on qualifications, be seen as a more valid 'number' towards targets. The second person could potentially possess higher level skills and operate in a more sophisticated and developed manner in the workplace.

The above scenario emphasises the importance of striking the balance between APCL and APEL and how these two could be blended together to achieve organizational and university objectives in WBL process.

7.3.9 University Support

The University's approach towards delivery of WBL is the main influential factor which decides the success or failure in terms of quality and standards of same.

JISC's report on the ICT/VLE policies of King Alfred's College (JISC, 2009b), latterly the University of Winchester, describe an effective use of technology to assist PT and WB learners by maintaining regular contact, and critical support, for distance learners, in addition to assisting in home learning via online seminar notes and teaching material.

The HEFCE report (2010) recommends institutions engaged in WBL to act on the following for the benefit of learners and their own academics:

- **Institutional responses to ICT** – All institutions should have an ICT strategy that is revised every three years. Students should be actively engaged in the process of developing that strategy. This does happen in Northumbria WBL delivery to a certain extent where the quarterly progress review meetings are attended by student representatives from WBL programmes.
- **Institutional organisation and planning** - Universities should appoint Senior Fellows responsible for new technologies, and support integrating such technologies into teaching and learning. Researcher did not find any evidence in the study whether this is being practiced in the university.
- **Institutional funding strategies** - Faculties should have innovation funds to support academics to develop new ways of using ICT. This has also been negatively highlighted by academics which needs the attention of university management,

The current study revealed that the University support was not as strong as it should be in terms of technical and financial support to academics particularly around the areas of online content development and upgrade, and recognition of staff online time in workload planning. In order to become a centre of excellence in WBL, Northumbria university management should be concerned about providing better support to academics as this will ultimately benefit the students and employers.

A case study carried out by Middlesex University (Garnett et al., 2007) on collaboration with the National Health Service (NHS) illustrates the importance of the university's role with its existing structural capital in the form of accreditation regulations and procedures and an existing validated framework for WBL programmes in coping with the demands of the employer. It further proves the fact that if HE providers and employers are to work together to create learning opportunities that enhance the work practices and

job opportunities of employees and, in service roles, to impact on a wider community, the university systems, structures and staff will be tested to the utmost.

Availability of TEL support staff is the leading factor in encouraging the development of TEL, followed by *availability and access to tools* and *senior management support* both centrally and at a departmental level. When comparing results with the 2008 Survey, the presence of a *committed local champion* and *availability of internal funding* have declined in importance as encouragers for TEL development. However, the top three barriers to TEL development remain the same as those identified in the previous survey, namely lack of *time, money* and *academic staff knowledge*. Furthermore, *lack of time* continues to be seen as the major barrier (2010). The current study also proves as mentioned in chapter 6 by academics themselves that lack of staff time is the major factor which hinders quality delivery of WBL.

According to the same survey, there has been an increase in the average number of units which support TEL across an institution, with an accompanying increase in local devolved support, much of this in conjunction with central units. Outsourced provision and support for TEL services are very limited across the sector which has only really been considered for the provision of student email services and, to a lesser degree, support for VLEs.

Also, Web 2.0, mobile computing, e-assessment and support for multimedia and lecture capture are identified as the leading new demands on institutional support. Staff development, resourcing (time and money), technical infrastructure and specialist support staff reflect the key challenges in meeting these new demands, with staff development, strategies/policies and support staff seen as the primary remedies – echoing similar responses to the 2008 Survey.

7.3.10 Employer Support

WBL will not be successful without the active involvement of employers. The level of support could vary from employer to employer which could range from mere motivational advice to full sponsorship for the WBL programme which is the climax one can expect from an employer.

The employer support is discussed in the literature emphasising its high importance. In the workplace, learning contracts provide a means of formalising what is otherwise often an informal and sometimes ad-hoc process of learning (Lee et al., 2004). Many organisations are already using personal development plans or the equivalent as part of their employee and organisational development processes. Cunningham, Dawes et al. (2004) developed the idea of learning contracts as formalising self-managed workplace

learning and focusing employees on learning objectives that can be reported and reflected upon. These often do not have any links to formally accredited activity, although they do offer a common language and structure to bring together organisational, professional (including CPD), personal and academic objectives and requirements. Garnett (2000) discusses organisational involvement in learning agreements for university-accredited WBL programmes and indicates that for the agreement to work properly the employer needs to be an active partner in the agreement. He also comments that the culture of the work organisation will have a significant effect on the learning agreement and the resulting programme, and this need to be understood and managed by university staff. Especially, the involvement of the employer (mentor) at early stages of the online content design and development process to have their inputs to fill the gaps if any to meet the organisation's requirements was found to be key which is absent in the current practice.

The report published by the TREE – Teaching and Research in Engineering in Europe (Fink et al., 2007) describes the expected level of employer support indicating *“WBL and Facilitated WBL (FWBL) are linking university and enterprise close together in partnerships to facilitate learning based on identification of workplace needs and employee needs and to integrate Mode 1 and Mode 2 knowledge in industrial applications. The organisation will experience from their involvement in a FWBL partnership, that this is a very efficient and dynamic way of integrating new knowledge in the organization and develop new competences. With a learning process based on organisational needs the professional content is by definition relevant. However, the organisation must give priority to be involved in the needs analysis process and in supporting the employee in the planned learning activity as an integrated daily activity.”*

7.3.11 Professional Body Support

As mentioned before, the literature that reports the involvement of professional bodies in WBL delivery is minimal compared to other stakeholders although some anecdotal evidences exist. There were few initiatives which have taken care of professional development of learners who undergo WBL programmes.

A joint statement was agreed by the Allied Health Profession (AHP) professionals in recognition of the generic nature of foundation degrees and their emphasis on inter-professional learning (AHP, 2006). It was acknowledged that the development of foundation degrees should be based on a three-way partnership among HE Institutions, Further Education Colleges and employers and that a collaborative approach across AHP professional bodies is therefore appropriate. It was also acknowledged that the development of foundation degrees will assist support workers in gaining accredited

recognition for their level of expertise. This is likely to be increasingly relevant in light of probable support worker regulation in the future.

The purpose of this statement is to:

- Influence the development of foundation degrees aimed at AHP support workers
- Support education providers
- Influence/advise commissioning and funding bodies
- Influence other professional bodies
- Disseminate information to potential students
- Promote the integration of academic and WBL

In addition it is expected that:

- Foundation degrees will be developed in line with PB guidance
- There will be clarity within the partnership, from the outset, about the potential for students to move from the foundation degree through to a programme leading to qualification as a healthcare professional
- Employers will make a commitment to sponsor employees through the foundation degree programme where it is identified that the foundation degree programme is appropriate for the employee and of value to the service.

The five programmes being considered in this study however had some accreditation practices through its affiliated professional bodies such as EngCUK, ARA, IRMS, CILIP but there was no formal mechanism as such to involve them throughout the process. Especially, involvement of PBs at early stages of the online content design and development process to have their inputs to fill the gaps if any to meet the benchmarks and standards required for professional registration was found to be key which is absent in the current practice.

7.4 An Example of Aligning the WBL Principles with Emerged Themes

As pointed out in chapter 2, WBL programmes typically share the following six characteristics according to Boud and Solomon (Boud and Solomon, 2001). This has been clearly emerged in both qualitative and quantitative analyses as shown in Table 7.4.

Table 7.4 An Example of Aligning Emerged Themes with Literature

Characteristic	Theme/Sub Theme
1. A <i>partnership</i> between an external organization and an educational institution is established (contractual arrangements)	Tailoring of Learning Contracts, University support, Employer support
2. The learners involved are <i>employees</i> (negotiate learning plans)	Tailoring of Learning Contracts
3. The learning programme followed derives from the <i>needs of the workplace and the learner</i> and not from a pre-defined academic curriculum.	Tailoring of Learning Contracts, University support, Employer support
4. The learning programme will be <i>individually adapted</i> to each learner according to their previous educational experience, work experience and training.	Tailoring of Learning Contracts, Accreditation of Prior Learning (APL)
5. Learning is taking place as <i>integrated part of projects/tasks</i> in the workplace	Tailoring of Learning Contracts, Employer support
6. The learning outcomes are <i>assessed</i> by the educational institution	University support

7.5 Conclusion

This chapter has summarised the emerged themes and subthemes that have emerged from the qualitative and quantitative outputs and encapsulated them under three parameters identified to be influential on the effectiveness of online WBL delivery: quality, access and support. It was observed that students' quantitative feedback aligned closely with the qualitative feedback obtained from all stakeholders thus achieving 'internal' triangulation. Subsequently, 'external' triangulation was achieved by comparing those outputs with those presented in the literature on WBL. It is clear that the results from this study are closely aligning with those reported in the literature and this further strengthens the problem statement given in chapter 1. The six characteristics of Boud and Solomon (2001) discussed in chapter 2 have emerged from the data as themes and sub themes.

8. Main Outcomes and Original Contribution to Knowledge

8.1 Introduction

This chapter presents the main outcomes from this study and highlights the key original contributions to knowledge that have emerged from this research. These contributions are categorised into three main areas. Firstly, eight main themes and three subthemes have emerged from the data analysis of this case study. These have been used to classify the main strengths and issues of WBL that have emerged from the data and a set of recommendations has been developed to address those main key issues. Secondly, the four-pillar model, its applications within this case study and its ability to encapsulate the full range of stakeholders were presented. An example was provided that illustrates how this four-pillar model could be used to adapt existing online WBL course design, development and delivery practices to provide inputs from the full range of stakeholders. Another illustration of a potential toolkit to assess the readiness for WBL by all stakeholders in the four-pillar model was also presented with examples from the literature. Each pillar of the stakeholders was examined in terms of the findings from the study and a set of recommendations was developed for each of them. Also this in depth case study has identified a number of benefits of WBL for the different stakeholders of the selected programmes in the disciplines of Computing, Engineering and IS. These benefits provide clear drivers and motivation for the stakeholders to engage in WBL. Thirdly, each of the embedded units within the case study contributed as original knowledge too. Each of these embedded units represents a separate WBL programme and an analysis was performed to highlight the key strengths of each of these programmes and their main deficiencies. This should help aid their future development and pinpoint the main areas for further improvement.

8.2 Contribution One: Strengths, Issues and Recommendations under each Theme and Sub Theme Emerged as New Knowledge

The main findings of the study are given under each of the themes and sub themes identified in the study in terms of strengths, issues and recommendations and represent new contributions to the field of WBL research. A summary of these are provided in Figure 8.1 under the three parameters: quality, access and support.

Main Themes Emerged from Data

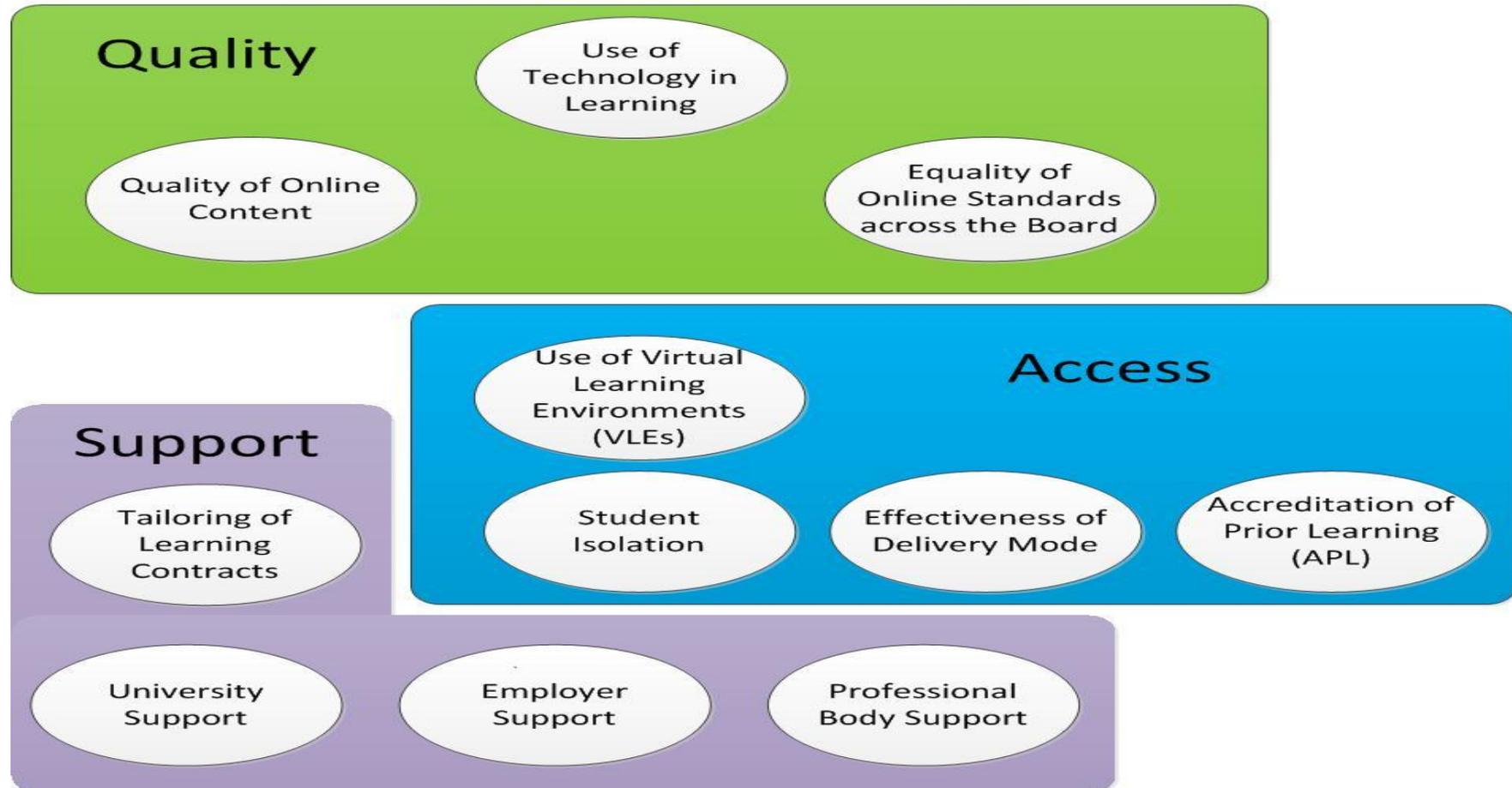


Figure 8.1 Main Themes Emerged from Data

8.2.1 Use of Technology in Learning

Strengths –

The use of technology in learning provides a number of advantages for academics. It provides the opportunity to receive online tutoring, online content design, development and delivery based technology oriented training from the university which would not have happened in traditional delivery formats. This is driven by the students' ever increasing desire and demand to use technology in their learning which leaves academics with 'no other option' but to embrace technology situation which is a positive thing considering overall effectiveness of delivery of WBL. The above is supported by the university by providing round the clock online support through IT services for online WBL students. This enables effective and better communication among students, academics and peers through the VLE.

Issues –

There are issues as well in the use of technology in learning. The major issue as pointed out by academics was insufficient capacity of LTech to cater all programmes in their online content development and upgrade process. Academics claim that there is a big queue to get advanced multi-media features done in their online programmes through LTech for which academics are not capable of. Non-compatibilities between different ICT platforms and applications which require extra investments and time lags are some of the other issues. Unlike in the face-to-face delivery where academics need to update themselves only in their subject discipline, in online delivery of WBL academics facing difficulties in coping with the rapid growth in ICT developments is seen as an issue too. This links with the slow rate of attitude change of academics in migrating to use of technologies which can be boosted with motivating factors aligned to same task.

Recommendations -

It is recommended to consider either expansion of LTech staff capacity or to establish faculty level online content development units by appointing LTech representatives or coordinators to assist academics in a more distributed and decentralised way. Also, it is necessary to appreciate and compensate academics' online tutoring time to WBL students (mostly happen during off work hours) in their time tables such that they have time to attend and practice what they learn at training. Maintaining 24X7 availability of university ICT systems to ensure online WBL students are connected throughout to eLP is strongly recommended too.

8.2.2 Quality of Online Content

Strengths –

The online delivery of content for WBL students has a prominent value for quality of such content. Making online content interactive and engaging seem a more technical job beyond academics' scope of work therefore LTech's capacity to do advanced multi-media enrichments like audio and video clips, simulations etc on online content for academics is a big strength. Academics are entrusted only to attend on less complex conversion of text based material into online content using Wimba Create like software saves academic time. Students' demand for quality content with more interactivity is a driving force in this exercise.

Issues –

However, insufficient administrative, technical, financial and moral support for academics to update and upgrade their online content is a key issue identified in the study. Also, standards/benchmarks for interactivity of online content have been given less priority which leaves academics with 'no goal to achieve' situation. At the same time, maintaining the balance between technology and pedagogy in highly technology enriched content is a concern considering the fact that HE standards expect more reading than interactive elements according to academics.

Recommendations –

Provide more administrative, technical, financial and moral support for academics to update and upgrade their online content is emphasized as a key recommendation. It is also important to establish standards and benchmarks for interactivity of online content to maintain quality of content across courses and academics. Also, academics should try to maintain the balance between technology and pedagogy in content not using technology for the sake of it is there.

8.2.3 Equality of Online WBL Standards across the Board

Strengths –

Equality of standards of online WBL across the board is very important from the point of view of stakeholders and in this section more emphasis has been given to standards of online delivery of content for WBL students. Obviously, equality helps to raise credibility about programmes from students and industry where all WBL students are fairly treated. This can be done only through setting up of benchmarks and standards of online delivery. The generation of competition and motivation among tutors, modules and courses to achieve benchmarks will ultimately raise overall quality standards of programmes.

Issues –

It was observed in the study that different standards and quality of delivery of WBL among modules, courses, tutors, and programmes are being practiced. This is not healthy for a WBL environment. This happens due to absence of policies, procedures, benchmarks and standards across programmes on online delivery of WBL which should be rectified.

Recommendations –

Empower and strengthen the WBLF in terms of equivalent WBL standards and guidance for the online delivery of content which can be exercised across the board. In order to implement conditions in WBLF, WRLS has to be empowered which will help maintain online WBL standards across the board.

8.2.4 Use of Virtual Learning Environments (VLEs)

Strengths –

The VLE, in this case study the eLP, acts as the interface between learner and content/academics/peers which is the main source of input from the university other than the learning which takes place at the workplace. The efficient and effective use of VLE by the student will have a big positive impact on his/her performance. The VLE offers 24X7 availability and accessibility to content and other resources together with facility to communicate synchronously and asynchronously with academics and peers. It also allows for electronic submission of assessments.

Issues –

The main issue of using VLEs is its high dependency on the Internet which can cause problems for online WBL students in under developed areas/countries and also during major technical faults in developed areas too. This could happen anywhere during university IT services' maintenance periods which often occur during weekends where most of the WBL students study. One of the other issues with VLEs is its initial difficulties in getting used to without training and there were concerns about user-friendliness of Northumbria VLE from some of the students as well as most of the academics.

Recommendations –

In order to address the high dependency on the Internet, it is recommended to use front-loaded content for downloading by students once connected and introduce more asynchronous communications which will also address the issue of geographical dispersion of students around the globe. With regard to difficulties in getting familiarized in using the VLE, it is recommended to provide online synchronous and asynchronous (using simulations and recorded videos) training on the use of VLEs in addition to the training provided during face-to-face induction programmes in some programmes. A further

recommendation is to regularly collect user feedback and use this as a basis for improving the user-friendliness of the VLE.

8.2.5 Student Isolation

Strengths –

Student isolation is a very common characteristic in traditional DE and OL contexts but WBL is slightly different in the sense that students often have work place mentors and work peers that can help counter feelings of isolation. This type of online WBL is appropriate for mature learners who prefer self-learning and are really busy with their work and find time to study only during odd times: evenings, weekends, and while travelling. Modern ICT developments can also break down isolation barriers caused by distance using low cost audio and video based communication technologies to keep students engaged actively.

Issues –

However, the fact that WBL students are not isolated due to workplace mentors and peers is true only in some of the disciplines like Engineering. Students on some of the IS programmes and MSc ICT do not have the benefit of workplace mentors and have little or no support from work colleagues. This isolation can lead to low morale, a lack of motivation and ultimately affect performance and lead to student drop-outs.

Recommendations –

In order to remove student isolation, it is recommended to make the student learning experience as interactive, engaged, enthusiastic and dynamic as possible by applying best pedagogical practices in terms of teaching, mentoring and tutoring online WBL students and using technology effectively to support this. For example design of online content should consider including of multi-media features such as audio/video/graphics/simulations/illustrations where appropriate together with assessed discussion boards with given topics to improve student collaborations. Also, proactive one to one discussions on Skype with pre-agreed times could significantly remove student isolation and improve students' confidence about the university support.

8.2.6 Effectiveness of Delivery Mode

Strengths –

As explained in section 2.4 of chapter 2, the spectrum of WBL delivery formats varies by discipline, sector, and context. All five programmes selected as the embedded units for this case study use online delivery of content through the VLE as the main format whilst using some blended methods including face-to-face meetings. However, all five

programmes have the common characteristic of students working at workplace and incorporating more or less work related activities into their learning and submissions. This can benefit the workplace. In this way, these WBL students experience the advantage of learning while earning and gaining work experience compared to a traditional FT face to face student. Students also have the opportunity to practice effective time management skills with the ability to balance work, family, social commitments and studies. Academics can also benefit in terms of time savings with front-loaded content although this is just one aspect and there are other time considerations that are not fully accounted for. Technology is able to break distance, time and venue barriers for learning whilst offering savings to the students on transport, accommodation costs and importantly the time. The core principle of WBL is real life reflective learning at the workplace and this is practiced whilst being able to submit such learning as part of the assessments according to the learning contracts. Another strength of online WBL is that studies are not interrupted during physical closures of the university.

Issues –

One of the main disadvantages of online WBL is blended learning is not practical for all students due to their geographical dispersion. However most students still prefer some face-to-face contact with academics and peer students. Academics feel that this lack of visibility could lead to them missing body language of the students which can help to indicate as to how they are progressing, whether they are engaged in the process and understand the material. This is more difficult to estimate with online WBL. Another issue of concern is the absence of proactive communications by the student which could lead to a student being ignored or forgotten by the university unintentionally.

Recommendations –

In order to make the delivery mode effective, firstly it is recommended to make appropriate decisions before deciding on WBL programmes. These decisions should consider the appropriateness of online delivery of content and identify how to use effective instructional design to compensate for the lack of physical presence. Also online WBL should make effective use of technology like video conferencing and synchronous/asynchronous video streaming. Finally, learners should be made aware that the success of WBL is all about learner-centred education and this requires proactive communications and active engagement by the students with the content, academics and peers.

8.2.7 Accreditation of Prior Learning (APL)

Strengths –

This emerged from both the quantitative and qualitative analyses as one of the top motivations for employees to embark on WBL. It provides an opportunity for senior, skilled but unqualified or vocationally qualified employees to obtain HE qualifications. Another way of applying APL for students is to consider the students' previous learning and experience when selecting modules. This can help prevent students studying areas that they are already experienced in and ensure they optimize their studies for new areas of knowledge. The university has the advantage of increasing student numbers through the use of APL whilst employers will be equipped with a skilled, experienced and qualified set of workforce. PBs also indirectly benefit out of APL by being able to increase their membership particularly at the higher skill levels. In addition, the overall industry benefits by having a skilled and qualified work force which contributes to the overall economy and health of the country.

Issues –

However, this is administratively a cumbersome process to the university as it requires modifications to the enrolment framework to ensure it can cater for APL. As a result of this it can be costly in terms of overheads and staff time. PBs too find it difficult to revise and re-standardise WBL qualifications with APL considerations particularly on a case by case basis. Another significant issue is academics found some of the APL entry students struggled and were not able to cope with the HE academic rigour. This needs careful attention at the recruitment and enrolment stage and can be a particular issue where numbers of APL entry students are high.

Recommendations –

It is strongly recommended to establish standards/benchmarks/matrices based on the accumulated past experience of the academics so that the administrative effort can be eased in terms of considering APL cases. This should also incorporate consideration of the student's ability to cope with the academic standards. All above efforts are worthwhile because the benefits APL offer to employees, employers and PBs and the university itself cannot be easily ignored.

8.2.8 Tailoring of Learning Contracts

Strengths –

Similar to the APL concept in WBL, the tailoring concept emerged as one of the top motivations for employees to embark on WBL from both the quantitative and qualitative analyses. Using this phenomenon, learners can reflect upon the learning which

happens through their activities at the workplace and report those experiences as part of their assessment submissions to the university. This enables application of theory in practice and leads to deeper learning related to their job roles and associated activities. In this way, both employers and workplace gain immense benefits. In addition, academics benefit as they also indirectly learn from the students themselves and their submissions about the practical applications and examples of their learning in the workplace.

Issues –

Again, similar to the APL issues mentioned earlier, tailoring of learning contracts is administratively very cumbersome and costly for the university. There are difficulties with benchmarking and standardising assessment criteria for these individual student learning contracts and it is difficult to scale this process to cope with large student numbers.

Recommendations –

As a solution for the above issues, it is recommended to optimise the tailoring process so that programmes with less student numbers get more tailoring. As student numbers increase, less tailoring is offered as there are likely to be similar requirements among the different students on the programme. It is also prudent to offer tailored options through the choice of modules, design of assignments, course work and final projects in order to maximize the benefits to the students' workplace. To ensure the equality and consistency of standards across all disciplines and students, it is advisable to establish assessment criteria based on learning outcomes that adhere to the standard benchmarks such as those defined by the UK Quality Assurance Agency (QAA) as a principle.

8.2.9 University Support

Strengths –

The development of the WBL Framework (WBLF) to include policies, procedures and standards which guide and govern the delivery of WBL is a major achievement by the university. In addition, the establishment of the central WRLS to support WBL activities across the university is another achievement which has been able to streamline WBL initiatives by different faculties over the years. The WRLS has formed a forum called Community of Practice (CoP) which collaborates and integrates WBL practitioners from across the university. This group meets on a monthly basis to share each others' experiences and achievements. The university has also established a central unit called LTech for multimedia support in online content development (ex: development of audio and video clips, advanced graphics, simulations, animations) for academics across the university. The researcher was also a part of Northumbria CoP during the stay in the

university which contributed with so many insights of WBL activities in the university and elsewhere.

Issues –

However, insufficient capacity and empowerment for WRLS in terms of staff, funding and authority seem to be a major barrier for pursuing WBL initiatives and moving forward. Also, inconsistency of university support services in particular IT and finance support were highlighted by students as problematic. In particular, the unavailability of flexible payment terms for students when they are in difficulties can lead to student drop-outs and is an issue which requires prioritised attention. In addition, there is insufficient dialogue and interaction between the university and employers in terms of employee performance, learning contracts and many other aspects.

Recommendations –

Simple recommendations for the above issues are to make university support services more effective, efficient, and importantly flexible enough to cater for the different circumstances of stakeholders. This would also help to establish better collaborations and effective communications with employers and PBs by the university. For example, university can introduce face to face induction and pre-dissertation meetings for those students who can make them while developing those programmes as videos and upload on the eLP or even distribute as DVDs. Also, PLs/academics should invite employers/mentors with the student for individual learning contract development meetings to seek their inputs to be beneficial for the company. In addition, a good marketing campaign could be launched to attract industries into more WBL programmes.

8.2.10 Employer Support

Strengths –

It is an obvious fact that the success of WBL delivery is very much dependent on employers' support. The good news is with the current economical recession there is a keen interest from employers to direct their employees for WBL. This is a win-win situation for both parties. Employers' support varies from organization to organization starting from full sponsorship through part sponsorships with study leave, book allowance and mentor support to mere moral support. One of the biggest advantages for the employer is that the employee is retained at the workplace throughout the programme and can carry out his/her day to day activities with a reflective approach whilst learning and working towards a HE level qualification. The end products of academically and professionally qualified employees benefit both the organisation and the overall industry.

Issues –

Not all employers are supportive of WB learners. The reasons for this are varied but include professional jealousy, profit oriented motives of companies which have no room for welfare, lack of confidence in the WBL approach, limited or no budget for sponsorships.

Recommendations –

It is up to the universities, employees and PBs to convince employers about the short and long term benefits of engaging their employees in WBL to make this initiative move forward.

8.2.11 Professional Body Support

Strengths –

One of the biggest challenges which young professionals face today is to fulfill the PB's academic requirements to apply for professional registration in their respective professions while being employed. The current economic recession and competition in the job market both make it difficult for them to leave employment to study FT for higher qualifications. This issue is addressed by the PBs by accrediting university level WBL qualifications as valid for fulfilling the PB's academic requirements to apply for professional registration. PBs also play a key role in recommending, guiding and advocating the advantages of WBL programmes to employers and employees and in encouraging universities and other education providers to continue their good work. Their efforts to set up accreditation benchmarks and frameworks of qualifications including required level of academic standards in WBL qualifications are positive signs of the PBs' support.

Issues –

In some cases, PBs fail to convey their requirements to WBL students in advance which leads to denial of professional registration through the WBL qualifications. Also, there are occasions where universities do not submit their WBL proposals for accreditation until the latter part of the programme implementation which can lead to PBs denying approval of student registrations.

Recommendations –

Active involvement of PBs with other stakeholders to support delivery of accredited WBL which ultimately benefit PBs themselves is highly recommended. Also, it is prudent that PBs make the industry and employees aware about benefits of following WBL qualifications which enable employees to obtain their professional registration which is a difficult task otherwise.

All the above themes and sub themes were encapsulated into three main categories namely quality, access and support which can be considered as the main influencing factors to ensure a successful delivery of WBL through online delivery of content in particular in the disciplines of Computing, Engineering and IS. The summary of strengths, issues and recommendations under those themes and sub themes within three influential parameters are shown in Figures 8.7, 8.8 and 8.9 in the section 8.8.

8.3 Contribution Two: Benefits of WBL for each Type of Stakeholder

Throughout the previous chapters, the challenges and issues of WBL process have been identified and discussed under various themes. The key benefits identified through this case study for WBL from each pillar of stakeholders are presented in this section which ultimately helps all stakeholders in the process to evaluate the applicability of those benefits to one's self and make a decision before embarking on WBL. These key benefits are summarized in Figure 8.2 and are elaborated below.

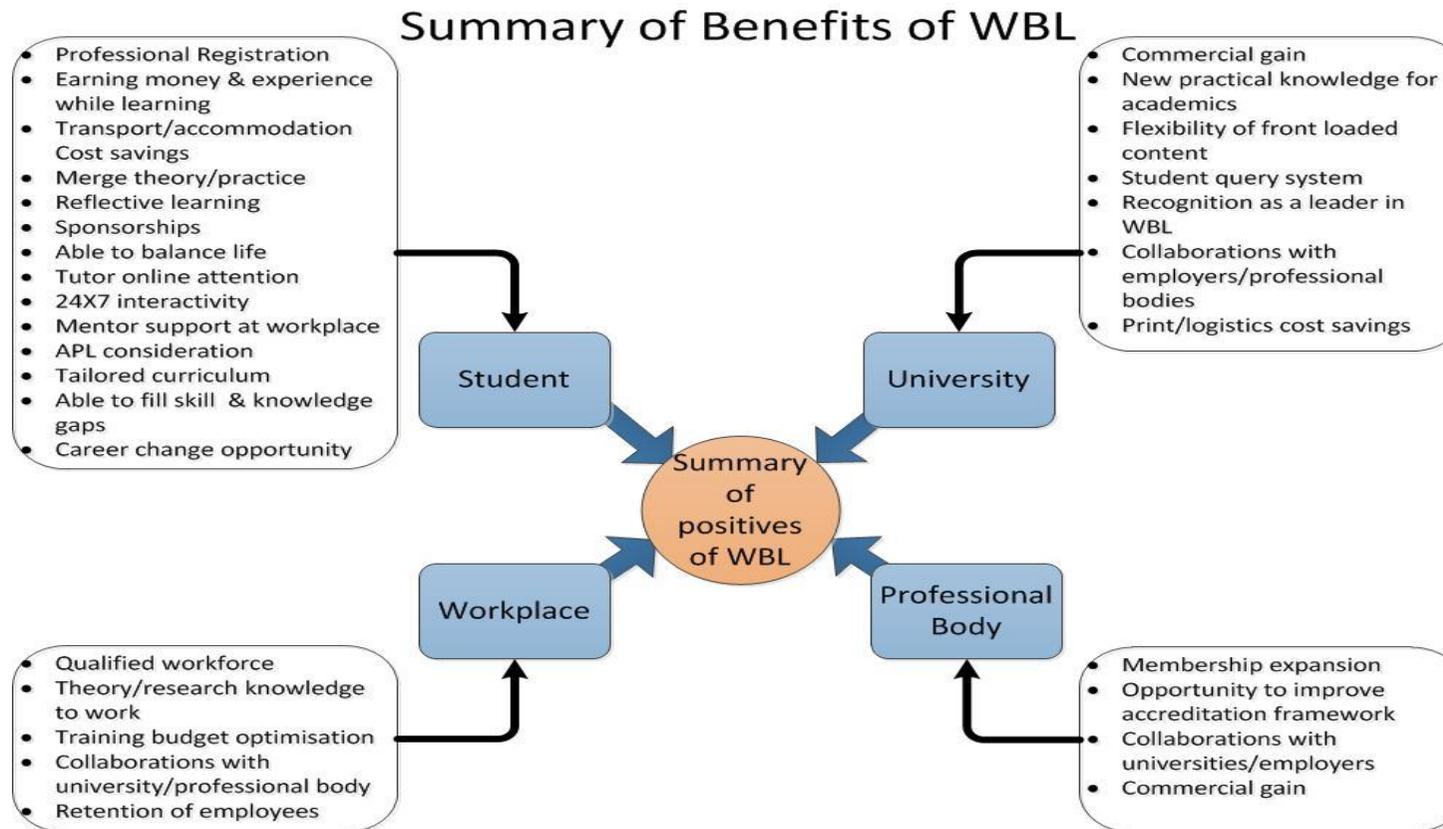


Figure 8.2 Summary of Benefits of WBL in this case study

8.3.1 Students

The reasons and expectations which students have enrolled for WBL programmes obviously are positive. The key motivation for students to consider WBL is to pursue HE without having to commit FT for it whilst still being employed. The distance online delivery of the selected case study programmes are well suited for them with a mentor at the workplace (in some disciplines only) to support them during their studies. They benefit from many other advantages as well in the process: their work experience gets accumulated during this study period, it helps upgrade their professional status, employers provide sponsorship, there is the opportunity to apply theory into practice and vice versa, and there is the essence of online distance learning with learn anytime, anywhere, using any tool. These advantages are depicted in the following student quotes:

“In order to gain higher level learning and chartered Engineer status I wanted to study for an MSc. WBL was chosen as I am in FT employment and a year out was not possible.”

“It fits with my life style being a mum and working FT.”

“I was waiting for a distance WBL program and this was the first such program I found in the NE. There were two others in Aberystwyth and Dublin but Northumbria suited me best because those two had a face-to-face component for a block week where I had to travel so far and stay which would have added extra cost and also my employer wouldn't allow me to be absent for so long on study purposes.” This particular quote suggests that although WBL is delivered through online technology, blending it with face-to-face components has to be considered sensibly where possible.

Many students have their career development in mind when selecting WBL and especially those who are very experienced but without paper qualifications which deprive them from progressing to higher levels in their workplaces.

“To put together all my informal ICT related qualifications and experience into one formal, recognized qualification for the career progression.” This quote aligns with literature where Pleasants (1996) explains that although individuals may be knowledgeable in what they do, they may not have the facility to say what it is they know which is the case with above student.

There were some cases where either the companies have persuaded students to take up WBL or situations in the companies have led them to obtain higher qualifications.

“My work required an MSc qualification to be able to place me in a better position and this study at work was the best option for me. Also, my employer sponsors my studies so this is a double bonus for me. And also, this MSc could lead to my

chartership as well in the future. Having to cram-in for 3 years for the degree would also allow me to fill the gaps in my knowledge which I was not able to do in my bachelor's degree."

"I realized that I'm not qualified enough to go up in this field and decided to take up this MSc. Now I feel more secure in my job having a related higher qualification"

"My company thought I was a good candidate to look after the system and I thought if I'm to do that I need qualifications and when I asked them whether I could do a degree they were happy about it. I found the knowledge I was getting was directly applicable to my work place."

Another category of students found in the survey were those who wanted career changes without having to lose their current employment until they complete the WBL qualification.

"I was looking for a career change and was interested in the area. Couldn't afford to go for FT studies, and started PT DL MSc while I was working."

However, there were few expectations beyond personal reasons where students acknowledge benefits to their employer as shown below:

"To improve the current practice in my organization. When you want to study in depth about your job WBL programmes will be more suitable"

"The opportunity to apply the knowledge learned to current projects in the workplace is beneficial to my company."

Also *"Transferable skills from theory to practice and vice versa will be beneficial for the employers"*. These comments above clearly indicate the relevance of theory in chapter 2 'WBL expressly merges theory with practice, and knowledge with experience' (Raelin, 2000) with the current study.

The WBL experience of students compared to face-to-face learning *"It is easier than face-to-face learning but you got to be self-disciplined. The best thing was you didn't have to go to a classroom to study yet I got more attention from the tutors than I did in my previous face-to-face education. It was extremely flexible to learn as and when time permits at my own rhythm. DL was better suited for my personality because I like to learn by myself. I managed to make the balance with my family at home for them to not feel my absence in their company."* This is an example of those students with extra commitments in life who have managed to succeed in WBL.

The advantages of tailoring from the students' point of view are *"All assignments are related to what we do here at work which is good because we could keep track of our work on daily basis and produce it as an assignment to the university. Also we could get*

feedback from tutors on the work we do here which is also beneficial to link practice with academic theoretical knowledge. Can get immediate feedback from your colleagues at workplace and pass your learning on to them with tailoring”.

The availability of a mentor at workplace is one of the key positive requirements in WBL and how students feel about it *“I would have regular meetings with my mentor to discuss the progress of my studies.”*

Recognition of WBL qualifications compared to traditional on-campus ones was viewed by students as follows. *“I faced few interviews with this MSc so far and the qualification was very well respected. Although WBL programmes are relatively new they are gaining popularity gradually. I believe WBL qualifications should have more recognition than face-to-face courses because of the extended workload in WBL and the practical orientation of its delivery. It also depends on the reputation of the institution where you study your WBL programme and the Northumbria programme has it with HEA accreditation.”* This shows that no discrimination exists between two modes of qualifications, i.e. face-to-face and distance. Middlesex University and Kingston University are two other leaders in the UK for delivery of successful WBL among many other institutions.

“My next plan is to do the MSc in RM WBL programme at Northumbria because the job which I’m eying at is related to RM.” The intension to continue WBL MSc after WBL BSc Librarianship is a positive proof about quality and satisfaction of current delivery.

The recent student fee increase in the UK will have a huge impact on demand. As a result and for many other reasons the students’ view on sustainability of WBL programmes in the future is also positive *“I think with all new technological developments it is possible to deliver more and more distance WBL programmes. It’ll however depend on government policies in future. When the student fees rise up, WBL will grow as the best alternative for learners”*

“Most young people will delay their HE and take up WBL later or even decide not to take any HE at all. Also, matured people would be unlikely to leave their job in the current economic climate to take HE” This demand perfectly blends with tangible benefits students have been gaining with WBL qualifications as follows: *“This MSc qualification, without affecting to my job, will lead to my next promotion in the workplace.”*

“I was meant to get a raise in salary.”

“I’ve seen people applying for entry level librarian jobs even with PhDs so where job practice and relevant qualifications matter people would embark on WBL

qualifications.” The number of students applying for WBL that are already qualified to PhD level illustrate the demand for job oriented programmes and that they are valued in industry over more so than academic based higher qualifications.

8.3.2 Academics

The following excerpts from academics explain the benefits of online WBL as per their perceptions.

The academics acknowledge the fact that WBL is more demanding over FT face-to-face learning due to various complications in life which present day students face. *“face-to-face MSc was cancelled due to less student numbers means the student demand is for DL. For most of students there is no other option than opting for distance WBL due to financial problems and family and employment commitments. Students can pay for their course by working FT. It is flexible and allows students to juggle work/home life and study. The course being all year round it doesn’t take too long to complete either.”*

One of the advantages of WBL compared to PT learning is *“WBL students are not constrained to a time table whereas PT students do and are tired after work when face-to-face sessions take place at 6-9pm.”* Also, academics were concerned about unnecessary spending occurred in the past and cost saving opportunities which emerge due to technological advancements. *“Today, even for my face-to-face students I do not give any handouts because everything is on eLP and its students’ responsibility to print them. For DL students we used to send materials worth of around £100 per module and a student might decide not to enroll before paying any fees so we used to lose that money but with the eLP we don’t lose anything if they fail to pay, we just switch them off to eLP. Another new decision made was we don’t supply text books anymore due to postal problems and students withdrawing without paying fees or returning books. We try and recommend text books that are available as eBooks.”* Due to the work-based nature of learning, there are more advantages according to academics. *“Working FT so career gap is not possible in case of u/g students. Due to senior positions being held at work it is not possible to afford time for FT education in case of p/g students. They get not only qualifications at the end of the study but a learning experience as well which can be applied in the workplace to enhance professional practice.”*

Academics’ view on students’ learning behaviour is *“Learning style is more suitable for active learners than for passive learners and those who prefer self-learning have more time for thinking.”* Academics also appreciate the flexibility in terms of time they have to support WBL students. *“Flexibility with the time you have available to support these students. Content is front loaded initially and then relaxation in terms of time*

unlike in the face-to-face system where throughout semester delivery of lectures happening.”

One of the other advantages academics find in WBL is *“Tutors get benefits from the experience the students bring to the online environment and also when talk with the employers which help to upgrade the study materials and assessments to match with individual students’ needs and expectations. Weaker students have opportunity to interact with tutors online to catch up.”* This way, a strong mutually beneficial relationship between the industry and academia is formed.

Finally, the academics endorse the fact that the quality of their WBL outputs is high *“We have a good reputation and employers are happy about our students and they get promotions. Recently Newcastle City Library filled all 3 vacant positions from our WBL students out of 700+ applications”.*

8.3.3 Support Services

Similar to the academics, the support services being a part of the university too have to be convinced about the benefits of WBL in order to play their role confidently. Some of the comments below explain as to how proactively support services have taken measures to make the WBL delivery process more efficient and effective.

“In order to save academic time on logistical matters like requests on extensions for assignments and examinations we implemented a mechanism. We at Admin office created a counter for WBL students where they can download a form on the eLP which they can fill and send to us explaining reasons. We have set up criteria for accepting or rejecting it with the consensus of PLs and Academics which we use to evaluate the application and take the decision. Subsequently, we inform the relevant academic about our decision in a way of a list which includes only the student’s minimum details, reason and the decision which takes up much lesser time than academic being directly approached by the student. Academic staff time is expensive and at the end of the day what students need from them is academic input but not counseling. This worked well for students in a different way also where they wouldn’t like to give all details to academics about their circumstances but they felt free to share it with our admin staff.”

When the researcher inquired about frequency and mechanism of obtaining feedback from students about their satisfaction about what they are getting *“I believe that feedback from the real life context is a good way of assessing something. One good example of that is I overheard from two students who were negatively commenting about a tutor which they wouldn’t do in the feedback form given by that tutor. The problem is that we over-survey our students in the university for various purposes so students are fed up*

with surveys!” Meantime, they also understand the fact that customer satisfaction, in this case student satisfaction is the utmost importance of any business. “I understand that if we don’t have happy students we don’t have our jobs so it’s critically important that we keep our main customers’ objectives intact by enhancing the student learning experience, all the rest is secondary.”

There is a robust and justifiable system to assess plagiarism issues *“We have mechanisms to address plagiarism issues like academic misconduct where a panel would assess the case and students are given opportunity to defend it if they are not happy”*

The NSU is confident about the QoS of IT services which is a positive sign. *“eLP issues come up at course level committees and get them routed to IT at that level. IT services is very efficient and they would have resolved any issue. They resolved the issue of non-compatibility of ‘Android’ OS apps on ‘Apple’ products in no time when it was raised by us”.*

WRLS also had a positive view on their role as *“I think we have been pretty successful in convincing faculties on WBL concept although every faculty is doing it at a different scale of course. The number of programmes is going up day by day. The HEFC funding also gave us a boost to disseminate the concept, create an interest among faculties through CoP. Now with the good reputation of the university on WBL delivery, it’s up to faculties to move forward with the support of the industry/employers.”*

Support services further endorsed the commitment of PLs of WBL programmes which ultimately benefit the students. *“You have dedicated programme leaders for WBL so students get more commitments from the PLs. Although they do teach for face-to-face students they don’t play the PL role for any other programmes.”*

Having a mentor at workplace is a big positive in WBL which is absent in PT learning or traditional e-learning. *“The learning can be applied to real life situations in practice. It’s an opportunity for students to work under supervision and then reflect on what they learnt, what are the gaps of knowledge or practical skills to be learnt. If it is facilitated well, supervisor and student can do action planning on what the individual student needs in a professional way in the real situation.”*

The advantages WBL students get over face-to-face students in terms of communication is *“Having DB on BB for discussions makes it easier to share ideas among peers in the absence of a tutor. From the academic time point of view, each student on Distance mode gets a lot of value than what face-to-face students get.”*

The cost factor is positive for WBL students according to faculty administrators *“Transport costs are higher for FT-ers as they commute to the university much more often*

than WBL-ers, They pay for their accommodation as well if they are not local students and also they cannot earn while studying which makes WBL cost effective for students compared to FT. Only in terms of duration FT-ers get the advantage as they complete their course earlier than PT-ers but we should not forget that WB Learners continuously earn work experience even during their studies.” When compare the performance between both categories of students, *“WB Learners used to get higher marks for assignments because of experience and tailoring their work activities into learning.”*

For a professional who is working FT and continuing further studies, WBL gives so many advantages like *“One can focus on one’s work role more reflectively, relate your work activities to your studies as opposed to a standard course where you have to take all what the course gives you whether you like it or not.”*

8.3.4 Professional Bodies

Unless PBs see the advantages which WBL offers to students, employers and to the university, PBs support cannot be guaranteed. *“Advantage to the learner is that they keep working and getting an income, they can see the relevance of what they’re learning and apply it in their job, and have real examples to include in their study. Advantage to the employer is that the employee stays with them, they are clearly motivated and keen to take on new tasks and projects.”*

CILIP has used WBL by themselves for training *“The obvious advantage to me is cost because it could be a real issue getting people to programmes forty to fifty miles away. Staff were often scattered across a very wide geographical area and this approach very much suited them. We used it for Library Assistant progression working with colleges based all over the UK. The advantage would be in broadening the base of potential professional members.”*

The PBs have positively realized the essence of WBL in terms of academic and professional point of view *“Entirely pertinent to your work as not all of the modules in traditional MSc programmes are relevant and useful to students at workplace or their career aspirations. Very attractive for mid-career professionals due to family commitments, mortgages and not having to sacrifice the salary for education.”*

In terms of contribution of WBL qualifications for professional registration *“For professional institutions with limited capabilities or rigid rules about ‘academic requirements’ accredited qualifications provide essential evidence of rigorously assessed learning as well as perhaps competence to some extent. In the case of the IET we consider ourselves competent to assess to UK-SPEC standards through our extensive expert community so accredited qualifications are useful. We hold meetings with employers to*

inform them how WBL might be incorporated in professional development. Universities have a good relationship with the PB through the work of the Accreditation team and we are in regular contact”.

8.3.5 Employers

WBL would not be successful if there was not a strong contribution and commitment from employers to guide, support and persuade employees to undertake WBL programmes. *“We believe that it should be blended learning especially in engineering discipline and also technology could make most of the things happen as if they are being delivered face to face. We are very happy with our engineers who follow this MSc on their progress. You need to give 24X7 in this type of engagement which they are ready to offer.”*

Similarly, there were some positive comments about university support as well.

“I think this is the best programme so far we have invested. We didn’t hear or find any issues/problems from the participants so far. I even visited the university when they designed the monitoring programme and I was a part of those workshops. The university is collaborative and flexible.”

8.4 Summary of Benefits of WBL

The main benefits identified in this case study for the stakeholders of WBL are summarized in Figure 8.2. From the stakeholders’ point of view these benefits are main motivating factors for them to engage with WBL. For example, students’ comments revealed that during the current economic recession this came as a fortune having been able to study for a university qualification whilst being at workplace which earns them money as well as work experience. On top of that their qualification leads to help for professional registration of the relevant discipline. Academics and the university consider this as an opportunity to be able to learn new technologies for delivery of education and broaden their knowledge from theory to practice through inputs from the industry. Employers are benefitting by being able to optimise their training budget for a worthy cause which enables them to have a qualified staff without having to send them out for training through WBL. Professional Bodies are able to widen their professional membership and develop close relationships among the industry, universities and employees through WBL partnerships. The benefits of WBL identified in this case study and explained in Section 8.3 have been encapsulated into following tables:

Students –

• A support for Professional registration
• Earning work experience and money while learning for HE qualification
• Cost savings on transport/accommodation compared to FT students
• Apply theory and practice between workplace and university
• Opportunity for reflective and deeper learning on activities at work place
• Sponsorships from employers
• Being able to balance between work, studies, family and social obligations through essences of online learning (anytime, anywhere, any tool)
• More individual attention from academics online
• Being able to communicate with academics/peers 24X7 basis through online media
• Mentor support at workplace
• APCL and APEL consideration
• Benefits of tailoring of curriculum
• Being able to fill personal knowledge/skill gaps and also gaps in workplace requirements
• Opportunity for career changes
• Being able to be sharpened in individual skills and being multi-task oriented in life

University –

• As a commercial venture
• Academics gain new industrial knowledge through student projects
• Flexibility for academics with time when content is front-loaded
• Academics being excluded from attending to student non-academic queries through a new student query system
• Prestige as a leader in WBL delivery
• Better collaborations with the Industry and Professional Bodies
• Being able to save costs of printing and posting through VLEs

Employers –

• A qualified and skilled workforce
• New theoretical and academic knowledge into work
• Research inputs for complex work-related problems

<ul style="list-style-type: none"> • Optimized use of training budget
<ul style="list-style-type: none"> • Better collaborations with the Universities and Professional Bodies
<ul style="list-style-type: none"> • Retention of employees with/without bonding obligations

Professional Body –

<ul style="list-style-type: none"> • An increased and broadened membership
<ul style="list-style-type: none"> • New opportunities with universities/employers
<ul style="list-style-type: none"> • Opportunity to improve accreditation framework through experience with WBL
<ul style="list-style-type: none"> • PBs appreciate the tailoring of curriculum concept
<ul style="list-style-type: none"> • PBs also appreciate the value of accredited qualifications to cover Academic Requirements’ in professional registration

8.5 Contribution Three: Representation and Consideration of Stakeholders through the Four Pillar Model

8.5.1 Application of Four-Pillar Model to the Design of Online Distance WBL

The current study on effectiveness of WBL from the perspective of all stakeholders has been able to discover new areas of knowledge in the area of WBL research. The significant difference between this new discovery to the WBL delivery model and existing traditional WBL model is the addition of both the workplace and the PB in the network of dialogue to be supported. The four-pillar dialogue does not suit standard WBL platforms as the workplace and PB do not have the same contract and involvement that exists between the University and the learner. The proposed four-pillar model is represented by the diagram in Figure 8.3 and has been presented and disseminated by the author and his supervisors during the course of this study ((Liyanage et al., 2011b), (Liyanage et al., 2011a), (Liyanage et al., 2013a), (Liyanage et al., 2013b), (Liyanage et al., 2012) and (Liyanage et al., 2011b)).

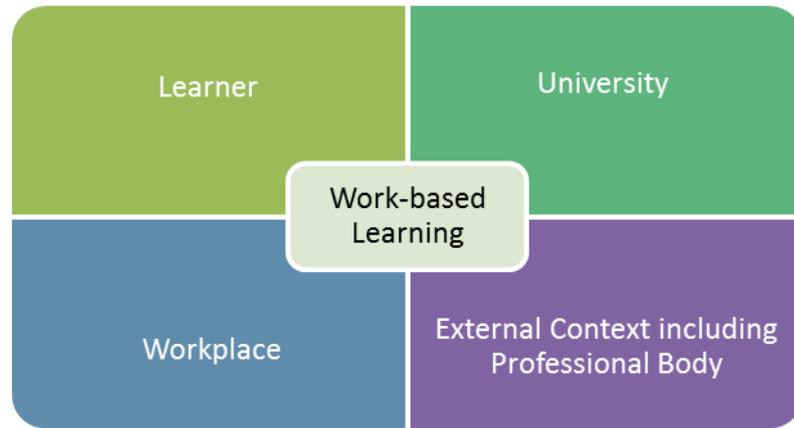


Figure 8.3 Suggested Four-pillar Model

One of the main contributions from this study is the effort taken to evaluate and link the representatives of professional bodies and employers into the traditional learner-tutor academic environment. This should help improve the quality and effectiveness of WBL programmes to cater to the current demands from the labour market for employees with professional, technical and employable skills. The fourth pillar which is the main new addition can be broadly designated as external context. In this particular case study the external context was viewed as the PB as four out of five selected WBL programmes are affiliated with professional bodies, the only exception being the MSc ICT programme. However the external context could have taken an even broader remit and included Sector Skills Councils, Technical and Vocational Training Institutions together with FE colleges which offer National Vocational Qualifications, home and social environment, etc. In terms of the current study this is the first use of this four pillar model and thus the decision was taken to firmly scope this fourth pillar to focus on the PB. A wider remit and definition of external context is thus left for future work.

In Section 2.6 a number of related studies have been referenced which have considered various stakeholder contexts but none of the studies have illustrated all four stakeholder contexts in one formal model. For example a study to examine the factors that influence the learners' perception and adoption of work-based e-training was carried out for the Hong Kong apparel industry (Chong et al., 2004). This study paid attention only to the learner which is one side of the four pillars. As mentioned above in the problem statement for this study, although there is anecdotal evidence to suggest that consideration of the workplace and the external environment could significantly enrich the effectiveness of WBL delivery, the literature review in chapter 2 highlighted that there is very little written about all four stakeholder contexts together.

The current study has applied the four pillar model to the case study to assess the range of stakeholders to include in the study and to evaluate how each of the four

stakeholder categories in the four pillar model can input and work together to improve the effectiveness of the WBL process.

8.5.2 Design of Online WBL Programmes

The focus of this study is on the effectiveness of WBL programmes delivered by FEE at Northumbria University across the disciplines of Computing, Engineering and IS. Each of the five embedded units (each comprises a separate WBL programme) are primarily DE with some face to face support. As such the content uses online delivery mechanisms. OL materials differ from traditional face-to-face learning materials in a number of ways. Face-to-face materials are usually paper based text books, seminar papers, tutorials, handouts, and journals. All these learning resources can be made available for students via online formats including e-books and e-versions in Microsoft Word, and scanned versions using pdf formats or similar. These are called ‘shovel ware’. The difference between ‘shovel ware’ and paper based materials is that ‘shovel ware’ have to be read on a computer screen and this may not suit all learning styles. The most important fact in online WBL is the ‘online learner support’ which should provide the basis for the design of the OL materials. There is a clear difference between ‘teacher-centred’ and ‘learner-centred’ education which can be mapped against traditional face-to-face and OL respectively, although face to face delivery has also been moving towards a more student centred approach. Paper based learning materials are acceptable for face-to-face learning in the presence of a face-to-face teacher who can explain and clarify things in the classroom. This is not the case in online WBL where the students and tutors are physically separated by distance. Learner-centred OL is mainly self-learning where students access online content through the Internet with little support from tutors. In this type of a scenario, learning content has to be self-explanatory with as many learning aids as possible embedded into the content. This enables the student to understand concepts, apply them to the real world, and ask questions in order to absorb the essence of content. This can be facilitated in OL by incorporating technology in the design, development, and delivery of programmes.

Design of any product has to be carefully thought out, including its usability. This means that the online content must be intuitive and easy to learn, effective to use, and provide an engaging user experience. Many products that require the user to interact with them to carry out their tasks have not necessarily been designed with the user in mind. Typically, they have been engineered as systems to perform set functions. While they may work effectively from a technical perspective, it is often at the expense of how the system will be used by real people. Design of online content as well as LMSs has to adopt design

principles in order for the final product to be comfortably usable for the end users, i.e. stakeholders of an online environment. Preece and Rogers (2007: 29) explain visibility, feedback, constraints, consistency, and affordance as most common design principles considering how to determine what users should see and do when carrying out their tasks using an interactive product.

The design process of online content is much more complex than design of print based material (Liyanage et al., 2011b). In order to create self-explanatory, interactive materials, content may need to be embedded with multimedia features like online quizzes, audio and video clips, simulations, animated and interactive graphics, illustrations, etc. There are a number of hardware and software tools in information and communication technology (ICT) which can be utilised to create the above multimedia elements to enrich the content. This is where experts in key areas have to be involved in this process including subject experts (SEs), instructional designers (IDs), audio/video technicians, animations and graphics experts, programmers, and word processing experts. They work in parallel but collaborating within a structured developmental framework as explained below. Nevertheless, a project manager is responsible for the overall management and scheduling of the process.

When a text book or any other print material is edited for face to face teaching, in most cases, only the subject expert (SE) is involved who will either write or type the content which will then be printed. In the online content development process, the SE will often design the outline of the content first. The second step is SE works together with an instructional designer (ID) to design the structure and learning materials considering the possibilities and appropriateness of using technology. In this case, SE does not compulsorily have to be an expert in ICT but the ID has to have a good understanding as to what and how multimedia elements could be used to explain the subject matters better for an online self-learner. When this task is accomplished, the ID will work with his/her team of ICT experts to incorporate relevant multi-media elements in the online content to make it available for online delivery. The next step is to agree with the SE about the final version of the content which could be an iterative process depending on the expertise of ID and his/her team to comply with SE's requirements. At this stage, the SE has to pay attention on the pedagogic and learner support frameworks, and provide advice and quality control on the effectiveness of the learning materials produced. There is an important action at this stage to follow which is the evaluation of the final content against design principles and heuristics. As mentioned in sub-section 'Quality of online content' under section 5.2.1

'Use of Technology in Learning', Nielsen (Nielsen, 1994) has developed a set of usability inspection techniques to evaluate whether user-interface elements conform to the principle.

In university based education, programme design has to be further concerned that it is not basic knowledge delivery but critical development of higher cognitive competencies. Accordingly, the academic review team would approve material for its curriculum suitability, and monitor subject coverage from one module to another. These steps would be supplemented by teams responsible for evaluation and delivery, whilst another team would provide marketing and administrative services. A Board of Studies finally will oversee the development of academic and accreditation standards.

Once everything is finalised, programmers would upload the content on to a Learning Management System (LMS) which are also called VLEs. The key considerations when uploading online content into a LMS are:

- the system compatibilities,
- size of the images, audio/video clips, simulations, illustrations,
- the bandwidth of the network which would host the programmes,
- the remote server capacities to accommodate concurrent online access of programmes by many students from around the globe,
- the storage capacity of the database servers and content management servers to facilitate online communications through discussion boards, and chat rooms and emails among stakeholders of the learning environment as per the four-pillar model.

Another key aspect of online delivery of programmes is the security of content, communications and assessment submissions by students and feedback provided by the tutors which must be of paramount importance as far as the academic integrity is concerned.

The above explained structure is based on an 'industrialised model' of development, in which a chain of experts each plays their part in the process. This is in contrast to the 'craft' model more familiar to lecturers in face-to face delivery, who are accustomed to designing and delivering traditional courses themselves (Bradley and Oliver, 2002a). On-campus, the physical space provides coherence to the learner whereas online it is important that the visual and functional aspects provide this coherence to their learning space. Each of the experts works in parallel on their respective areas of activity within a framework of regular meetings, at which they would come together and present their progress and experiences.

The above online course design, development and delivery process is illustrated in Figure 8.4.

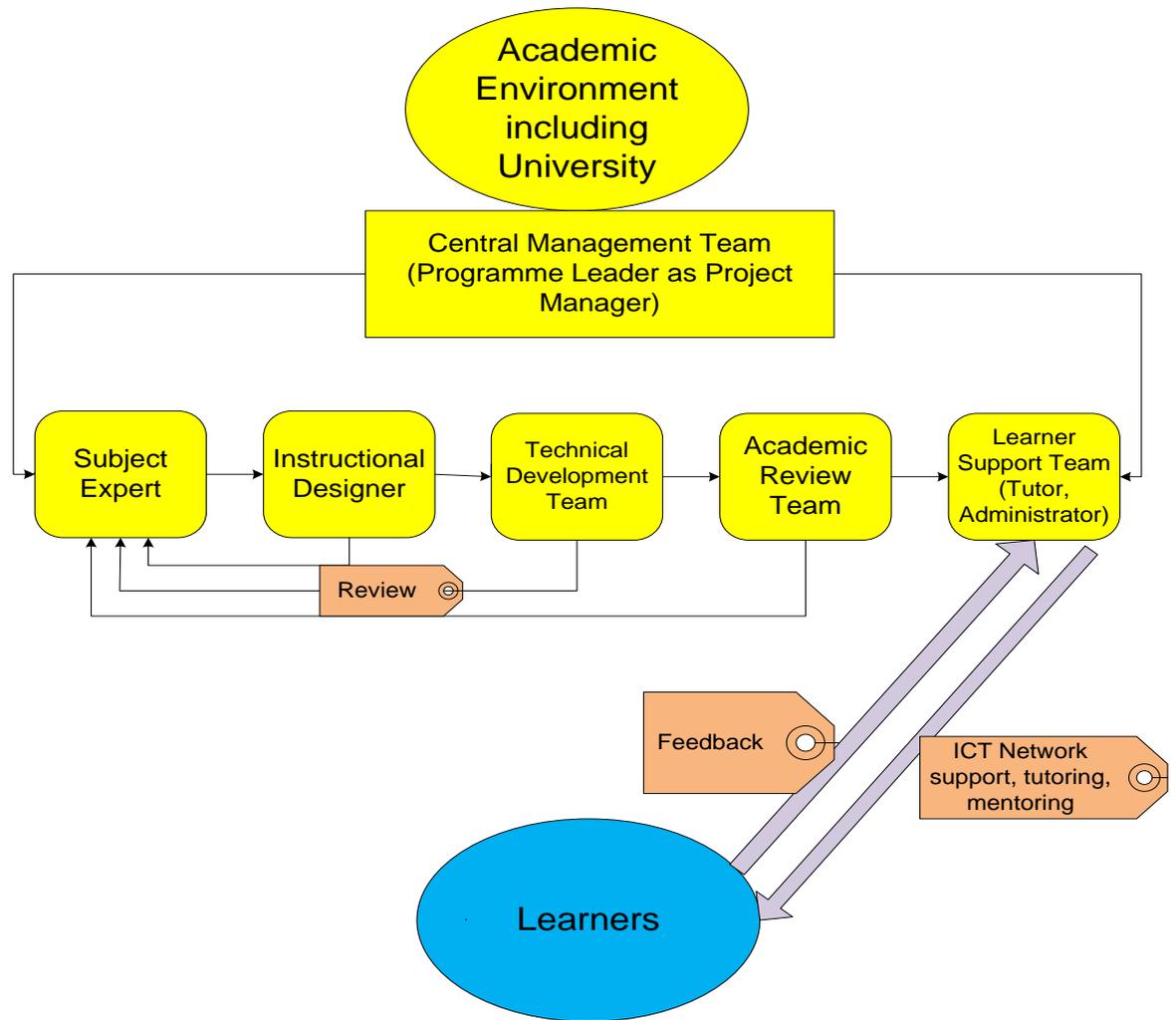


Figure 8.4 Current online course design, development and delivery model (source: (Liyanage, Strachan et al. 2011(b)))

WBL should integrate the learning process as far as possible into the work role and its tasks, allowing experience to be drawn upon, and knowledge and practice gained to be applied in future work. This requires careful design. Pragmatically, WBL imposes structural and organisational constraints upon education. The need to fit learning around existing commitments (both in terms of work and family) means that the curriculum must be designed so that it can be undertaken flexibly, both in terms of time and, ideally, place. This, in turn, places limitations on traditional forms of education, which are organised and scheduled to meet the organisational needs of the host institution rather than the individual learners.

The ideal scenario for online WBL is one in which learners would predominantly study independently, within a framework of support and activities designed to encourage face-to-face interaction with work colleagues and other online learners. It is intended at the

outset to base the programmes on a modular structure, which enables greater flexibility, in terms of learner selection of subject matter and order of study. Modularity also makes it easier to break down the learning material into smaller, more manageable components. Work-based learners find it easier to study if they have short chunks of material, for example 45-60 minutes (Bradley and Oliver, 2002a), to study in short spaces of time. It could be during a lunch break, in a period devoted to learning or during a slack period during the day. Such timescales are also pertinent to online learners, who may find it tiring to spend a long time sitting at the computer and maintaining their concentration.

Accordingly, the author would like to recommend the following model (see Figure 8.5) in order to improve the effectiveness of design, development and delivery of online programmes for work-based learners. The main difference between Figure 8.4 and Figure 8.5 is the inclusion of inputs from employer and PB at various stages of the WBL delivery process based on the four-pillar model. In addition, communication between employers, professional bodies, university and learners also takes place and informs the design process in various ways.

As outlined earlier, the learner support framework should combine online tutors, in-company mentors and professional bodies. The professional bodies support WBL by accrediting university programmes which gives an extra assurance for the learners about future benefit of upgrading their professional status and also by encouraging employers to persuade their employees for WBL programmes. PB should involve both in the initial and latter part of the process for accrediting the programme before and after the academic review. Tutors are responsible for assessment together with workplace mentors ideally. An in-company mentor, selected by the learner or appointed by the employer, would provide support on workplace practice and application in the early design phase to the SE, and act as a friendly guide and provide feedback and support for the learner as they require it. Between PB and employer too there has to be a dialogue in terms of employee's learning contract, professional registration, mutual marketing and funding opportunities.

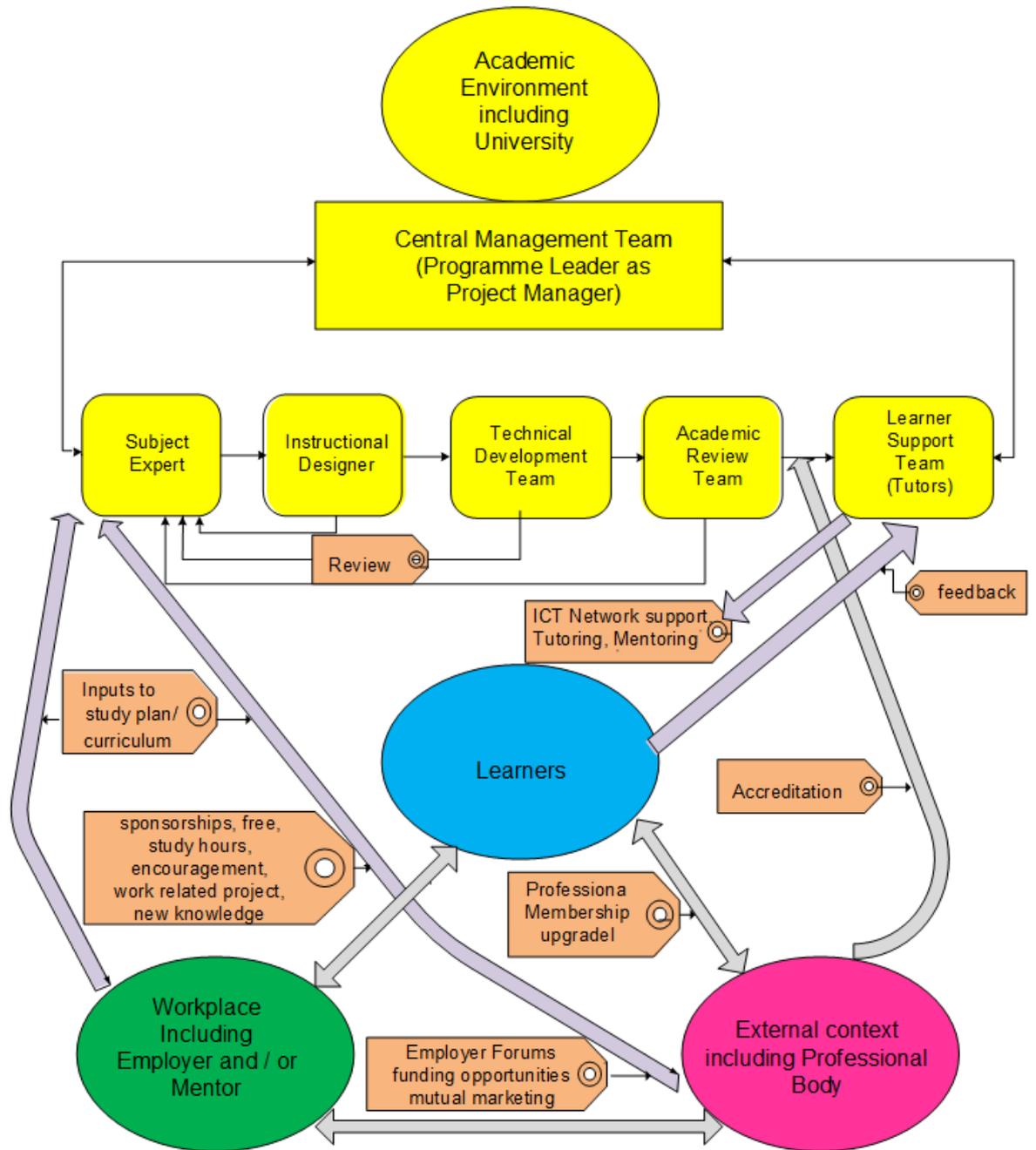


Figure 8.5 The recommended online course design, development and delivery model based on the Four-Pillar model (source: (Liyanage, Strachan et al. 2011(b))

8.5.3 Application of Four Pillar Model to a Toolkit

It has been noted that the use and application of the four-pillar model in practice can be incorporated into a WBL toolkit. There are examples available in the literature as to how such a toolkit should be developed. Using those as an example, the researcher has shown how it could be adapted to include consideration and input from the full range of stakeholders on the readiness to engage in WBL.

Such a toolkit would assist stakeholders in the four-pillar-model to self-assess their readiness for WBL. Through the outcomes that have emerged from this study, two sets of recommendations have been developed: recommendations for issues identified in section 8.2 for each theme and sub theme; recommendations made separately for all stakeholders in section 8.7. All these recommendations can be customised and adopted in a toolkit so that it can be contextualised appropriately for a similar WBL environment as another way of presenting original contribution to knowledge. The development and validation of the toolkit are proposed as future work to this study in section 10.2 and examples from the literature are given as a guideline in Appendix XVI.

8.6 Contribution Four: Key Outcomes and Contributions to Knowledge for each of the Embedded Units

As explained above in Chapter 4, the five WBL programmes selected as the embedded units of this case study each have their own individual characteristics and differ from one another. The data from the case study has been examined in terms of these five programmes and the following has been identified as the key knowledge that has emerged from this data.

8.6.1 MSc Information and Communication Technology (ICT)

The MSc Information and Communication Technology (ICT) is 3 years by DL. The main highlight of this programme is that there is neither an induction programme nor pre-project meeting at the university for those who prefer meeting with academics and peers physically. Students' background qualifications/experience vary a lot because ICT is a widely distributed discipline today hence APL has been applied extensively. There is no tailoring in terms of module selection but assignments and final project are allowed to be customized to their workplace. Students prefer inclusion of some face-to-face sessions and also a higher level of interactivity in content where possible. They also prefer to have option of module selection and interestingly some students even did not know who their student representative is! This programme does not link to any PB but it is strongly recommended linking this qualification as an academic criterion for professional registration of IET, BCS kind of professional bodies. This is a male dominant student cohort.

8.6.2 MA/MSc Information and Library Management (ILM)

The MA/MSc Information and Library Management (ILM) started delivering in distance mode in year 2003 using online delivery of content focusing work-based learners.

The duration is 2 years by DL. The Chartered Institute of Library and Information Professionals (CILIP) is considering the MA/MSc ILM as an entry qualification for the professional registration of Librarians. Students seem to be satisfied with the content of distance delivery but they emphasise that content should be more interactive and rich in terms of multi-media technology. Same time, tutors consider that students' lack of ICT competence by nature of students' background compel them to keep content as simple as possible and establishment of video communications with students still has become a distance reality. Therefore, re-engineering of delivery process is recommended to strike the balance between different ambiguities. This is a female dominant student cohort.

8.6.3 MSc Professional Engineering

The MSc Professional Engineering takes place completely in the workplace with distance delivery of content via the e-Learning portal (eLP) of the university. The programme is structured to be directly relevant to what students are working on whilst furthering their education and working towards PB recognition and eventually the chartered status. This is achieved through the use of an individualised learning contract which is drawn up in consultation with the programme team and student and ideally the employer and PB. The 3 year programme was launched in September 2008 but with students taking time out and other delays, the first batch of 12 WBL learners are due to pass their MSc in 2013. The employer's mentor support needs to be addressed as this currently varies from employer to employer. Also the employer's involvement with the university has been minimum although the employer is willing to participate in a more significant role and in particular to be more involved in the learning contract development. EngCUK is concerned with individual students' learning contracts which should be referred to them before students embark on the programme. This does not always happen as envisaged. The learning content of common modules like Research Methodologies needs to provide more content on the eLP as engineering students need more support in those areas. Students are sponsored through the GDP programme which students appreciate as an additional bonus on top of being given the support to learn at the workplace through a reflective learning approach. Employers have established a comprehensive progress monitoring mechanism at workplace and employers are keen on timely completion of the MSc and their engineers being granted professional registration from EngCUK early. This is a male dominated student cohort.

8.6.4 MSc Records Management (RM)

The MSc Records Management attracts students from all over the UK and overseas. It has moved from a campus-based academic delivery model to a 2-year distance delivery and has embraced technology developments, including the eLP, e-resources, and Skype.

MSc RM is accredited by the Archives and Records Association (ARA). Students feel satisfied about the DE methods being adopted by the university whilst requesting more interactivity for the OL content. Tutors' willingness to embrace with technology to be able to handle online elements available on the eLP was seen to be of paramount importance by the students and tutors themselves. This is a female dominated student cohort.

8.6.5 BSc (Hons) Librarianship

The BSc (Hons) Librarianship degree is the only u/g degree offered by the FEE which has been granted the full WBL status by the University. More than 2/3 of applicants possess ACLIP and the rest have equivalent work and training, plus minimum work experience in a Library or information handling environment. This online WBL programme takes a minimum period of 3 years to complete. Students' average age range is 31-40 years which shows the appropriateness of WBL for experienced employees who are without paper qualifications. Inclusion of face-to-face components as blended delivery is important for this type of u/g programmes considering this is their first university level education in most cases. Also, feelings of inclusiveness and student community are important for them and the ability to experience 'university student life'. This could be more strongly facilitated in the current programme delivery. This is a female dominated student cohort.

All above findings can be recorded as strengths and issues in delivering WBL in the disciplines of the five programmes selected as embedded units within the case study. All five programmes use online and/or blended delivery methods. Strengths can be recorded as best practices and issues can be addressed through recommendations so that they will not be repeated again.

8.7 Contribution Five: Recommendations for each Stakeholder

Recommendations as a way forward for all the stakeholders in the WBL four-pillar model are presented in this section. The recommendations for the issues presented in the

section 8.2 are for each theme and sub theme that emerged from the study. The recommendations in this section are presented in terms of each pillar of stakeholders.

Five WBL programmes delivered across the disciplines of Computing, Engineering and IS by FEE at Northumbria University formed the case study for this research. These recommendations apply to the stakeholders associated with these programmes and include the PBs and employers. They form the basis for a set of initiatives that can strengthen and expand on this current online distance WBL provision. Others contemplating offering similar provision can consider the results of this case study and these recommendations and their applicability to their own circumstances. Figure 8.6 gives a summary of recommendations of the study which is elaborated under each key stakeholder type. It should also be noted that these recommendations are derived purely from the data and its analysis and outcomes of this current research study.

8.7.1 Learners

- i. Recognise the importance of WBL in terms of academic, employable and economical contexts.
- ii. WBL is a self-driven exercise hence in order to succeed, learners need to exhibit self-belief, commitment, dedication and motivation.
- iii. WBL students as employees preferably should first seek their employers' permissions and support before committing to enroll on a WBL programme.
- iv. WBL students should clarify with the employer the exact nature of the support they will provide from full financial sponsorship, part sponsorship and/or other means such as providing a loan, facilitating for a grant, granting study leave and free study hours during work, granting book allowances and assigning a mentor/s. The first and one of the most important steps in WBL is setting up of the learning contract between the student, employer (mentor) and the university which needs very careful attention from the student to foresee their work role and how to align these activities with the academic standards, i.e. learning outcomes. However this only happens currently in full scale in the Engineering programme and there are even variations from engineering discipline to discipline and company to company depending on their line of business. Other programmes deliver set curricula which take into consideration the common nature of those subjects and job descriptions (Ex: Librarians, Record Managers, IT Managers).
- v. It is recommended that WBL students attend the university induction programme and pre-dissertation programme on campus if it is within the reach by the student as this gives them an opportunity to get to know academics and some of their peers and

enables them to gain first hand knowledge and experience of the systems such as the eLP.

- vi. Once the programme has commenced, it is important for students to have a proactive approach rather than being reactive. This is because academics and peers are not physically visible (visual only virtually) and it is easy for a student to get isolated and lose the focus.
- vii. It is vital that students make full use of the university VLE as this is the main interface for content downloading, communication with academics and peers, assessment submission purposes and access to university library resource.
- viii. It is also important to attend day to day work activities with a reflective learning approach which helps the workplace raise their quality of work as well as helping the student with their studies and assignment submissions.
- ix. The application of theoretical and research knowledge gained from the university at the workplace and the sharing of workplace practical knowledge and skills with the university as a way of submissions is healthy and a win-win situation for both parties and this should be continued.
- x. It is always recommended to get enrolled to a WBL programme within a reasonable distance to the offering university if at all possible to make it a blended learning experience with the opportunity to visit the university and meet the academics to discuss subject content when and where necessary. This approach was appreciated by many of the students in the survey.
- xi. An important step before committing to a WBL programme is that the student should ensure that where a PB is involved they have consented to the learning contract and programme and have checked that these align with the PB's accreditation benchmarks. Otherwise on completion of the programme students could face difficulties with their professional registration and acknowledgement of their WBL qualifications.

8.7.2 Academic Institutions

- i. Recognise the importance of WBL in terms of academic, employable, economical and administrative contexts.
- ii. Appreciate and compensate for online WBL time in the staff time table which is mostly out of office hours (evenings, weekends, and vacations) and on an individual student basis.
- iii. Enhance LTech support by allocating individual representatives/coordinators to each faculty and also establish internal content support units within faculties.

- iv. Improve ease and speed of online access to university resources through the DTA or an alternative provision.
- v. Provide better awareness about university facilities for WBL students.
- vi. Create flexible, efficient and effective IT, library, finance and student services for WBL students.
- vii. The technology must be sufficiently maintained and for the equipment and software a timely replacement programme must be implemented.
- viii. More rigorous marketing is essential for WBL by delivering institutions. Also it is important that they encourage collaborations among institutions such as a consortium arrangement to deliver degrees programmes. This resource sharing can save reinventing the wheel. It is good to provide opportunities to exchange experiences among WBL educators similar to the Community of Practice forum at Northumbria University.
- ix. Plagiarism needs to be eliminated by educating both learners and developers who create online content, on the consequences of plagiarism, and to use short excerpts and ensure it is customary to acknowledge such materials when used. Train students and educators that it is immoral and illegal to copy without acknowledging others' work; apprehend and prosecute those who plagiarize; use plagiarism detection software to pre-scan student assignments (before scoring) and educator content (before posting on line). It is recommended to have final tests supervised face-to-face and allocate a fair percentage of marks for it whenever it is possible. If the online chats, discussions, wikis and assignments are given a reasonable weight and questions are based on higher order thinking, moving to group projects rather than multiple choice questions for online assessments, this issue could be minimised.
- x. Quality assurance systems must be established and monitored throughout in order for this system to stabilize and sustain. The standards that are used must be made available to the WBL community. Ideally, similar standards should be used for conventional educational institutions too so that a fair comparison can be maintained. Professional editors should be involved in the review and proofreading of all learning materials.
- xi. Academics have their own definitions for interactivity of content but it is advisable to define the levels of interactivity as benchmarks in order to maintain quality standards of online content.
- xii. Tutors are required to provide timely, constructive and frequent feedback to online WBL students. The internationally accepted standard for online feedback time is 48

hours which needs to be adhered by academics. The quality and frequency of the feedback that they provide should be monitored from time to time.

- xiii. Institutions should also make a rigorous effort to develop good quality multimedia-rich online content to create interest among students which would eventually attract high numbers for online WBL allowing the learning to be conducted at a distance using technology.
- xiv. Tertiary sector educational institutions should prioritise WBL as a need to produce employable diplomats / graduates and to professionally develop existing employees, who are adoptable and flexible to meet ever-changing needs of the labour market.
- xv. These institutions should invest in developing the skills of their academic and other staff to move forward with changing scenarios in knowledge production and delivery.

8.7.3 Employers

- i. Recognise the importance of WBL in terms of academic, employable, economical and administrative contexts.
- ii. It is very important to assess the training need of the company before embarking on WBL programmes for employees.
- iii. It is also important to carry out a cost benefit analysis to evaluate the best option for the company between in-house WBL and out-bound short-term industrial training for employees.
- iv. The main benefit in WBL for employers is the tailoring of learners' learning contracts with the work activities whilst aligning them with programme's learning outcomes. In this sense it is very important for employers to sit with their employees and the university academics to give their inputs for the learning contracts to assure whether the company objectives are met in this exercise.
- v. Assigning a mentor for the employee by the employer for the entire duration of the programme is also highly recommended. This will benefit the employer to monitor employee's progress, for the university to discuss and sort out work related issues relevant to the programme, for the employee to share his/her learning experience and obtain advice where necessary and finally for the mentor to learn and refresh knowledge from the employee's learning.
- vi. If the employer could fully sponsor or at least partly sponsor the employee from the training budget it would be the ideal scenario of course with a bonding arrangement which will ensure that the trainee will retain in the organisation for a stipulated period. In case of the employer is unable to sponsor, any arrangement for a grant or even a loan scheme where the employee could pay back over the years will be worthwhile as

financial difficulties to pay programme fees came out in the study as the top reason for student dropouts.

- vii. Other than sponsoring, the other ways of support the employer could provide are; allocating free study hours at work, granting study leave during exams and induction programmes where the student has to travel to the offering university in some cases, granting a book allowance, and providing guidance, advice and morale support.
- viii. Establishment of a monitoring mechanism at workplace is mandatory through which the employee has to report his/her progress, new knowledge acquired and achievements for the workplace to the management and peers on regular basis to ensure the timely completion of the programme.
- ix. To have regular contacts with the university in particular with the PL, module tutors and the management is recommended for the employer for being updated about the employee's progress as well as overall delivery of WBL.
- x. It will also be advisable to hold discussions with the relevant professional bodies on behalf of the employee so that the employee has only to concentrate on his work and studies because ultimate benefit the employee is expecting to achieve will be guaranteed through those discussions.

8.7.4 Professional Bodies

- i. Recognise the importance of WBL in terms of academic, employable, economical, professional and administrative contexts.
- ii. The core business of any PB is to accredit, accept and formalise various academic and training endeavours of potential candidates which needs to be prioritised and given the due consideration for WB learners.
- iii. Early interventions by PBs in the WBL delivery process is very important which will then permit the employer, employee and the university to accommodate any due requirements/unattended gaps of PB's benchmarks/standards in the learning contract for employee's professional registration.
- iv. PBs should maintain a close relationship with the university by mutually sharing and blending the academic standards and professional practice together in order to be able to produce highly skilled and knowledgeable professionals for the development of the industry.
- v. PBs should also maintain a good relationship with the employers and the industry to identify the skills and knowledge gaps and try to fill them.
- vi. The PBs should streamline their policy framework and benchmarking of standards so that WBL qualifications which embed with APL are fairly treated across the board

- vii. Tailoring of work activities of the employee to the academic learning outcomes has to be carefully assessed by the PBs to ensure whether the necessary academic and industry standards have been met.
- viii. PB's role as an implicit monitoring body to ensure the quality of delivery of online WBL should not be at any cost compromised.

The effectiveness of delivery of online WBL from the perspective of each of the four pillars of stakeholders has been analysed and recommendations have been proposed as one of the major outcomes of this research.

8.8 Summary of Key Contributions and Recommendations

This section is dedicated for recommendations made out of this study which can be divided into two areas: Firstly, each pillar of the stakeholders was examined in terms of the findings from the study and a set of recommendations was developed for each of them (See Figure 8.6). These recommendations can be used by stakeholders as best practices by contextualising depending on their own WBL environment. Further to that, the eight main themes and three subthemes emerged from the data analysis of this case study were used to classify the main strengths and issues of WBL that have emerged from the data and another set of recommendations was developed to address those main key issues. They were encapsulated under the three most influential parameters identified in the study, i.e. quality, access and support, and shown in Figures 8.7-8.9.

Recommendations for all Stakeholders in the Four-Pillar Model

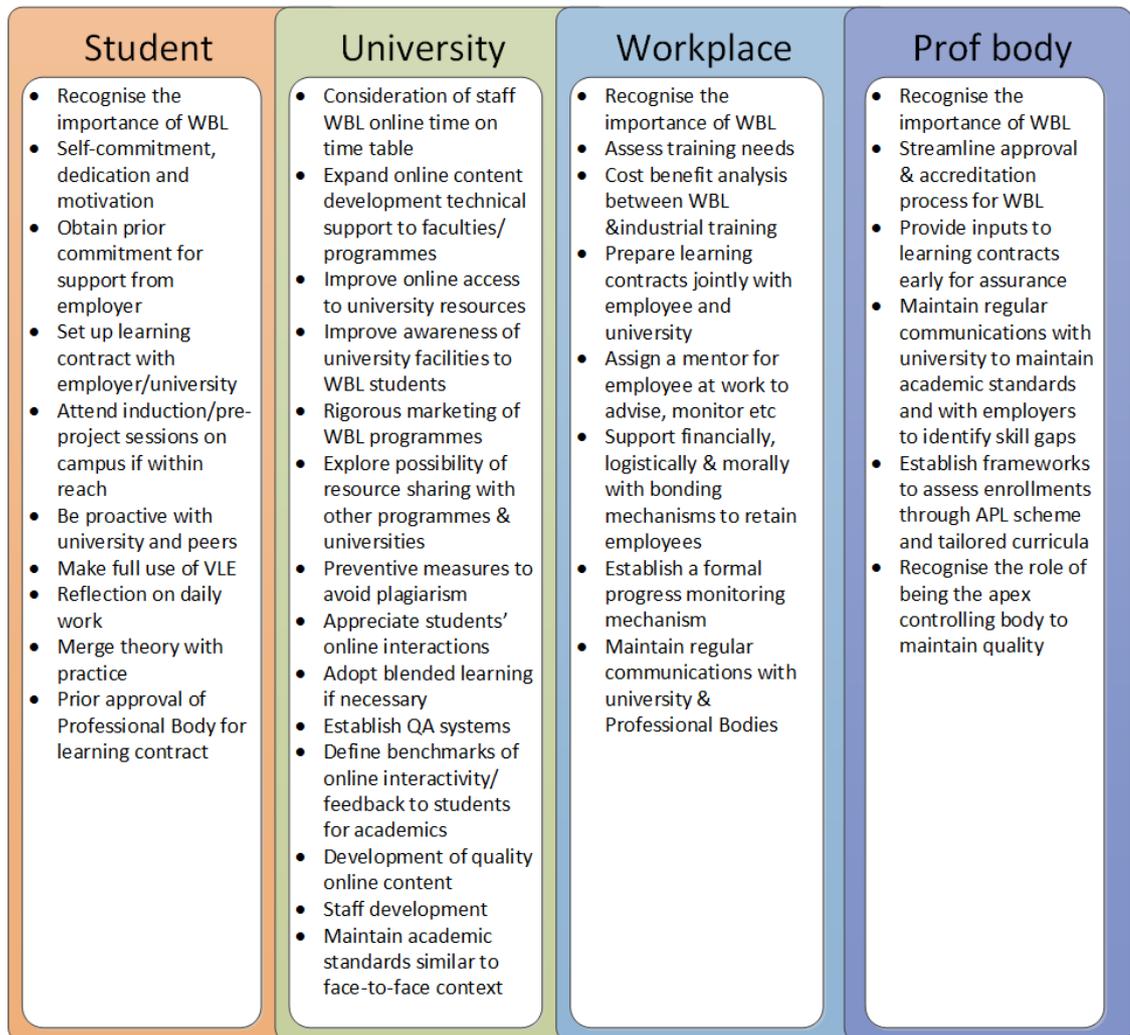


Figure 8.6 Recommendations of the study for each of the stakeholders

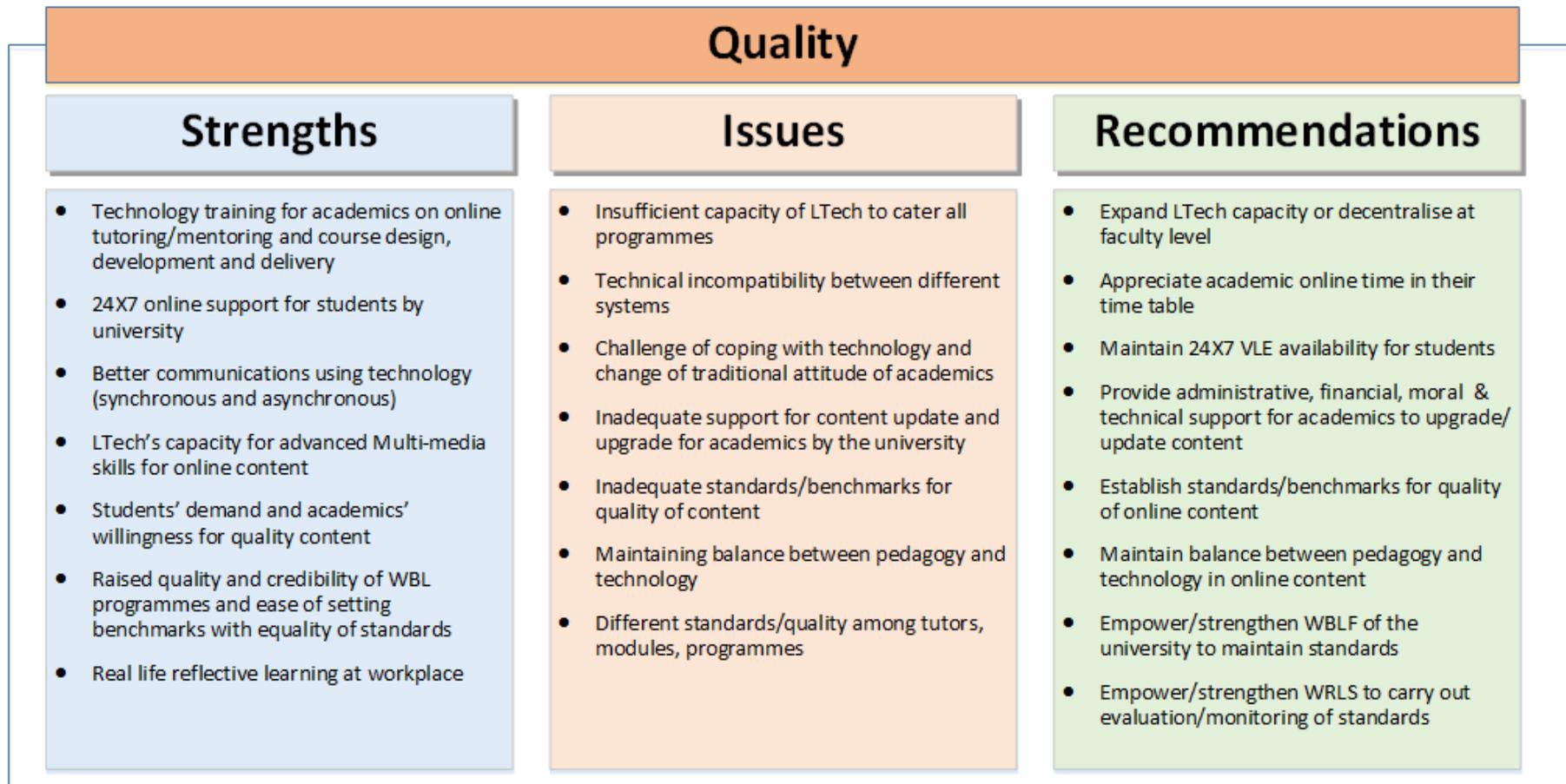


Figure 8.7 Strengths, issues and recommendations under the variable Quality

The quality parameter listed a number of overall strengths and key issues which lead into the recommendations as shown in the Figure 8.7. As explained earlier, quality parameter includes quality of use of technology, online content, and equality of online standards across the board.

Access		
Strengths	Issues	Recommendations
<ul style="list-style-type: none"> • VLE acts as the interface between students, academics and content • 24X7 access to content and communications with academics & peers • Online delivery of WBL suits matured learners who prefer self-learning • Opportunity to learn and earn (both money and work experience) together • Front-loaded content saves academic tutoring time and during interruption to Internet saves student time as well • Develop time management skills to balance learning, work, family, social commitments etc • Cost savings for students on transport, accommodation etc through learn anytime, anywhere, using any tool concept • Able to continue learning during university closures • Opportunity for unqualified, senior and skilled employees to obtain HE qualifications through APL • University can raise student numbers while PB can increase their membership through APL • Employers to have skilled and qualified staff through APL which is good for the industry and overall production of the country 	<ul style="list-style-type: none"> • High dependency on Internet • User-friendliness of Northumbria VLE (eLP) • No access to eLP during maintenance in weekends • Distance students' isolation could lead to student drop-outs and low performance • Blended WBL is not possible due to long geographical separation although students prefer it • Academics miss students' body language • Lack of proactive communications by students which could lead to students being forgotten by academics • APL is costly and administratively cumbersome for the university • APL is difficult for PBs to set benchmarks case by case • Students selected through APL sometimes struggle with academic rigour 	<ul style="list-style-type: none"> • Provide front-loaded content and asynchronous communications for students • Provide training on use of eLP using recorded videos and simulations • Improve user-friendliness of eLP • Make the students' learning a rich and engaging experience with an extensive learner support mechanism • Use effective instructional design to compensate the physical absence using technology • Prompt students for active engagement with learning content, academics and peers • Design of assessments should base on reflections of students' day to day activities • Establish standards/benchmarks for university entry criteria through APL • Establish standards for professional registration criteria through APL • Consider students' capabilities to cope with university rigour at enrolment

Figure 8.8 Strengths, issues and recommendations under the variable Access

The access parameter listed a number of overall strengths and key issues which lead into the recommendations as shown in the Figure 8.8. The access parameter includes use of VLE, application of APL in enrollments, effectiveness of delivery mode and potential for student isolation.

Support		
Strengths	Issues	Recommendations
<ul style="list-style-type: none"> • Tailoring of learning contracts to work role is advantageous to employer/employee • Tailoring allows students' reflective learning at workplace to be submitted to university • Academics learn new industrial trends through tailoring from students • Existence of university WBLF to maintain standards • Existence of WRLS to assist/evaluate/monitor implementation of WBL programmes in the university • Availability of LTech for online content development support • Employers' current positive trend towards WBL for employees • Assignment of mentors at workplace to support employee learning • Unlike industrial training, employees retain at workplace throughout the programme • PBs accredit WBL programmes which guarantee employees' academic requirement for professional registration through framework of standards 	<ul style="list-style-type: none"> • Tailoring is costly and administratively cumbersome for the university with high student numbers • Difficult to benchmark and standardise assessment criteria • Inconsistency of university support services for distance WBL students • Inadequate empowerment for WRLS in terms of staff capacity, funding and authority • Insufficient dialogue between university and employers regarding employee performance, learning contracts etc • Unavailability of flexible payment terms for students when they are in difficulties • Not all employers are supportive of WBL • Lack of dialogue between universities and PBs leads to delays of accreditation of WBL programmes which results in denial of professional registration 	<ul style="list-style-type: none"> • More tailoring should happen for programmes with less student numbers and vice versa considering its benefits to employer/employee • Consider tailoring options of choosing modules, assignments and final projects to benefit students' workplace • Establish assessment criteria on learning outcomes to maintain equality & consistency for tailored components • Make university support services more effective, efficient, and flexible to cater different circumstances of students • University to launch awareness campaigns to attract industries for WBL programmes • University to establish better collaborations and communications with employers and PBs • Convince employers about short and long term benefits of WBL • Active involvement of PBs with other stakeholders to support delivery of accredited WBL which ultimately benefit PBs themselves • Make industry aware about benefits of WBL which enable employees to obtain their professional registration

Figure 8.9 Strengths, issues and recommendations under the variable Support

The support parameter listed a number of overall strengths and key issues which lead into the recommendations as shown in the Figure 8.9.

Accordingly, support parameter includes support from the university, employers and professional bodies for students together with application of tailoring concept in the programme.

8.9 Conclusions

This chapter presented the main outcomes from this study and highlights the key original contributions to knowledge that have emerged from this research. These contributions are categorised into three main areas. Firstly, eight main themes and three subthemes have emerged from the data analysis of this case study. These have been used to classify the main strengths and issues of WBL that have emerged from the data and a set of recommendations has been developed to address those main key issues. Secondly, the four-pillar model, its applications within this case study and its ability to encapsulate the full range of stakeholders were presented. An example was provided that illustrates how this four-pillar model could be used to adapt existing online WBL course design, development and delivery practices to provide inputs from the full range of stakeholders. Another illustration of a potential toolkit to assess the readiness for WBL by all stakeholders in the four-pillar model was also presented with examples from the literature. Each pillar of the stakeholders was examined in terms of the findings from the study and a set of recommendations was developed for each of them. Also this in depth case study has identified a number of benefits of WBL for the different stakeholders of the selected programmes in the disciplines of Computing, Engineering and IS. These benefits provide clear drivers and motivation for the stakeholders to engage in WBL. Thirdly, each of the embedded units within the case study contributed as original knowledge too. Each of these embedded units represents a separate WBL programme and an analysis was performed to highlight the key strengths of each of these programmes and their main deficiencies. This should help aid their future development and pinpoint the main areas for further improvement.

9. Research Evaluation and Reflection

9.1 Introduction

This chapter presents an overall evaluation of the research in terms of conceptual, logistical and administrative perspectives. This chapter reflects on the adopted research approach and techniques and evaluates what worked well, what could have been improved and lessons learnt from the process. Then strengths and limitations of this study are also identified.

9.2 Reflection of the Study

The effectiveness of delivery of WBL programmes was studied using case study research methodology. Five WBL programmes have been selected from the FEE at Northumbria University as five embedded units within the case study methodology and mixed method research technique was used for data collection, analysis and cross unit analysis. The data collection and analysis phases included the following activities:

- initial orientation in the way of discussions with supervisors, PLs and important and relevant personnel in delivery of WBL in the university
- preparing the questionnaires (both MCQ type online questionnaires and semi-structured interview questionnaires) based on the findings of initial orientation
- piloting the questionnaires for reliability
- deciding upon the sample size
- identifying the appropriate candidates for interviews and online survey, contacting, and convincing them
- attending training on surveying software called ‘Snap’
- hosting the online questionnaires on the university ‘Snap’ server
- inviting all students of five WBL programmes from FEE to participate in the survey
- downloading the responses received on email from ‘Snap’ server and sorting them out using ‘Snap’ features
- attending training on statistical analysis software called ‘SPSS’
- exporting all responses from ‘Snap’ to ‘SPSS’ statistical software for analysis
- reserving times and dates for interviews
- booking interview rooms
- installing and ensuring reliability of technology for interviews (video online and recording equipment),

- maintaining the flow of interview without detracting and disturbing the interviewees
- transcribing of the recorded interviews
- re-confirming (member checking) the transcribed interviews with the interviewees
- attending training on qualitative analysis software called ‘NVivo’
- entering the transcribed interview data into NVivo software
- qualitative analysis using ‘constant comparative analysis’ technique
- quantitative analysis using four different statistical analysis techniques
- triangulation of quantitative outputs against qualitative outputs
- triangulation of outputs against literature and current WBL practice

It was a significant challenge in terms of time, effort, motivation, commitment and maintaining personal relationships with survey participants and interviewees especially being an international student. The online questionnaires were administered over a period of four months as the initially planned two months’ duration was not enough to obtain a sufficient number of responses. The researcher had to send second and third chase up letters to students through PLs which resulted in accumulating reasonable response rates of 35-40% in both u/g and p/g categories.

The PhD was split between Northumbria University and a University in Sri Lanka (Sri Lanka Institute of Information Technology) from December 2011 from where the balance analysis and thesis write-up was carried out distantly with the condition to attend the final viva in 2013 again at Northumbria University. Keeping this in mind, the initial and major data collection through online questionnaires and interviews was completed by July 2011. Also the quantitative and qualitative data were prepared to be analysed in SPSS and NVivo software tools. Then by the time of leaving the UK what left to be done was analysing them using mixed methods and triangulate with already defined variables as well as what is emerging as new categories and themes. There was a brief second phase of data collection before end of November 2011 especially to elaborate findings from student questionnaires in a way of representative student interviews. The researcher targeted 11 students to cover 5 programmes (3 students from ILM and Engineering, 2 students from ICT and RM and one from BSc) and also to interview the most relevant officer from each to cover university support services like WRLS, WBL administration at Faculty of EE, IT services, library, student union, and LTech. The findings formulated two sets of recommendations under each theme/subtheme and for each of the stakeholders separately.

According to the paper published on ‘Case Study Evaluations’ (GAO, 1990), there is a check list for case study research evaluation which should cover aspects like whether the research approach has been appropriate, what worked well, what could have been done better and looking back is there anything that would have changed and if so why?

The strengths and weaknesses of the case study as identified by Flyvbjerg (2011) are shown below in Table 9.1:

Case Study

Table 9.1 Case study Method: Strengths Vs Weaknesses (Source: Flyvbjerg, 2011)

Strengths	Weaknesses
• Dept	• Selection bias may override or understate relationships
• High conceptual validity	• Weak understanding of occurrence in population of phenomena under study
• Understanding of Context and process	• Statistical significance often unknown or unclear
• Understanding of what causes a phenomenon, linking causes and outcomes	
• Fostering new hypotheses and new research question	

The author mentioned in chapter 3 above that the research strategies can be used with any of the research/philosophical paradigms. For example, a case study research strategy can be positivist, critical or interpretive. Various research strategies were considered before a case study approach within an interpretive research paradigm was selected for this study as it enables the researcher to conduct an in-depth and extensive research of the online WBL programmes within the Faculty of EE in Northumbria University. As said by Benbasat, Goldstein et al. (1987), an interpretive case study approach is considered as a well established method to study IS data and analysis of data. In the view point of Hartley (2004) a case study research is a detailed investigation with the data collected over a period of time within their context. This is very suited to the research questions that require detailed understanding of processes because of their rich information context. This research study has multiple programmes and sources of data collection to understand online WBL programmes in HE context. According to Yin (2009) a case study research includes both single and multiple case studies. The author has taken advantage of using multiple embedded units of case study and multiple sources for data collection as the conclusion arising from such an approach is more powerful than those coming from a single source. The researcher has very meticulously conducted this research study taking into account its research and academic value who has used semi-structured

interviews as the main data source and online survey questionnaire data as secondary data source with the purpose of generating rich information and revealing the multiple aspects about the online WBL programmes in HE context. Considering the fixed time period of the PhD study, the case study approach within one institution is more suitable and practical. Another advantage in view of Hartley (2004) of case study approach within one institution is that it assists the researcher in a better understanding of the people and processes within the research domain and the information obtained can be utilized to develop a theoretical proposition as in this research study of how these behaviours and processes are affected by and affected the online WBL programmes at FEE in Northumbria university context. The findings of this research study cannot be generalized but, it can be utilized by other researchers to understand WBL processes, especially in HEI's context which uses online delivery of content as the main delivery format and some blended learning as well within the disciplines of Computing, Engineering and IS.

The major findings that emerged from the data in terms of the following themes and sub themes were encapsulated into three major categories: quality, access and support.

1. Use of Technology in Learning
 - a. Quality of Online Content
 - b. Use of Virtual Learning Environments (VLEs)
 - c. Equality of Online WBL Standards across the Board
2. Tailoring of Learning Contracts
3. Student Isolation
4. Effectiveness of Delivery Mode
5. Accreditation of Prior Learning (APL)
6. University Support
7. Employer Support
8. Professional Body Support

9.3 Strengths of the Study

There were a number of strengths associated with the study as follows:

1. In-depth, rich narrative data from case study methodology allows accurate, reasonable and reliable outcomes.
2. Use of mixed methods with both qualitative and quantitative data allows cross validation of data for accuracy.
3. Triangulation analysis provides cross validation of outputs coming from both qualitative and quantitative analyses as well as from amongst different quantitative statistical analysis techniques.

4. Selected variety of disciplines of Computing, Engineering and IS gives a good distribution of industries for WBL.
5. Both p/g and u/g levels of students, private sector and public sector employers, and use of face-to-face, DE, OL methods in all five programmes being considered for delivery of WBL gives depth and encompasses the full range of online DE WBL provision across the selected disciplines.
6. Researcher's own experience in DE/OL areas added value to the research in terms of making it easy to understand the online delivery context and the gaps from best practices during all phases of study from data collection through analysis to thesis writing.

9.4 *Limitations of the Study*

Limitations of the study were identified as

1. A larger response rate for student questionnaires would yield more comprehensive data. However, the methodology described above was employed to enable conclusions to be drawn from the available data.
2. As some of the programmes had been started only recently (at the time of data collection), and also online WBL was a novel mode of learning for some students as well as for other stakeholders, the experience was limited.
3. This study is confined only to students from one or two employers (Eg: Assistant Librarians from universities/colleges, Engineers from private companies, Records Managers from Archives and IT Managers from private sector companies) as opposed to students from many employers in the banking, health or even education sector which also narrows down the outcomes to a particular subset of WBL.
4. In the survey strategy, there is a concern for representative sampling, so that generalizations can be made to a known population. The selected five programmes from different disciplines had student numbers ranging from 14-76 and the response rates were ranging from 27.5% - 47.4% which could have an impact for the results.
5. The other problem with surveys is the 'demand' made on a respondent is typically very small in terms of time and effort. The low demands that surveys make on respondents constitute another weakness as to how much trust can be put on the 'chance encounter' comments made to a stranger, or to a piece of paper? (Robson, 1993 , 4).
6. The online questionnaire was deployed on one of the university 'Snap' servers which was difficult to access by some student participants from outside through DTA due to firstly incompatibilities between their PCs and the remote access server in the

university (DTA) and secondly restrictions from their company network firewalls to download remote access software called 'Citrix'. Subsequently, the researcher had to send a MS Word version of the questionnaire to those participants on email as a result of which some of the participants' identities were revealed.

7. Similar to any other surveys, receiving responses from participants was a challenge until second and third reminders have been sent. It was also difficult to contact and make appointments with interviewees for interviews due to interviewees' other commitments. Once the interview was conducted, the transcribing which took a lot of time was followed. The re-confirmation of the transcribed material for final consent from the interviewees again took a considerable time.
8. The researcher's circumstances were changed from on-campus status to distance status and had to continue with the analysis and thesis write-up part from home in Sri Lanka. This had a significant impact where the researcher could experience the real distance students' environment as to how difficult it is to manage a PhD research from distance. For example, the difference between face-to-face meetings and online 'Skype' meetings with supervisors, the absence of that research environment in the university with peer researchers, difficulties faced to access SPSS, NVivo, EndNote type of software through DTA, when there are 'burning' questions which need instant answers had to be postponed until a response comes on email which was again affected by time difference between countries as well, and difficulties to access to library resources distantly having to wait for postage time back and forth and cost and effort for posting.

Under the given circumstances the research was carried out satisfactorily and to a high standard. The limitations identified above would have been difficult to address during the current study but the researcher suggests that a future study with a number of researchers would have yielded more survey data from a larger number of WBL programmes from several universities across the spectrum of different WBL practices would have allowed richer and a greater breadth and depth of data for generalisations of the outcomes for the entire WBL community. However this was not possible within the scope and constraints of the current study.

9.5 Conclusion

This chapter presents the overall evaluation of the research in terms of conceptual, logistical and administrative perspective. It starts with a reflection on the whole study to evaluate whether the research approach has been appropriate, what worked well, what

could have been improved upon and the reasons behind this. The chapter also identifies the strengths of the study which paved the way for an original and strong contribution to knowledge. Finally, the limitations of the study are explored and how addressing these could lead to further work in this area.

10. Final Conclusions and Future Work

10.1 Introduction

This chapter presents recommendations for future work that can build on this current case study on online WBL across the disciplines of Computing, Engineering and IS at Northumbria University. It also outlines the main conclusions from this study, the future work as a follow up of this research and final conclusions of the study.

10.2 Future Work

A key recommendation for future work is to develop and implement a toolkit that incorporates the concept of the four pillar model and through this consideration of the full range of stakeholders in the WBL process. This should reap benefits for the four key stakeholder types identified in this model and should initially be applied to the WBL programmes used in the current study which spans through the disciplines of Computing, Engineering and IS. The rationale for this is that the current study has used the concept of the four pillars of stakeholders in the design, implementation and analysis of the research and this has proved helpful in identifying key elements of the study and how this applies to each of the stakeholder groups. The model has also proved effective in providing a framework and scope for the participants for the study and ensuring the case study involved input from the wider set of stakeholders.

The JISC funded Lifelong Learning and Workforce Development Programme launched a toolkit (Toolkit, 2011) to support the HE/FE sectors in enhancing WBL provision. Institutions are able to use this WBL maturity Toolkit to:

- Assess their current performance in WBL
- Identify a vision for WBL
- Identify the “enablers” and “barriers” to achieving the vision
- Develop recommendations for actions and change management

One future line of work would be to adapt this toolkit to consider the four pillar model and validate that revised toolkit with a set of stakeholders. It would be ideal if the same set of stakeholders from this case study could be used to validate this modified toolkit as it is their own inputs which have resulted in these recommendations for future work. However it is doubtful whether this would be possible as some of the students are likely to have completed their studies when this study reaches its validation stage and secondly their identity was anonymous. It is envisaged that the PLs will be able to use another set of students for validation. It would be ideal if all PLs as ‘key informants’ take

the lead role in this validation process using sufficient amount of stakeholders including students, tutors, representatives from the professional bodies and employers. A key aspect that has emerged from this case study and that is likely to align with the use of this toolkit is the importance of the support and motivation from the top management of the university for stakeholders in order to improve the current situation of online WBL delivery.

10.2.1 Validation Process

The online WBL delivery process has several stages as shown in Figure 8.5 (Chapter 8) where different levels of inputs from different stakeholders could add value to the entire process. In this context, each of the stakeholders should be involved in the validation process where different criteria can be applied to different stakeholders in the Toolkit.

The main areas of focus in the Toolkit should be:

1. Institutional readiness
2. Faculty/Department readiness
3. Programme design and Accreditation by the PB
4. Programme delivery and Assessment
5. Partnership engagement
6. The learner experience
7. Effective, usable, accessible technologies
8. The employer support and so on

There should be a set of criteria under each of the focus areas which would be derived from this research. The research questions or derived sub questions under each of the above areas form the basis for a self assessment. Then guidelines emerge based on the outputs from this self assessment and based on the research findings and best practices from elsewhere.

A sample toolkit has been provided from the literature which considers each stakeholder context discussed in this study as a guideline or a user manual in order to maintain equal standards among different WBL environments. This is discussed briefly in section 8.5.3 of Chapter 8 but is further elaborated in Appendix XVI.

In addition, it is necessary to implement the recommendations and best practices made through this study which have been emerged through stakeholders' feedback in the particular WBL programmes within the FEE appropriately. In that way, the efforts and contributions made towards this study by the researcher, participants and the university would be justified.

It is also worth exploring the main themes emerged from this study in two aspects: by taking a similar online WBL provision at another institution into consideration for a study and see if similar themes emerge; by taking a contrasting set of disciplines as opposed to Computing, Engineering and IS and see how that works.

It might also be worth a future study looking at how this work might be used in the context of the emerging world of MOOCs in the sense that full programme content is online which is comprehensive enough to obtain a HE qualification without much online support from the academics. However, this type of setup cannot be totally considered as WBL due to the fact that content could be focused on a particular academic qualification without considering much tailoring of work activities on individual basis.

10.3 Final Conclusions

Gaining a deeper understanding of the effectiveness of WBL programmes can contribute to the development of this field and this has formed the basis for the current study. The research was aimed at conducting an in-depth study of WBL programmes across the disciplines of Computing, Engineering and IS offered by the FEE at Northumbria University. The pilot study and the literature review indicated that the current process does not involve all stakeholders formally who can provide inputs to make the delivery of WBL programmes richer. In particular, although the learner and the academic institution as stakeholders can be seen commonly, the inclusion of the employer and the external context was rare apart from existence of some anecdotal evidences. In order to address this research problem, having explored all potential research methodologies, methods, typologies and paradigms, the case study research methodology with mixed method research within the interpretivist research paradigm were selected as most appropriate. Mixed methods allowed using of both qualitative data (through interviews with all stakeholders and related documentation) as well as quantitative data (through online questionnaires for students using Snap surveying software) that gave both depth and width of information for the analysis. Qualitative analysis was carried out using constant comparative analysis technique with the help of NVivo software. Quantitative analysis was carried out using frequency analysis, factor analysis, Spearman-Brown correlations and CART analysis techniques with the help of SPSS software. Triangulation was used for verification and cross validation of both types of data which at the end showed complementary to each other. Accordingly, in addition to the traditional learner-tutor WBL stakeholder model, the employer and the external context (the PB in this study) have been considered formally in a Four-Pillar model of delivery of WBL. The main delivery medium for the selected programmes in

the case study as five embedded units is online with some face to face components which makes it blended learning which encompasses a range of DE WBL provision from that fully individualized to the learner through to a DE programme with a set diet of modules where the individualization occurs mainly through the assessment processes and final BSc/MSc project.

The proposed four-pillar model which includes learner, university, workplace and PB is able to improve the quality of delivery of online WBL programmes significantly with the increased collaborations among all of them. In this way the students can be assured a guaranteed support from all other stakeholders, the university is aware of employers' needs, the employers are ensured of RoI and the PB can streamline their accreditation mechanisms well in advance.

The original contribution to knowledge and the significance of this study can be seen in three different areas. Firstly, eight main themes and three subthemes have emerged from the data analysis of this case study. These themes and sub themes were consolidated through triangulation of the qualitative and quantitative outcomes. They illustrate the key drivers and factors underpinning the effectiveness of WBL in the selected case study and have been used to classify the main strengths and issues of WBL that have emerged from the data and develop a set of recommendations to address the main key issues. For example, 'Accreditation of Prior Learning' and 'Tailoring of Learning Contracts' emerged as key attractions for students to embark on WBL programmes. The need for the use of technology in learning was highlighted by students to support the distance delivery of content, communications and assessments, whilst academics came out with the issues and challenges which prevented them from being able to use technology effectively. Thus one of the key recommendations arising from this study is the need to provide assistance and support to academics to engage with technology in learning to support WBL. 'Student isolation' was found to be an issue in some disciplines where mentor and peer support cannot be facilitated and thus developing approaches that reduce student isolation is another key recommendation. One final example is that a majority of students prefer 'blended learning' where distance online learning is combined with some face to face components compared to purely distance online learning. This is a challenge particularly where students are dispersed over a large geographical area.

Secondly this research study has considered the range of key stakeholder groups: student, employer, academic and professional body, and their contribution to the effectiveness of WBL programmes. This consideration has highlighted the specific impact

they have on the effectiveness of WBL. For example employers' support was found to be particularly useful for the development of learning contracts and for onsite mentoring support during the lifetime of the students' studies. Professional bodies contribute through the process of accreditation of WBL programmes/qualifications for students' professional registration. In this study this proved to be a key motivational factor for the students to embark on WBL. A four pillar model has been constructed to illustrate consideration of the range of stakeholders and this has been applied to two existing WBL frameworks to show how such consideration might be applied in practice. In the first example, the researcher has taken an existing approach to online WBL course design, development and delivery practice and adapted it to include consideration of the range of stakeholders at appropriate times in the process to strengthen the WBL experience. In a second example, the researcher has taken an existing WBL maturity toolkit and shown how it could be adapted to include consideration and input from the full range of stakeholders on the readiness to engage in WBL. The study provides a set of key recommendations separately for each pillar of stakeholders which should enhance the effectiveness of the WBL provision.

The final contribution to knowledge that emerges from this work is focused on each of the embedded units within the case study. Each of these embedded units represents a separate WBL programme and an analysis was performed to highlight the key strengths of each of these programmes and their main deficiencies. For example, the MSc Professional Engineering programme uses 100% tailoring of workplace projects in student learning contracts which benefit the employers. The academics' role is primarily centered on guiding those students to document the learning outcomes from those workplace projects against their individualised programme learning outcomes. In order to support the students better, students felt that academics could upload online content for the general un-tailored modules like research methodologies which was found new and difficult by engineering students. In contrast, the MSc Information and Library Management programme takes a more generic approach to its learning content and has minimal tailoring. The students and employers benefit from application of this learning content to their own environment through assignments and the final MSc project. One way of improving the portion of tailoring in the programme content in this programme is categorizing the broad discipline into narrowed areas within the main domain and tailor the modules further down accordingly so that groups of students could have option of choosing those modules considering the higher student numbers as opposed to the

engineering programme. This analysis should help their future development and pinpoints the main areas for further improvement.

The recommendations emerged as the outcome of the current study should be further validated as a further study and include in a Toolkit as described in Sections 8.5.3, 10.2 and Appendix XVI. Also, the key themes emerged can be tested on one hand in a similar online WBL provision at another institution to see if similar themes emerge therein too. On the other hand, taking a contrasting set of disciplines to see how that works is another possible future study. In addition, it might be worth a study looking at how this work might be used in the context of the emerging world of MOOCs considering the online delivery context of the researched programmes.

The rapid development of ICT in the 21st century offers a successful means to address most of the voids experienced during early phases of distance WBL but the pace of professional development of learners and academics in these technologies is much slower and thus there still remain a number of challenges in exploiting this technology to its full potential. The delivery of WBL programmes by HEIs to employees is fast capturing its market in the UK, North America and Australia inter alia the current economic recession has become one of the main reasons. However, the concept is yet to be practiced widely in other parts of the world.

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Appendices

Appendix I – Interview Questions for Programme Leaders/Tutors

Demographics:

- A. Name:
- B. Job Title:
- C. Role in the Online / Distance Work-based Learning programme:
- D. Subject area / Module undertaken in Online / Distance Work-based Learning:
- E. Years of Experience in delivering Online / Distance Work-based Learning:
- F. Area of Expertise in Online / Distance Work-based Learning: (Pl tick one or more options with an X mark in the box)

- i. Course Design
- ii. Tutoring and Mentoring
- iii. Programme Administration
- iv. Education Technology
- v. Instructional Design
- vi. Educational Management

Questions:

Your own views on Online /Distance/WBL:

1. What is your involvement with Online/Distance Work-based Learning as selected above F?
2. What are your own experiences of being an Online / Distance Work-based learner?
3. What do you see as the advantages of Online / Distance Work-based Learning when compared with campus learning?
4. What do you see as the disadvantages of Online / Distance Work-based Learning when compared with campus learning?
5. What is your experience of adopting APEL / APL in WBL?
6. What do you think about the concept of tailoring curricula to an individual student?

Programme development, delivery and assessment:

7. How confident are you in using the ELP in tutoring, content development and assessments on your programme?

8. What do you think about quality of the online study materials of your programme in terms of relevancy, interactivity and currency on Northumbria ELP?
9. What issues exist, if any, to you when working with the ELP in terms of content, communication and assessments?
10. What do you think about the IT support you get to assist you when faced with technical problems in running your online course?
11. What is your opinion about the level of interactivity (low, medium, high) in terms of inclusion of multi-media elements (Eg: chats, discussions, quizzes, animations, graphics, audio and video clips, simulations, illustrations, diagrams etc.) in online study materials of your programme on Northumbria ELP?
12. How can elements of a course that would be delivered practically in a face to face setting be transferred to an Online / Distance Work-based Learning setting? Any examples from your programme/module?
13. Is plagiarism an issue for Online / Distance Work-based Learning, if so why and how can it be controlled?

Management support and general perceptions:

14. How well does the Northumbria University support development of Online / Distance Work-based Learning programmes? What else is needed?
15. Do you believe that qualifications obtained from distance / online courses have the same level of acceptance or recognition from the employers?
16. What are the main issues/problems for Online / Distance Work-based Learning delivery of programmes?
17. Do you think that there is a mechanism in place in the University for the retention of Online / Distance Work-based Learning students?
18. What are your views about future prospects for Online / Distance Work-based Learning in the UK?
19. Whether you have had any communication/contact with the WBL students' employer/s or mentors at work place with regard to the progress of the student or any curriculum related matter?

Appendix II – Interview Questions for Employers

Demographics:

- A. Name (Optional):
- B. Company/Organisation (Optional):
- C. Job Title:
- D. Role in the Online / Distance Work-based Learning programme: Superior/Mentor/Sponsor/Supervisor/other
- E. Years of Experience in association with Online / Distance Work-based Learning:
- G. Number of employees currently following WBL in your company/organisation:
- H. Number of employees already followed/completed WBL in your company/organisation:

Questions:

Your own views on Online/Distance/WBL:

1. What is your involvement with Online / Distance Work-based Learning?
2. Have you ever been an Online / Distance Work-based learner? And if so what are your own experiences?
3. What do you see as the advantages of Online / Distance Work-based Learning when compared with campus face-to-face learning?
4. What do you see as the disadvantages of Online / Distance Work-based Learning when compared with campus face-to-face learning?
5. What is your opinion about adopting Accreditation of Prior Experiential Learning (APEL) / Accreditation of Prior Learning (APL) in WBL? *Explanation about terms APEL/APL, if necessary, will follow at the interview.*
6. What do you think about the concept of tailoring curricula/study programmes to an individual learner?
7. Did you give any inputs to curricula/study programmes of your employee/s?

Employer aspects of WBL:

8. How are you supporting your employee/s to follow university WBL programmes?
 - a. by fully sponsoring course fee
 - b. by partly sponsoring course fee
 - c. by granting loan/s at low interest
 - d. by allocating free hours for studies

- e. by encouraging and guiding
 - f. by providing a mentor at workplace
 - g. Not applicable
 - h. Other
9. How confident are you in supporting/sponsoring your employee/s as to whether once completed, they will remain in your company/organisation? Are there any contractual obligations that they must abide by in terms of remaining with the employer?
 10. Are you aware about quality of the online study materials of your employees' programme in terms of relevancy, interactivity and currency on Northumbria ELP? And if so are they happy about it? Do you take time to talk about it with your employee/s? What are the main issues/problems for interaction with the programmes for your employees?
 11. How satisfied are you with this collaboration with the university? What works well? What doesn't work so well? How could the university help you / your organization in this?
 12. The practical/hands on elements of a programme that would be delivered physically in a face to face setting need to be converted to an Online / Distance Work-based Learning setting? How do you support your employee/s to tackle this situation in their programme/module? Are you happy with the arrangements been made by the university?
 13. Have you had any communications/contact with the university/programme leader/Module tutors with regard to the curriculum/progress of the employee and if so how often?
 14. Do you believe that qualifications/skills/knowledge obtained from distance/online/work-based programmes have the same level of credibility/recognition to your company/organization had they been obtained F2F?
 15. Is your RoI justified in terms of support you provided for the employees?
 16. What are your views about future prospects for Online/Distance Work-based Learning in the UK?

Appendix III – Interview Questions for Representatives of Professional Bodies

Demographics:

- A. Professional Body:
- B. Name of the officer (Optional):
- C. Job Title (Optional):
- D. Role in the Online / Distance Work-based Learning programme:
- E. Years of Experience in association with Online / Distance Work-based Learning:
- F. Number of members already benefitted in upgrading of professional membership status through WBL qualifications:

Questions:

Your own /your organisation's views on Online/Distance/WBL:

1. What is your involvement with accreditation of Work-based Learning qualifications for professional membership of your organisation?
2. Personally, have you ever been an Online / Distance Work-based learner? And if so what are your own experiences?
3. What do you see as the advantages of accreditation of Work-based Learning qualifications for professional membership status?
4. What do you see as the disadvantages of accreditation of Work-based Learning qualifications for professional membership status?
5. What is your opinion about adopting Accreditation of Prior Experiential Learning (APEL) / Accreditation of Prior Learning (APL) in WBL? *Explanation about terms APEL/APL, if necessary, will follow at the interview.*
6. What do you think about the concept of tailoring curricula/study programmes to an individual learner? Can this be accredited/standardized by your professional organization?
7. What are/were the inputs given so far by your organization to support this initiative?

Employer aspect of WBL:

8. How are you supporting/influencing employers to encourage their employees to follow university WBL programmes?
9. Are you aware about quality of the online study materials of university WBL programmes in terms of relevancy, interactivity and currency? And if so are you happy about it? Do you take time to talk about it with the universities/employers/employees?
10. How satisfied are you with this collaboration with the employers and universities? What works well? What doesn't work so well? How could the universities help employers/employees/Professional Bodies in this?
11. Have you had any communications/contacts with the universities/employers' association/your own membership with regard to this initiative?
12. Do you believe that qualifications/skills/knowledge obtained from distance/online/work-based programmes have the same level of credibility/recognition compared to the qualifications obtained on face-to-face programmes?
13. What are your views about future prospects for Online/Distance Work-based Learning in the UK?
14. How do you see Professional Bodies working in a Global context?
15. Are there any plans to expand this initiative beyond your professional organization to have links with similar overseas associations so that professionals from other countries could get the benefit of WBL towards membership upgrade in their own association?

Appendix IV – Interview Questions for Members of Support Services of the University

Demographics:

- A. Name:
- B. Job Title:
- C. Role in the Work-based Learning (WBL) programme:
- D. Years of Experience in your role:

Questions:

Your own views on WBL:

1. What is your involvement with WBL?
2. Have you ever been a Work-based learner and if so what were your experiences?
3. What do you see as the advantages of WBL when compared with campus learning?
4. What do you see as the disadvantages of WBL when compared with campus learning?
5. What is your experience of adopting APEL / APL in WBL?
APEL – Accreditation of Prior Experiential Learning
APL - Accreditation of Prior Learning
6. What do you think about the concept of tailoring curricula to an individual student?

Programme development, delivery and assessment:

7. Is the use of eLP a requirement of your job? If so, how confident are you in using the eLP in your role on WBL programme?
8. What do you think about quality of the online study materials in terms of relevancy, interactivity and currency on Northumbria eLP?
9. What issues exist, if any, to you when working with the eLP?
10. Do you think that plagiarism is an issue for WBL, if so why and how can it be controlled?

Management support and general perceptions:

11. What do you think about the support you offer to assist tutors/students when faced with problems in running their WBL programmes?
12. How well does the Northumbria University support development of WBL programmes? What else is needed?
13. Do you believe that qualifications obtained from WBL programmes have the same level of acceptance or recognition from the employers?
14. What are the main issues/problems for WBL delivery of programmes?
15. How do you communicate with different stakeholders? Any suggestions for improvements?
16. Do you think that there is a mechanism in place in the University for the retention of WBL students?
17. What are your views about future prospects for WBL in the UK?

Appendix V – Interview Questions for Students

Demographics:

- A. Name:
- B. Work Based Learning (WBL) programme:
- C. Your Employment:

Questions:

Your own views on WBL:

1. What was the main reason for you to take up WBL?
2. What are your own experiences of being a Work-based learner?
3. What do you see as the advantages of Work-based Learning when compared with campus learning?
4. What do you see as the disadvantages of Work-based Learning when compared with campus learning?
5. Did the university consider APEL / APL in your enrolment for WBL programme?
What's your view on that?
APEL – Accreditation of Prior Experiential Learning
APL - Accreditation of Prior Learning
6. What do you think about the concept of tailoring curricula to an individual student?
Did you have any tailoring in your programme?

Quality of Learning Related:

7. How confident are you in using the eLP in your studies?
8. What do you think about quality of the study materials in terms of relevancy, interactivity and currency on Northumbria eLP? What else is needed?
9. What issues exist, if any, to you when working with the eLP?
10. Do you see the issue of plagiarism differently had you been followed this programme face-to-face but not on WBL?
11. Do you believe that qualifications obtained from WBL courses have the same level of acceptance or recognition from the employers?

Support and general perceptions:

12. What do you think about the support you get from following university services:

- a. IT
- b. Library
- c. Student Union
- d. Finance

13. What do you think about the support you get from

- a. programme leaders
 - b. tutors
 - c. peer students
 - d. your employer
 - e. mentor at work place
 - f. professional body
- regarding your WBL programme? What else is needed?

14. How do you communicate with your tutors/programme leaders?

15. How this qualification will benefit in your career?

16. What are your views about future prospects for WBL in the UK?

Appendix VI – Some NVivo Screens

The screenshot displays the NVivo interface for a project named 'PhD.mvp'. The 'Sources' pane on the left shows a hierarchical tree of data sources, with 'Tutor Interviews' selected under the 'Internals' folder. The main window shows a table of data for 'Tutor Interviews' with columns for Name, Nodes, References, Created On, Created By, Modified On, and Modified By. The table lists 10 individual interview sources, each with associated node and reference counts and creation/modification dates and users.

Name	Nodes	References	Created On	Created By	Modified On	Modified By
answers_Tan	20	20	17/02/2011 11:00	LCK	17/05/2011 16:35	LCK
answers_Susannah	21	23	19/01/2011 10:25	LCK	19/01/2011 18:17	LCK
answers_Seana	19	19	25/02/2011 14:24	LCK	17/05/2011 14:46	LCK
answers_Matt	20	25	19/01/2011 10:24	LCK	19/01/2011 15:58	LCK
answers_Julie	21	24	19/01/2011 14:52	LCK	19/01/2011 18:16	LCK
answers_Jackie	21	22	21/01/2011 14:21	LCK	21/01/2011 14:37	LCK
answers_Fouad	21	23	21/01/2011 14:20	LCK	21/01/2011 14:35	LCK
answers_Ali	20	22	19/01/2011 10:23	LCK	17/05/2011 13:47	LCK

Figure Appendix_VI.0.1 - Nvivo Data Sources

PhD.nvp - NVivo

File Edit View Go Project Links Code Tools Window Help

New [Icons]

Code At [Dropdown] In [Dropdown] [Icons]

Options X

Nodes

- Free Nodes
- Tree Nodes
- Cases
- Relationships
- Matrices
- Search Folders
- All Nodes

Sources

- Nodes
- Sets
- Queries
- Models
- Links
- Classifications
- Folders

Look for: [Text] Search In [Tree Nodes] Find Now Clear

Tree Nodes

Name	Sources	References	Created On	Created By	Modified On	Modified By
answers_employers	0	0	17/05/2011 18:09	LCK	17/05/2011 18:09	LCK
PL_Answers	0	0	21/01/2011 16:42	LCK	21/01/2011 16:42	LCK
Demographics~	4	4	21/01/2011 16:42	LCK	17/05/2011 14:38	LCK
Question 1	4	4	21/01/2011 16:42	LCK	17/05/2011 14:38	LCK
Question 10	4	4	21/01/2011 16:42	LCK	17/05/2011 14:38	LCK
Question 11	4	4	21/01/2011 16:42	LCK	17/05/2011 14:38	LCK
Question 12	4	4	21/01/2011 16:42	LCK	17/05/2011 14:38	LCK
Question 13	4	4	21/01/2011 16:42	LCK	17/05/2011 14:38	LCK
Question 14	4	4	21/01/2011 16:42	LCK	17/05/2011 14:38	LCK
Question 15	4	4	21/01/2011 16:42	LCK	17/05/2011 14:38	LCK
Question 16	4	4	21/01/2011 16:42	LCK	17/05/2011 14:38	LCK
Question 17	4	4	21/01/2011 16:42	LCK	17/05/2011 14:38	LCK
Question 18	4	4	21/01/2011 16:42	LCK	17/05/2011 14:38	LCK
Question 19	4	4	21/01/2011 16:42	LCK	17/05/2011 14:38	LCK
Question 2	4	4	21/01/2011 16:42	LCK	17/05/2011 14:38	LCK
Question 3	4	4	21/01/2011 16:42	LCK	17/05/2011 14:38	LCK
Question 4	4	4	21/01/2011 16:42	LCK	17/05/2011 14:38	LCK
Question 5	4	4	21/01/2011 16:42	LCK	17/05/2011 14:38	LCK
Question 6	4	4	21/01/2011 16:42	LCK	17/05/2011 14:38	LCK
Question 7	4	4	21/01/2011 16:42	LCK	17/05/2011 14:38	LCK
Question 8	4	4	21/01/2011 16:42	LCK	17/05/2011 14:38	LCK
Question 9	4	4	21/01/2011 16:42	LCK	17/05/2011 14:38	LCK
Prof_Body_answers	0	0	17/05/2011 17:39	LCK	17/05/2011 17:39	LCK
Tech Quotes	3	23	17/02/2011 12:15	LCK	17/02/2011 14:47	LCK
Tech_Quotes_Tutors	6	21	18/02/2011 10:24	LCK	18/02/2011 11:27	LCK
Tutor_answers	0	0	19/01/2011 18:18	LCK	19/01/2011 18:18	LCK
Demographics~	8	8	19/01/2011 18:18	LCK	17/05/2011 16:35	LCK
Question 1	8	8	19/01/2011 18:18	LCK	17/05/2011 16:35	LCK
Question 10	8	8	19/01/2011 18:18	LCK	17/05/2011 16:35	LCK
Question 11	8	8	19/01/2011 18:18	LCK	17/05/2011 16:35	LCK
Question 12	8	8	19/01/2011 18:18	LCK	17/05/2011 16:35	LCK
Question 13	8	8	19/01/2011 18:18	LCK	17/05/2011 16:35	LCK
Question 14	8	8	19/01/2011 18:18	LCK	17/05/2011 16:35	LCK
Question 15	8	8	19/01/2011 18:18	LCK	17/05/2011 16:35	LCK
Question 16	8	8	19/01/2011 18:18	LCK	17/05/2011 16:35	LCK
Question 17	8	8	19/01/2011 18:18	LCK	17/05/2011 16:35	LCK
Question 18	8	8	19/01/2011 18:18	LCK	17/05/2011 16:35	LCK

LCK | 79 Items

Figure Appendix_VI.0.2 - Nvivo Nodes

The screenshot shows the NVivo software interface with a search for 'Tutor Interviews'. The search results table is as follows:

Name	Nodes	References	Created On	Created By	Modified On	Modified By
answers_Tan	20	20	17/02/2011 11:00	LCK	17/05/2011 16:35	LCK
answers_Susannah	21	23	19/01/2011 10:25	LCK	19/01/2011 18:17	LCK
answers_Seán	19	19	25/02/2011 14:24	LCK	17/05/2011 14:46	LCK
answers_Matt	20	25	19/01/2011 10:24	LCK	19/01/2011 15:58	LCK

The detailed view of the source 'answers_Susannah' shows the following content:

Question 1

1. What is your involvement with Online / Distance Work-based Learning as selected above F?

Module tutor - BSc and MSc

Programme leader - BSc

Was involved in course design for both modules in two programmes and also applied educational technology concepts in my tutoring, course design and programme administration. Do mentoring for w/g programme. When developing course material I sought for assistance from LTech to develop couple of audio clips. I did my own video to show how I look like to an overseas student. They also told me about iPadio for video development.

Question 2

2. What are your own experiences of being an Online / Distance Work-based learner?

I'm taking a part-time on campus French Language learning course but due to time constraints I take most of it online because the course materials have been uploaded in the ELP. The support I get from the tutor so far is excellent, helpful and the interactive elements like online tests, audio and video clips using iPadio (not iPadio - I forget the name of the software that was used) (voice was clunky though!) and quizzes make my learning enjoyable and ease the understanding. However, I feel that learning languages online is not 100% successful because the lack of spoken practice unlike in a F2F classroom facility. I need to be able to listen to someone speaking which makes my understanding sharper than reading.

I applied the learning from this course to my students like formative tests so that they

Figure Appendix_VI.0.3 - Nvivo preparation of data for Autocode

Distance / Online Work-based Learning Post Graduate Student Questionnaire

Introduction

Demographic Characteristics

- 1. What is the distance / online work-based learning programme you are following?**
 - MSc in Professional Engineering*
 - MA/MSc in Information and Library Management*
 - MSc in Records Management*
 - MSc in Information Technology*

- 2. What is your age?**
 - 21 - 30*
 - 31 - 40*
 - 41 - 50*
 - 51 - 60*
 - 61 - 70*
 - Above 70*

- 3. What is your gender?**
 - Male*
 - Female*

- 4. What is your highest Educational qualification?**
 - Bachelors degree relevant to my current MSc*
 - Bachelors degree not relevant to my current MSc*
 - Post Graduate degree relevant to my current MSc*
 - Post Graduate degree not relevant to my current MSc*
 - Other (Professional) (Please specify)*

- 5. What is your main employment?**
 - Mechanical Engineer*
 - Design Engineer*
 - Process/Manufacturing Engineer*
 - Electrical/Electronic Engineer*
 - Communication Engineer*
 - Manager*
 - Librarian*
 - Assistant Librarian*
 - Library Assistant*
 - Information Specialist*
 - Information Manager*
 - Information Officer*
 - Information Assistant*
 - Records Manager*

- IT Manager*
 - IT Officer*
 - IT Specialist*
 - System Analyst*
 - Programmer*
 - Network Administrator*
 - Database Administrator*
 - Other (Please specify)*
-
-

6. On average, how many hours a week do you spend on your main employment?

- 0 - 10 hrs*
- 10 - 20 hrs*
- 21 - 30 hrs*
- 31 - 40 hrs*
- 41 - 50 hrs*
- Above 50*

7. Who is sponsoring your studies? You may click more than one answer.

- Yourself*
 - Your Employer*
 - Your Family*
 - A grant / Scholarship*
 - Other (PI specify)*
-
-

8. Where do you usually live?

- North East of England*
- Rest of UK*
- Rest of Europe*
- Rest of World*

9. From where do you access your online programme/s? You may click more than one answer.

- Home*
 - Workplace*
 - Public library*
 - University library*
 - Internet cafe*
 - Other (Neighbour/friend etc) (PI specify)*
-
-

For each of following, please select the appropriate check box / bullet:
SA - if you strongly agree with the statement
A - if you agree with the statement
AV - Average / Neutral
D - if you disagree with the statement
SD - if you strongly disagree with the statement
NA - Not applicable

- 10. The main reasons why you have chosen online work-based learning**
- | | <i>SA</i> | <i>A</i> | <i>AV</i> | <i>D</i> | <i>SD</i> | <i>NA</i> |
|---|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| 10.1 I can learn at my own pace | <input type="checkbox"/> |
| 10.2 I prefer self-learning | <input type="checkbox"/> |
| 10.3 I do not need to go to university for studies | <input type="checkbox"/> |
| 10.4 I can learn anytime when I am free | <input type="checkbox"/> |

Following questions are related to the experience you had so far with learning related features of distance / online work-based learning

About Blackboard E-Learning Portal

- 11. An Induction at the beginning of the programme made me/will make me comfortable using the Blackboard E-Learning Portal (ELP)**
- | | <i>SA</i> | <i>A</i> | <i>AV</i> | <i>D</i> | <i>SD</i> | <i>NA</i> |
|--|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | <input type="checkbox"/> |
- 12. The ELP is very user-friendly**
- | | <i>SA</i> | <i>A</i> | <i>AV</i> | <i>D</i> | <i>SD</i> | <i>NA</i> |
|--|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | <input type="checkbox"/> |
- 13. Online discussions and chat provided in the ELP help me to share different views posted by others, as if I were in the physical classroom**
- | | <i>SA</i> | <i>A</i> | <i>AV</i> | <i>D</i> | <i>SD</i> | <i>NA</i> |
|--|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | <input type="checkbox"/> |
- 14. I still prefer the inclusion of some face to face sessions in the programme because I miss the classroom environment**
- | | <i>SA</i> | <i>A</i> | <i>AV</i> | <i>D</i> | <i>SD</i> | <i>NA</i> |
|--|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | <input type="checkbox"/> |

Support from Programme Leader, Tutors, Mentor, Employer, and University

- 15. The programme leader is very supportive and accommodating**
- | | <i>SA</i> | <i>A</i> | <i>AV</i> | <i>D</i> | <i>SD</i> | <i>NA</i> |
|--|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | <input type="checkbox"/> |

- 16. The feedback I get from my module tutors for queries and submissions is timely and responsive. Please consider the last tutors you have had (upto a maximum of four)**

	SA	A	AV	D	SD	NA
16.1 Tutor 1	<input type="checkbox"/>					
16.2 Tutor 2	<input type="checkbox"/>					
16.3 Tutor 3	<input type="checkbox"/>					
16.4 Tutor 4	<input type="checkbox"/>					

- 17. My module tutor's subject knowledge and expertise to deliver online are of high quality. Please consider the last tutors you have had (upto a maximum of four)**

	SA	A	AV	D	SD	NA
17.1 Tutor 1	<input type="checkbox"/>					
17.2 Tutor 2	<input type="checkbox"/>					
17.3 Tutor 3	<input type="checkbox"/>					
17.4 Tutor 4	<input type="checkbox"/>					

- 18. My mentor at my workplace supports me in my studies (Please mark NA if you do not have a mentor at workplace)**

	SA	A	AV	D	SD	NA
	<input type="checkbox"/>					

- 19. My employer has supported my studies. You may click more than one answer.**

- by fully sponsoring my course fee*
 - by partly sponsoring my course fee*
 - by granting me a loan at low interest*
 - by allocating free hours for studies*
 - by encouraging and guiding me*
 - Not applicable*
 - Other (Please specify)*
-

- 20. The following university services are supportive and responsive**

	SA	A	AV	D	SD	NA
20.1 IT	<input type="checkbox"/>					
20.2 Library	<input type="checkbox"/>					
20.3 Finance	<input type="checkbox"/>					
20.4 Student services	<input type="checkbox"/>					

- 21. There is an effective monitoring mechanism to ensure I progress through my programme in a timely manner**

	SA	A	AV	D	SD	NA
	<input type="checkbox"/>					

Learning materials and interactivity

- 22.** I would like the inclusion of learning elements (Eg: quizzes, animations, graphics, audio and video clips, simulations, illustrations, diagrams etc.) to aid the understanding of subject content

<i>SA</i>	<i>A</i>	<i>AV</i>	<i>D</i>	<i>SD</i>	<i>NA</i>
<input type="checkbox"/>					

- 23.** The quality of learning materials of my programme is very high, relevant, and up-to-date. Please consider the last modules you have had (upto a maximum of four)

	<i>SA</i>	<i>A</i>	<i>AV</i>	<i>D</i>	<i>SD</i>	<i>NA</i>
23.1 Module 1	<input type="checkbox"/>					
23.2 Module 2	<input type="checkbox"/>					
23.3 Module 3	<input type="checkbox"/>					
23.4 Module 4	<input type="checkbox"/>					

- 24.** My curriculum is very relevant to my role, duties and responsibilities at workplace

<i>SA</i>	<i>A</i>	<i>AV</i>	<i>D</i>	<i>SD</i>	<i>NA</i>
<input type="checkbox"/>					

Future benefits

- 25.** After completion of this programme, my professional status should be upgraded and more employment prospects should be opened up

<i>SA</i>	<i>A</i>	<i>AV</i>	<i>D</i>	<i>SD</i>	<i>NA</i>
<input type="checkbox"/>					

- 26.** This programme will help me with my personal development through increased knowledge and skills

<i>SA</i>	<i>A</i>	<i>AV</i>	<i>D</i>	<i>SD</i>	<i>NA</i>
<input type="checkbox"/>					

- 27.** I am likely to continue education in distance / online WBL mode after this programme

<i>SA</i>	<i>A</i>	<i>AV</i>	<i>D</i>	<i>SD</i>	<i>NA</i>
<input type="checkbox"/>					

Distance / Online Work-based Learning specifics

- 28.** It was difficult to adjust to online learning initially

<i>SA</i>	<i>A</i>	<i>AV</i>	<i>D</i>	<i>SD</i>	<i>NA</i>
<input type="checkbox"/>					

- 29.** I have benefited from the Accreditation of Prior Experiential Learning (APEL) as a selection criteria in my enrolment

<i>SA</i>	<i>A</i>	<i>AV</i>	<i>D</i>	<i>SD</i>	<i>NA</i>
<input type="checkbox"/>					

30. I have benefited from the Accreditation of Prior Certified Learning (APCL) as a selection criteria in my enrolment

SA A AV D SD NA

31. Any other comment you want to make about your overall experience so far

32. If you would like to see the summary of results for this survey, please enter your email address here

Thank you very much for your valuable time!

Distance Online Work-based Learning Undergraduate Student Questionnaire

Introduction

Demographic Characteristics

- 1. What is the route of your distance online work-based learning degree programme?**
 - Slow*
 - Regular*

- 2. At what level are you studying on your programme?**
 - Level 5*
 - Level 6 Taught modules*
 - Level 6 Work place project*

- 3. What is your age?**
 - 21 - 30*
 - 31 - 40*
 - 41 - 50*
 - 51 - 60*
 - 61 - 70*
 - Above 70*

- 4. What is your gender?**
 - Male*
 - Female*

- 5. What is your highest Educational qualification to date (e.g. A-Level, Higher Diploma, ACLIP)?**
 - Pl specify below*

- 6. What is your main employment?**
 - Librarian*
 - Assistant Librarian*
 - Library Assistant*
 - Information Specialist*
 - Information Manager*
 - Information Officer*
 - Information Assistant*
 - Records Manager*
 - Bookshop Manager*
 - Other (Please specify)*

7. **On average, how many hours a week do you spend on your main employment?**
- 0 - 10 hrs
 - 10 - 20 hrs
 - 21 - 30 hrs
 - 31 - 40 hrs
 - 41 - 50 hrs
 - Above 50
8. **Who is sponsoring your studies? You may click more than one answer.**
- Yourself
 - Your Employer
 - Your Family
 - A grant / Scholarship
 - Other (PI specify)
-

9. **Where do you usually live?**
- North East of England
 - Rest of UK
 - Rest of Europe
 - Rest of World

10. **From where do you access your online programme/s? You may click more than one answer.**
- Home
 - Workplace
 - Public library
 - University library
 - Internet cafe
 - Other (Neighbour/friend etc) (PI specify)
-

For each of following, please select the appropriate check box / bullet:

SA - if you strongly agree with the statement

A - if you agree with the statement

AV - Average / Neutral

D - if you disagree with the statement

SD - if you strongly disagree with the statement

NA - Not applicable

11. **The main reasons why you have chosen online work-based learning**
- | | SA | A | AV | D | SD | NA |
|--|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| 11.1 I can learn at my own pace | <input type="checkbox"/> |
| 11.2 I prefer self-learning | <input type="checkbox"/> |
| 11.3 I do not need to go to university for studies | <input type="checkbox"/> |
| 11.4 I can learn anytime when I am free | <input type="checkbox"/> |

Following questions are related to the experience you had so far with learning related features of distance / online work-based learning

About Blackboard E-Learning Portal

12. An Induction at the beginning of the programme made me comfortable using the Blackboard E-Learning Portal (ELP)
- | | | | | | |
|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| SA | A | AV | D | SD | NA |
| <input type="checkbox"/> |
13. The ELP is very user-friendly
- | | | | | | |
|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| SA | A | AV | D | SD | NA |
| <input type="checkbox"/> |
14. Online discussions and chat provided in the ELP help me to share different views posted by others, as if I were in the physical classroom
- | | | | | | |
|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| SA | A | AV | D | SD | NA |
| <input type="checkbox"/> |
15. I still prefer the inclusion of some face to face sessions in the programme because I miss the classroom environment
- | | | | | | |
|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| SA | A | AV | D | SD | NA |
| <input type="checkbox"/> |

Support from Programme Leader, Tutors, Mentor, Employer, and University

16. The programme leader is very supportive and accommodating
- | | | | | | |
|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| SA | A | AV | D | SD | NA |
| <input type="checkbox"/> |
17. The feedback I get from my module tutors for queries and submissions is timely and responsive. Please consider the last tutors you have had (upto a maximum of four)
- | | | | | | | |
|--------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | SA | A | AV | D | SD | NA |
| 17.1 Tutor 1 | <input type="checkbox"/> |
| 17.2 Tutor 2 | <input type="checkbox"/> |
| 17.3 Tutor 3 | <input type="checkbox"/> |
| 17.4 Tutor 4 | <input type="checkbox"/> |
18. My module tutor's subject knowledge and expertise to deliver online are of high quality. Please consider the last tutors you have had (upto a maximum of four)
- | | | | | | | |
|--------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | SA | A | AV | D | SD | NA |
| 18.1 Tutor 1 | <input type="checkbox"/> |
| 18.2 Tutor 2 | <input type="checkbox"/> |
| 18.3 Tutor 3 | <input type="checkbox"/> |
| 18.4 Tutor 4 | <input type="checkbox"/> |
19. My mentor at my workplace supports me in my studies (Please mark NA if you do not have a mentor at workplace)
- | | | | | | |
|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| SA | A | AV | D | SD | NA |
| <input type="checkbox"/> |

20. My employer has supported my studies. You may click more than one answer.

- by fully sponsoring my course fee*
 - by partly sponsoring my course fee*
 - by granting me a loan at low interest*
 - by allocating free hours for studies*
 - by encouraging and guiding me*
 - Not applicable*
 - Other (Please specify)*
-

21. The following university services are supportive and responsive

	SA	A	AV	D	SD	NA
21.1 IT	<input type="checkbox"/>					
21.2 Library	<input type="checkbox"/>					
21.3 Finance	<input type="checkbox"/>					
21.4 Student services	<input type="checkbox"/>					

22. Do you feel that the University is concerned when you are in difficulties?

SA	A	AV	D	SD	NA
<input type="checkbox"/>					

Learning materials and interactivity

23. I would like the inclusion of online learning elements as given below to aid the understanding of subject content.

- Online Quizzes*
- Animations*
- Graphics*
- Audio clips*
- Video clips*
- Simulations*
- Illustrations*
- Diagrams*
- Other*

Pl specify below

24. The quality of learning materials of my programme is very high, relevant, and up-to-date. Please consider the last modules you have had (upto a maximum of four)

	SA	A	AV	D	SD	NA
23.1 Module 1	<input type="checkbox"/>					
23.2 Module 2	<input type="checkbox"/>					
23.3 Module 3	<input type="checkbox"/>					
23.4 Module 4	<input type="checkbox"/>					

25. My curriculum is very relevant to my role, duties and responsibilities at workplace

SA	A	AV	D	SD	NA
<input type="checkbox"/>					

Future benefits

- 26.** After completion of this programme, my professional status should be upgraded and more employment prospects should be opened up
- | | | | | | |
|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| SA | A | AV | D | SD | NA |
| <input type="checkbox"/> |
- 27.** This programme will help me with my personal development through increased knowledge and skills
- | | | | | | |
|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| SA | A | AV | D | SD | NA |
| <input type="checkbox"/> |
- 28.** I am likely to continue education in distance / online WBL mode after this programme
- | | | | | | |
|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| SA | A | AV | D | SD | NA |
| <input type="checkbox"/> |

Distance / Online Work-based Learning specifics

- 29.** It was difficult to adjust to online learning initially
- | | | | | | |
|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| SA | A | AV | D | SD | NA |
| <input type="checkbox"/> |
- 30.** I have benefited from the Accreditation of Prior Experiential Learning (APEL) as a selection criteria in my enrolment
- | | | | | | |
|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| SA | A | AV | D | SD | NA |
| <input type="checkbox"/> |
- 31.** I have benefited from the Accreditation of Prior Certified Learning (APCL) as a selection criteria in my enrolment
- | | | | | | |
|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| SA | A | AV | D | SD | NA |
| <input type="checkbox"/> |

32. Any other comment you want to make about your overall experience so far

33. Please provide one word or phrase about what distance learning is to you

34. If you would like to see the summary of results for this survey, please enter your email address here

Thank you very much for your valuable time!

Appendix IX – Information Sheet for Interviewees

**Northumbria University
CEIS Research Ethics Sub-Committee
Information Sheet – F**

Project Title: Effectiveness of Online learning for Work-based learning from the point of view of stakeholders

Name of the Researcher or Project Consultant: Lalith Liyanage

Name of participant:

Participating Organisation:

Project overview:

The aim of the study is to develop a model as a suggested way forward for an online learning environment for work based and distance learners which, takes account of the identified needs of stakeholders such as learners, tutors, workplace mentors/employers and professional regulatory bodies.

Project aims:

The study will aim to find out the perceptions of stakeholders (learners, tutors, work place mentors/employers, professional bodies and relevant administrators of all above) on the effectiveness of WB online learning programmes (OLP) as opposed to traditional OLPs.

The study will examine the perceptions of stakeholders drawn from four contrasting distance/online work-based programmes within the University of Northumbria, three of them are closely linked to professional regulatory bodies which employs a work-place learning model namely the MA/MSc in Information and Library Management, MSc in Professional Engineering and MSc in Records Management. The fourth programme, MSc in Information Technology although not linked directly to a PB, is meant for adult, working, ‘women returners’.

Information required and outline of any potential risks involved:

What I expect from the interview is the participant’s experience of being in the system as a stakeholder and also the views about overall online/distance/work-based learning.

There are no potential risks to the participant.

How the information will be stored and published (if applicable):

The information will be stored securely and analysed and anonymised before publication in the research thesis, appropriate conferences and journals.

Any other information deemed relevant to the project

Nil

Appendix X – Ethical Consent Form for Interviewees

**Northumbria University
CEIS Research Ethics Sub-Committee
CONSENT FORM – C**

Project Title: Effectiveness of Work-based Learning from the point of view of stakeholders

Name of the Researcher or Project Consultant: Lalitha Liyanage

Name of participant: Diana Leigh

Participating Organisation: School of CEIS

I consent to take part in this project.	<input type="checkbox"/>
I have had the project explained to me by the researcher/ consultants and been given an information sheet . I have read and understand the purpose of the study.	<input type="checkbox"/>
I am willing to be interviewed.	<input type="checkbox"/>
I understand and am happy that the discussions I will be involved in may be audio-taped and notes will be taken.	<input type="checkbox"/>
I understand I can withdraw my consent at any time, without giving a reason and without prejudice.	<input type="checkbox"/>
I know that my name and details will be kept confidential and will not appear in any printed documents.	<input type="checkbox"/>
<ul style="list-style-type: none">▪ The tapes and any personal information will be kept secure and confidential. They will be kept by the researcher/project consultants until the end of the project. They will then be disposed of in line with Northumbria University's retention policy.▪ Anonymised summaries (if required) will be produced from the discussions to be used in the project report and in other publications. None of the participants will be identified in the project report or in other publications based on this project. Copies of any reports or publications will be available on request to participants.	
I have been given a copy of this Consent Form.	
Signed:	Date:

Researcher/Project consultant: I confirm that I have explained the project to the participant and have given adequate time to answer any questions concerning it.

Signed:



Date: 31/10/2011

Appendix XI – Cronbach Alpha

Reliability Test

```
/VARIABLES=q2 q3 q4 q5 q6 q8 q10.a_1 q10.a_2 q10.a_3 q10.a_4 q11.a q12.a q13.a  
q14.a q15.a q16.a q16.b q16.c q16.d q17.a q17.b q17.c q17.d q18.a q20.a q20.b  
q20.c q20.d q21.a MSQ22.a q23.a q23.b q23.c q23.d q24.a q25.a q26.a q27.a  
q28.a q29.a q30.a
```

```
q7_1 q7_2 q7_3 q7_4 q7_5 q9_1 q9_2 q9_3 q9_4 q9_5 q19_1 q19_2 q19_3 q19_4  
q19_5 q19_6 q19_7
```

```
/SCALE('ALL VARIABLES') ALL
```

```
/MODEL=ALPHA
```

```
/STATISTICS=DESCRIPTIVE SCALE
```

```
/SUMMARY=TOTAL
```

Reliability

Scale: ALL VARIABLES

Case Processing Summary

		N	%
Cases	Valid	72	100.0
	Excluded ^a	0	.0
	Total	72	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.808	58

Appendix XII – Frequency Analysis

Frequency Analysis

```
FREQUENCIES VARIABLES=q10.a_1 q10.a_2 q10.a_3 q10.a_4 q11.a q12.a q13.a q14.a
q15.a q18.a q19 q20.a q20.b q20.c q20.d q21.a MSQ22.a
q24.a q25.a q26.a q27.a q28.a q29.a q30.a cat16 cat17 ca23
/ORDER=ANALYSIS.
```

Frequencies

		Notes
Output Created		07-Mar-2012 05:45:02
Comments		
Input	Data	C:\Documents and Settings\Administrator\Desktop\finalized06022012\finalized06022012missingzero.sav
	Active Dataset	DataSet1
	File Label	student questionnaire
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data	72
	File	
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics are based on all cases with valid data.
Syntax		FREQUENCIES VARIABLES=q10.a_1 q10.a_2 q10.a_3 q10.a_4 q11.a q12.a q13.a q14.a q15.a q18.a q19 q20.a q20.b q20.c q20.d q21.a MSQ22.a q24.a q25.a q26.a q27.a q28.a q29.a q30.a cat16 cat17 ca23 /ORDER=ANALYSIS.
Resources	Processor Time	00:00:00.000
	Elapsed Time	00:00:00.079

[DataSet1] C:\Documents and Settings\Administrator\Desktop\finalized06022012\finalized06022012missingzero.sav

Statistics

		10.1 The main reasons why you have chosen online WBL - I can learn at my own pace	10.2 I prefer self-learning	10.3 I do not need to go to university for studies	10.4 I can learn anytime when I am free	An Induction at the beginning of the programme made me/will make me comfortable using the Blackboard E-Learning Portal (ELP)
N	Valid	72	72	72	72	72
	Missing	0	0	0	0	0

Statistics

		The ELP is very user-friendly	Online discussions and chat provided in the ELP help me to share different views posted by others, as if I were in the physical classroom	I still prefer the inclusion of some face to face sessions in the programme because I miss the classroom environment	The programme leader is very supportive and accommodating	My mentor at my workplace supports me in my studies
N	Valid	72	72	72	72	72
	Missing	0	0	0	0	0

Statistics

		My employer has supported my studies by	20.1 The following university services are supportive and responsive - IT	20.2 Library	20.3 Finance	20.4 Student services
N	Valid	72	72	72	72	72
	Missing	0	0	0	0	0

Statistics

		There is an effective monitoring mechanism to ensure I progress through my programme in a timely manner	I would like the inclusion of learning elements (Eg: quizzes, animations, graphics, audio and video clips, simulations, illustrations, diagrams etc.) to aid the understanding of subject content	My curriculum is very relevant to my role, duties and responsibilities at workplace	After completion of this programme, my professional status should be upgraded and more employment prospects should be opened up	This programme will help me with my personal development through increased knowledge and skills
N	Valid	72	72	72	72	72
	Missing	0	0	0	0	0

Statistics

		I am likely to continue education in distance / online WBL mode after this programme	It was difficult to adjust to online learning initially	I have benefited from the Accreditation of Prior Experiential Learning (APEL) as a selection criteria in my enrolment	I have benefited from the Accreditation of Prior Experiential Learning (APL) as a selection criteria in my enrolment	cat16
N	Valid	72	72	72	72	72
	Missing	0	0	0	0	0

Statistics

		cat17	ca23
N	Valid	72	72
	Missing	0	0

Frequency Table

What is your age?

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 21 - 30	31	43.1	43.1	43.1
31 - 40	19	26.4	26.4	69.4
41 - 50	19	26.4	26.4	95.8
51 - 60	2	2.8	2.8	98.6
61 - 70	1	1.4	1.4	100.0
Total	72	100.0	100.0	

What is your gender?

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Male	25	34.7	34.7	34.7
Female	47	65.3	65.3	100.0
Total	72	100.0	100.0	

What is your highest Educational qualification?

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Bachelors degree relevant to my current MSc	15	20.8	25.0	25.0
Bachelors degree not relevant to my current MSc	29	40.3	48.3	73.3
Post Graduate degree relevant to my current MSc	1	1.4	1.7	75.0
Post Graduate degree not relevant to my current MSc	10	13.9	16.7	91.7
Other (Professional) (Please specify)	5	6.9	8.3	100.0
Total	60	83.3	100.0	
Missing System	12	16.7		
Total	72	100.0		

What is your main employment?

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Mechanical Engineer	2	2.8	2.8	2.8
Design Engineer	1	1.4	1.4	4.2
Electrical/Electronic Engineer	2	2.8	2.8	6.9
Manager	4	5.6	5.6	12.5
Librarian	6	8.3	8.3	20.8
Assistant Librarian	2	2.8	2.8	23.6
Library Assistant	17	23.6	23.6	47.2
Information Specialist	6	8.3	8.3	55.6
Information Officer	4	5.6	5.6	61.1
Information Assistant	2	2.8	2.8	63.9
Records Manager	4	5.6	5.6	69.4
IT Manager	1	1.4	1.4	70.8
IT Specialist	2	2.8	2.8	73.6
Programmer	2	2.8	2.8	76.4
Database Administrator	2	2.8	2.8	79.2
Bookshop Manager	15	20.8	20.8	100.0
Total	72	100.0	100.0	

How many hours a week do you spend on your main employment?

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 0 - 10 hrs	6	8.3	8.3	8.3
10 - 20 hrs	9	12.5	12.5	20.8
21 - 30 hrs	9	12.5	12.5	33.3
31 - 40 hrs	34	47.2	47.2	80.6
41 - 50 hrs	12	16.7	16.7	97.2
Above 50	2	2.8	2.8	100.0
Total	72	100.0	100.0	

Who is sponsoring your studies?

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Yourself	37	51.4	51.4	51.4
Your employer	15	20.8	20.8	72.2
Your family	3	4.2	4.2	76.4
A Grant or Scholarship	2	2.8	2.8	79.2
12	5	6.9	6.9	86.1
13	3	4.2	4.2	90.3
14	2	2.8	2.8	93.1
15	1	1.4	1.4	94.4
34	1	1.4	1.4	95.8
123	3	4.2	4.2	100.0
Total	72	100.0	100.0	

Where do you usually live?

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid North East of England	17	23.6	23.6	23.6
Rest of UK	35	48.6	48.6	72.2
Rest of Europe	16	22.2	22.2	94.4
Rest of World	4	5.6	5.6	100.0
Total	72	100.0	100.0	

From where do you access your online programmes/s?

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Home	22	30.6	30.6	30.6
Workplace	2	2.8	2.8	33.3
12	39	54.2	54.2	87.5
13	2	2.8	2.8	90.3
14	5	6.9	6.9	97.2
124	1	1.4	1.4	98.6
1234	1	1.4	1.4	100.0
Total	72	100.0	100.0	

10.1 The main reasons why you have chosen online WBL - I can learn at my own pace

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	5	6.9	6.9	6.9
	SA	24	33.3	33.3	40.3
	A	29	40.3	40.3	80.6
	N	7	9.7	9.7	90.3
	D	6	8.3	8.3	98.6
	NA	1	1.4	1.4	100.0
	Total	72	100.0	100.0	

10.2 I prefer self-learning

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	4	5.6	5.6	5.6
	SA	12	16.7	16.7	22.2
	A	17	23.6	23.6	45.8
	N	24	33.3	33.3	79.2
	D	12	16.7	16.7	95.8
	SD	2	2.8	2.8	98.6
	NA	1	1.4	1.4	100.0
	Total	72	100.0	100.0	

10.3 I do not need to go to university for studies

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	4	5.6	5.6	5.6
	SA	20	27.8	27.8	33.3
	A	25	34.7	34.7	68.1
	N	11	15.3	15.3	83.3
	D	9	12.5	12.5	95.8
	SD	3	4.2	4.2	100.0
	Total	72	100.0	100.0	

10.4 I can learn anytime when I am free

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	2	2.8	2.8	2.8
	SA	39	54.2	54.2	56.9
	A	22	30.6	30.6	87.5
	N	5	6.9	6.9	94.4
	D	3	4.2	4.2	98.6
	NA	1	1.4	1.4	100.0
	Total	72	100.0	100.0	

An Induction at the beginning of the programme made me/will make me comfortable using the Blackboard E-Learning Portal (ELP)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	SA	16	22.2	22.2	22.2
	A	33	45.8	45.8	68.1
	N	12	16.7	16.7	84.7
	D	7	9.7	9.7	94.4
	NA	4	5.6	5.6	100.0
	Total	72	100.0	100.0	

The ELP is very user-friendly

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	SA	11	15.3	15.3	15.3
	A	35	48.6	48.6	63.9
	AV	18	25.0	25.0	88.9
	D	6	8.3	8.3	97.2
	SD	2	2.8	2.8	100.0
	Total	72	100.0	100.0	

Online discussions and chat provided in the ELP help me to share different views posted by others, as if I were in the physical classroom

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	1	1.4	1.4	1.4
	SA	9	12.5	12.5	13.9
	A	22	30.6	30.6	44.4
	AV	20	27.8	27.8	72.2
	D	12	16.7	16.7	88.9
	SD	5	6.9	6.9	95.8
	NA	3	4.2	4.2	100.0
	Total	72	100.0	100.0	

I still prefer the inclusion of some face to face sessions in the programme because I miss the classroom environment

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	SA	8	11.1	11.1	11.1
	A	30	41.7	41.7	52.8
	AV	17	23.6	23.6	76.4
	D	6	8.3	8.3	84.7
	SD	7	9.7	9.7	94.4
	NA	4	5.6	5.6	100.0
	Total	72	100.0	100.0	

The programme leader is very supportive and accommodating

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	1	1.4	1.4	1.4
	SA	41	56.9	56.9	58.3
	A	25	34.7	34.7	93.1
	AV	3	4.2	4.2	97.2
	SD	1	1.4	1.4	98.6
	NA	1	1.4	1.4	100.0
	Total	72	100.0	100.0	

My mentor at my workplace supports me in my studies

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	6	8.3	8.3	8.3
	SA	7	9.7	9.7	18.1
	A	4	5.6	5.6	23.6
	AV	2	2.8	2.8	26.4
	D	3	4.2	4.2	30.6
	NA	50	69.4	69.4	100.0
	Total	72	100.0	100.0	

My employer has supported my studies by

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Fully sponsoring my course fee	6	8.3	8.3	8.3
	Partly sponsoring my course fee	4	5.6	5.6	13.9
	Allocating free hours for studies	4	5.6	5.6	19.4
	Encouraging and guiding me	11	15.3	15.3	34.7
	Not applicable	27	37.5	37.5	72.2
	Other	6	8.3	8.3	80.6
	14	3	4.2	4.2	84.7
	15	3	4.2	4.2	88.9
	24	2	2.8	2.8	91.7
	45	3	4.2	4.2	95.8
	145	1	1.4	1.4	97.2
	245	2	2.8	2.8	100.0
	Total	72	100.0	100.0	

20.1 The following university services are supportive and responsive - IT

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	7	9.7	9.7	9.7
	SA	22	30.6	30.6	40.3
	A	23	31.9	31.9	72.2
	AV	8	11.1	11.1	83.3
	D	1	1.4	1.4	84.7
	SD	3	4.2	4.2	88.9
	NA	8	11.1	11.1	100.0
	Total	72	100.0	100.0	

20.2 Library

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	9	12.5	12.5	12.5
	SA	25	34.7	34.7	47.2
	A	21	29.2	29.2	76.4
	AV	8	11.1	11.1	87.5
	D	1	1.4	1.4	88.9
	NA	8	11.1	11.1	100.0
	Total	72	100.0	100.0	

20.3 Finance

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	9	12.5	12.5	12.5
	SA	14	19.4	19.4	31.9
	A	17	23.6	23.6	55.6
	AV	11	15.3	15.3	70.8
	D	4	5.6	5.6	76.4
	SD	6	8.3	8.3	84.7
	NA	11	15.3	15.3	100.0
	Total	72	100.0	100.0	

20.4 Student services

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	7	9.7	9.7	9.7
	SA	6	8.3	8.3	18.1
	A	13	18.1	18.1	36.1
	AV	9	12.5	12.5	48.6
	D	1	1.4	1.4	50.0
	NA	36	50.0	50.0	100.0
	Total	72	100.0	100.0	

There is an effective monitoring mechanism to ensure I progress through my programme in a timely manner

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	12	16.7	16.7	16.7
	SA	6	8.3	8.3	25.0
	A	20	27.8	27.8	52.8
	AV	17	23.6	23.6	76.4
	D	9	12.5	12.5	88.9
	SD	1	1.4	1.4	90.3
	NA	7	9.7	9.7	100.0
	Total	72	100.0	100.0	

I would like the inclusion of learning elements (Eg: quizzes, animations, graphics, audio and video clips, simulations, illustrations, diagrams etc.) to aid the understanding of subject content

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	7	9.7	9.7	9.7
	SA	16	22.2	22.2	31.9
	A	26	36.1	36.1	68.1
	AV	11	15.3	15.3	83.3
	D	5	6.9	6.9	90.3
	SD	3	4.2	4.2	94.4
	NA	4	5.6	5.6	100.0
	Total	72	100.0	100.0	

My curriculum is very relevant to my role, duties and responsibilities at workplace

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	10	13.9	13.9	13.9
	SA	16	22.2	22.2	36.1
	A	20	27.8	27.8	63.9
	AV	13	18.1	18.1	81.9
	D	3	4.2	4.2	86.1
	SD	1	1.4	1.4	87.5
	NA	9	12.5	12.5	100.0
	Total	72	100.0	100.0	

After completion of this programme, my professional status should be upgraded and more employment prospects should be opened up

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	11	15.3	15.3	15.3
	SA	29	40.3	40.3	55.6
	A	21	29.2	29.2	84.7
	AV	5	6.9	6.9	91.7
	D	2	2.8	2.8	94.4
	NA	4	5.6	5.6	100.0
	Total	72	100.0	100.0	

This programme will help me with my personal development through increased knowledge and skills

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	2	2.8	2.8	2.8
	SA	46	63.9	63.9	66.7
	A	24	33.3	33.3	100.0
	Total	72	100.0	100.0	

I am likely to continue education in distance / online WBL mode after this programme

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	1	1.4	1.4	1.4
	SA	14	19.4	19.4	20.8
	A	11	15.3	15.3	36.1
	AV	21	29.2	29.2	65.3
	D	14	19.4	19.4	84.7
	SD	7	9.7	9.7	94.4
	NA	4	5.6	5.6	100.0
	Total	72	100.0	100.0	

It was difficult to adjust to online learning initially

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	3	4.2	4.2	4.2
	SA	5	6.9	6.9	11.1
	A	20	27.8	27.8	38.9
	AV	9	12.5	12.5	51.4
	D	21	29.2	29.2	80.6
	SD	14	19.4	19.4	100.0
	Total	72	100.0	100.0	

I have benefited from the Accreditation of Prior Experiential Learning (APEL) as a selection criteria in my enrolment

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	7	9.7	9.7	9.7
	SA	7	9.7	9.7	19.4
	A	4	5.6	5.6	25.0
	AV	6	8.3	8.3	33.3
	D	2	2.8	2.8	36.1
	SD	4	5.6	5.6	41.7
	NA	42	58.3	58.3	100.0
	Total	72	100.0	100.0	

I have benefited from the Accreditation of Prior Experiential Learning (APL) as a selection criteria in my enrolment

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	13	18.1	18.1	18.1
	SA	2	2.8	2.8	20.8
	A	2	2.8	2.8	23.6
	AV	6	8.3	8.3	31.9
	D	4	5.6	5.6	37.5
	SD	2	2.8	2.8	40.3
	NA	43	59.7	59.7	100.0
	Total	72	100.0	100.0	

cat16

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	SA	32	44.4	44.4	44.4
	A	24	33.3	33.3	77.8
	AV	6	8.3	8.3	86.1
	D	5	6.9	6.9	93.1
	NA	5	6.9	6.9	100.0
	Total	72	100.0	100.0	

cat17

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	SA	20	27.8	27.8	27.8
	A	29	40.3	40.3	68.1
	AV	13	18.1	18.1	86.1
	D	7	9.7	9.7	95.8
	SD	1	1.4	1.4	97.2
	NA	2	2.8	2.8	100.0
Total	72	100.0	100.0		

ca23

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	SA	23	31.9	31.9	31.9
	A	29	40.3	40.3	72.2
	AV	9	12.5	12.5	84.7
	D	6	8.3	8.3	93.1
	SD	3	4.2	4.2	97.2
	NA	2	2.8	2.8	100.0
Total	72	100.0	100.0		

Appendix XIII – Spearman Brown Correlations

Spearman Correlations - Table XIIIa

		Age	Gender	Highest Educational qualification	Main employment	Hours a week on main employment	sponsoring on studies	Residence	Programme access location	learn at own pace	prefer self-learning	No need to commute to university	learn anytime	Induction will ease using eLP	eLP is user-friendly
Gender	Sig. (2-tailed)	1.000	.	.545	.215	.001	.914	.393	.640	.140	.522	.932	.892	.022	.836
Highest Educational qualification	Sig. (2-tailed)	.109	.545	.	.000	.217	.451	.724	.284	.968	.731	.291	.064	.845	.570
Main Employment	Sig. (2-tailed)	.170	.215	.000	.	.220	.841	.547	.305	.970	.624	.226	.524	.329	.911
Hours a week on main employment	Sig. (2-tailed)	.392	.001	.217	.220	.	.836	.021	.938	.657	.747	.023	.539	.685	.514
Learn at own pace	Sig. (2-tailed)	.706	.140	.968	.970	.657	.664	.373	.862	.	.000	.008	.000	.286	.411
Prefer self-learning	Sig. (2-tailed)	.889	.522	.731	.624	.747	.747	.345	.283	.000		.001	.001	.076	.951
No need to commute to university	Sig. (2-tailed)	.164	.932	.291	.226	.023	.690	.371	.680	.008	.001		.000	.668	.147
Learn anytime	Sig. (2-tailed)	.648	.892	.064	.524	.539	.394	.642	.310	.000	.001	.000	.	.789	.974
Online chat and discussions help as if I'm in classroom	Sig. (2-tailed)	.358	.015	.394	.997	.564	.976	.054	.996	.618	.394	.626	.492	.131	.006
Mentor at workplace	Sig. (2-tailed)	.258	.203	.000	.016	.024	.163	.382	.234	.934	.889	.480	.459	.287	.774
Library helpful	Sig. (2-tailed)	.451	.004	.225	.495	.069	.027	.489	.350	.146	.416	.541	.095	.211	.001

Spearman Correlations - Table XIIIa contd.

Finance helpful	Sig. (2-tailed)	.066	.003	.253	.328	.073	.080	.517	.739	.947	.937	.926	.279	.722	.107
Student services helpful	Sig. (2-tailed)	.842	.696	.009	.818	.842	.258	.509	.416	.735	.996	.788	.178	.250	.272
Effective monitoring mechanism in place	Sig. (2-tailed)	.548	.148	.000	.413	.772	.692	.495	.491	.891	.480	.165	.341	.936	.264
Curriculum relevant to work role	Sig. (2-tailed)	.698	.302	.000	.000	.895	.345	.307	.729	.619	.513	.211	.792	.707	.048
Professional status upgrade	Sig. (2-tailed)	.397	.640	.001	.050	.381	.203	.641	.803	.793	.590	.016	.479	.813	.136
difficult to adjust to online learning	Sig. (2-tailed)	.581	.713	.002	.289	.118	.490	.092	.121	.286	.007	.023	.005	.800	.396
benefited from APEL at enrolment	Sig. (2-tailed)	.973	.483	.000	.025	.298	.804	.768	.075	.621	.761	.439	.522	.755	.910
APL benefits as a selection criteria in my enrolment	Sig. (2-tailed)	.665	.806	.000	.048	.310	.785	.894	.129	.770	.307	.615	.427	.401	.652
Quality of learning material	Sig. (2-tailed)	.100	.509	.003	.009	.267	.206	.448	.505	.497	.157	.945	.280	.790	.015
**. Correlation is significant at the 0.01 level (2-tailed).															
* Correlation is significant at the 0.05 level (2-tailed).															

Spearman Correlations Table XIIIb

		Online discussions and chat help	prefer inclusion of some face to face sessions	programme leader supportive	Mentor at workplace supports	Employer supports	IT services helpful	Library helpful	Finance helpful	Student services helpful	Effective monitoring mechanism in place	prefer inclusion of MM learning elements,	Curriculum relevant to work role	Professional status upgrade	Personal development through knowledge and skills
Gender	Sig. (2-tailed)	.015	.654	.952	.203	.487	.296	.004	.003	.696	.148	.676	.302	.640	.293
Highest Educational qualification	Sig. (2-tailed)	.394	.859	.589	.000	.281	.252	.225	.253	.009	.000	.405	.000	.001	.971
Main employment	Sig. (2-tailed)	.997	.681	.302	.016	.287	.373	.495	.328	.818	.413	.308	.000	.050	.517
eLP is user- friendly	Sig. (2-tailed)	.006	.260	.837	.774	.542	.026	.001	.107	.272	.264	.493	.048	.136	.089
Online discussions and chat help me to share different views	Sig. (2-tailed)	.	.968	.112	.910	.130	.988	.000	.071	.365	.059	.649	.038	.031	.607
Mentor at workplace helps my studies	Sig. (2-tailed)	.910	.092	.576	.	.551	.565	.486	.773	.143	.002	.845	.029	.039	.277
IT services helpful	Sig. (2-tailed)	.988	.053	.371	.565	.796	.	.001	.000	.009	.059	.084	.221	.205	.973
Library helpful	Sig. (2-tailed)	.000	.717	.412	.486	.836	.001	.	.000	.033	.017	.182	.023	.015	.144
Finance helpful	Sig. (2-tailed)	.071	.095	.996	.773	.024	.000	.000	.	.001	.036	.659	.009	.031	.433
Student services helpful	Sig. (2-tailed)	.365	.537	.552	.143	.170	.009	.033	.001	.	.022	.039	.072	.715	.013
Effective monitoring mechanism in place	Sig. (2-tailed)	.059	.377	.036	.002	.207	.059	.017	.036	.022	.	.106	.000	.001	.279
Curriculum relevant to work role	Sig. (2-tailed)	.038	.075	.146	.029	.727	.221	.023	.009	.072	.000	.070	.	.000	.429
Professional status upgrade	Sig. (2-tailed)	.031	.013	.100	.039	.713	.205	.015	.031	.715	.001	.952	.000	.	.010

Spearman Correlations Table XIIIb contd.

personal development through knowledge and skills	Sig. (2-tailed)	.607	.588	.151	.277	.541	.973	.144	.433	.013	.279	.691	.429	.010	.
Likelihood of continuing WBL	Sig. (2-tailed)	.471	.085	.405	.227	.861	.446	.131	.141	.385	.576	.239	.874	.117	.001
benefited from APEL at enrolment	Sig. (2-tailed)	.464	.774	.401	.000	.347	.048	.145	.036	.003	.000	.090	.000	.048	.141
APL benefits as a selection criteria in my enrolment	Sig. (2-tailed)	.135	.594	.781	.000	.041	.247	.083	.093	.005	.000	.137	.000	.024	.297
Tutor expertise	Sig. (2-tailed)	.046	.488	.444	.011	.969	.734	.189	.561	.985	.251	.618	.003	.095	.520
Response quality	Sig. (2-tailed)	.072	.609	.750	.205	.616	.161	.161	.055	.512	.064	.868	.004	.039	.018
Quality of learning material	Sig. (2-tailed)	.069	.307	.500	.005	.192	.025	.014	.006	.011	.004	.121	.000	.010	.570

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed)

Spearman Correlations Table XIIIc

		Likelihood of continuing WBL after this programme	Difficult to adjust to online learning	Benefits of APEL in enrolment	Benefits of APL in enrolment	Tutor expertise	Response quality	Quality of learning material
Highest Educational qualification	Sig. (2-tailed)	.341	.002	.000	.000	.314	.190	.003
Main employment	Sig. (2-tailed)	.471	.289	.025	.048	.117	.249	.009
Prefer self-learning	Sig. (2-tailed)	.599	.007	.761	.307	.224	.320	.157
Learn anytime	Sig. (2-tailed)	.656	.005	.522	.427	.246	.347	.280
Prefer inclusion of some face to face sessions	Sig. (2-tailed)	.085	.000	.774	.594	.488	.609	.307
Mentor at workplace helps my studies	Sig. (2-tailed)	.227	.038	.000	.000	.011	.205	.005
Finance helpful	Sig. (2-tailed)	.141	.079	.036	.093	.561	.055	.006
Student services helpful	Sig. (2-tailed)	.385	.017	.003	.005	.985	.512	.011
Effective monitoring mechanism in place	Sig. (2-tailed)	.576	.719	.000	.000	.251	.064	.004
Curriculum relevant to work role	Sig. (2-tailed)	.874	.034	.000	.000	.003	.004	.000
Professional status upgrade	Sig. (2-tailed)	.117	.000	.048	.024	.095	.039	.010
Personal development through knowledge and skills	Sig. (2-tailed)	.001	.173	.141	.297	.520	.018	.570
Benefited from APEL at enrolment	Sig. (2-tailed)	.948	.144	.	.000	.171	.507	.000
APL benefits as a selection criteria in my enrolment	Sig. (2-tailed)	.758	.040	.000	.	.066	.414	.000
Tutor expertise	Sig. (2-tailed)	.384	.606	.171	.066	.	.000	.000
Response quality	Sig. (2-tailed)	.409	.986	.507	.414	.000	.	.000
Quality of learning material	Sig. (2-tailed)	.354	.313	.000	.000	.000	.000	.

Appendix XIV – Awards and Publications Summary

a. Awards

Best Performing 2nd year PhD student award 2011 at the Annual Faculty Day on 11th July 2011.

b. Publications

Journals:

1. “Design of Educational Systems for Work Based Learning (WBL)” for the Journal of Higher Education, Skills and Work-based Learning, Volume (3) Issue (1)
Published
2. “Is Learning on Campus the most appropriate ‘space’ for learning?” for the Journal ‘On the Horizon Special New Media Edition’.
Abstract approved but final paper rejected citing further revisions to be made. Work in progress.

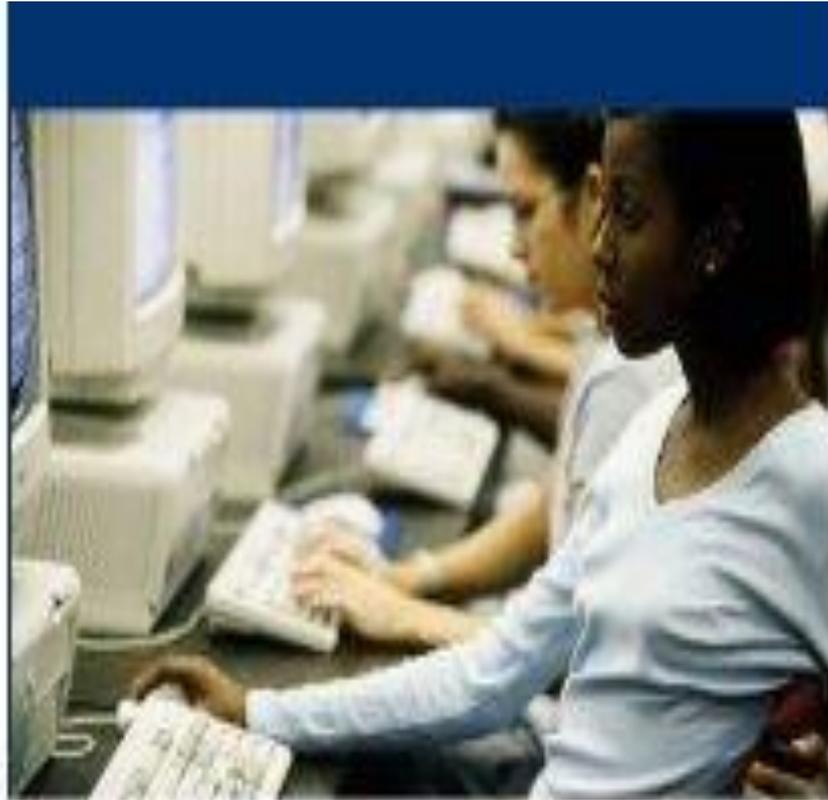
Book Chapter:

1. “Active Student Engagement: The Heart of Effective Learning” in the Book *Engaging Student Learning in Non-Traditional Formats* edited by Prof. Prudence Layne and Mr. Peter Lake, 2013
Chapter approved and in the press

Books:

1. “From traditional to technology enabled tertiary education in Sri Lanka: Perceptions of online learning stakeholders of National Online Distance Education Service (NODES) in Sri Lanka”
ISBN 978-3-8433-5864-4 (2010) Lambert

Books:



Lalith Liyanage

From traditional to technology-based tertiary education in Sri Lanka

Perceptions of online learning stakeholders of National
Online Distance
Education Service (NODES) in Sri Lanka



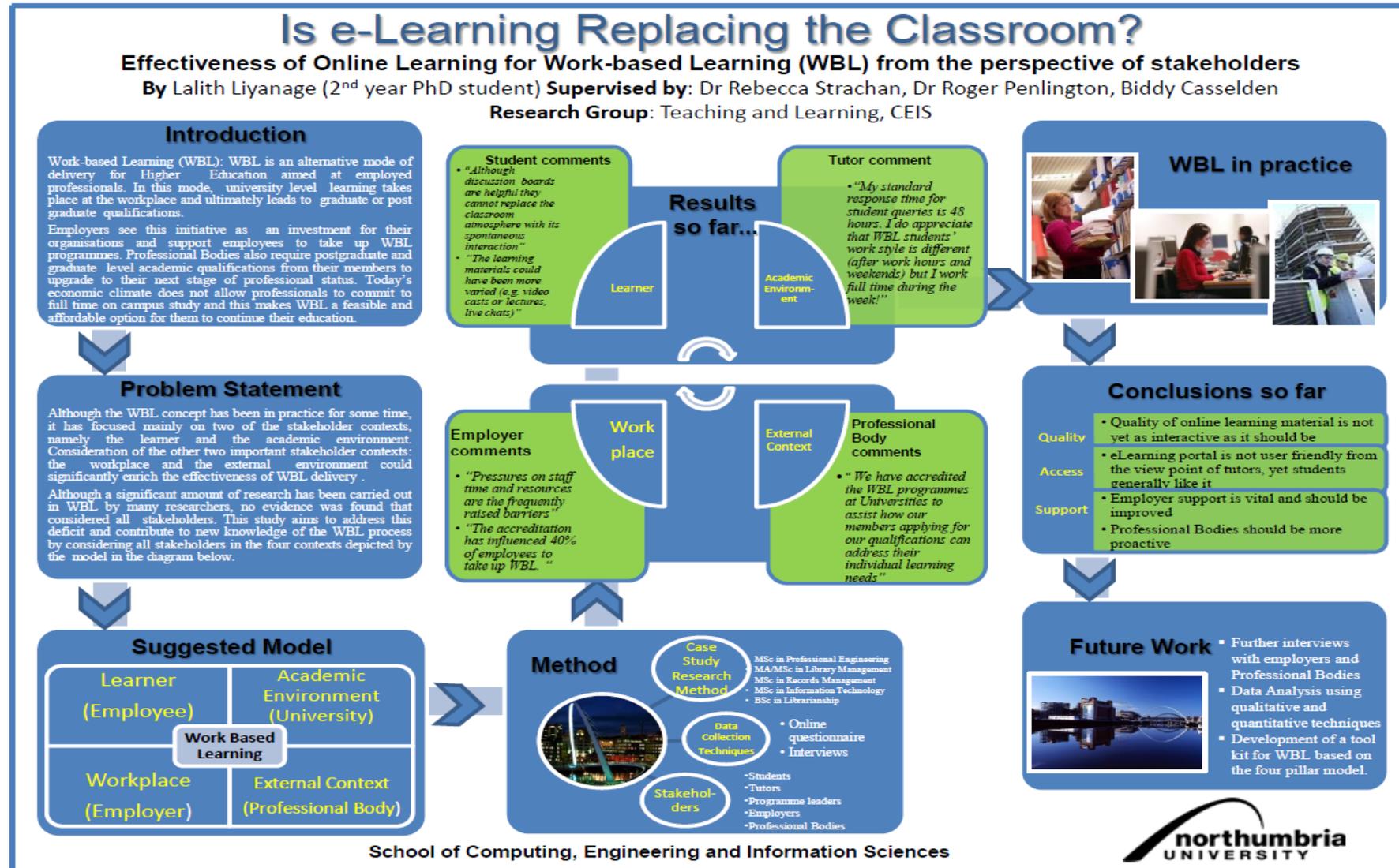
Conferences:

1. "Lessons Learned in Managing ICT Systems for Online-Learning" at the 5th Conference of Learning International Networks Consortium (**LINC**) University Leadership: Bringing Technology-Enabled Education to Learners of All Ages from May 23rd - 26th, 2010 on the campus of the Massachusetts Institute of Technology in Cambridge, Massachusetts, USA.
<http://linc.mit.edu/linc2010/proceedings/session9Liyana.pdf>
Presented and proceedings published
2. "Evaluation of Using Distance Learning to support Work-based learning programmes: A case study from Northumbria University, UK" at E-Learn 2010 conference from 18-22 October 2010 in Orlando/Florida, USA
<http://www.editlib.org/j/ELEARN/v/2010/n/1/?page=7>
Presented and proceedings published
3. "Technology Enabled Delivery of Distance Education: and Challenges and Opportunities in Sri Lanka" at E-Learn 2010 conference from 18-22 October 2010 in Orlando/Florida, USA
<http://www.editlib.org/j/ELEARN/v/2010/n/1/?page=22>
Presented and proceedings published
4. "Workshop on Engaging Learning: Bringing the Stakeholders' Perspective to Work Based Online Learning (Based on a Case Study from Northumbria University)" from 18-20 April 2011 at Queen's University, Belfast, N.Ireland
<http://www.aldinhe.ac.uk/symposium11/handouts/51handout.pdf>
Presented and proceedings published
5. "Design of Educational Systems for WBL" at i-Society 2011 conference on Information Society co-sponsored by IEEE UK/ RI Computer Chapter 27-29 June 2011, London
Paper approved but could not present
6. "Effectiveness of design of online learning programs for work-based learning from the point of view of stakeholders" at the Design, Development and Research Conference from 26-27 September 2011 at Cape Town , South Africa
Presented and proceedings published
<http://www.design-development-research.co.za/index.php/DDRC/2011/paper/view/57>
7. "Workshop on the added dimensions of multiple stakeholders in delivering learning" at the Community and Employer Engagement Conference on WBL at University of Wales Institute, Cardiff (UWIC) from 28-29 June 2011
<http://www.ics.heacademy.ac.uk/events/displayevent.php?id=265>
Presented and proceedings published
8. "Use of Software tools for case study research" at Research² PhD Data Analysis Conference at Loughborough University from 7-8 July 2011
<http://www.ics.heacademy.ac.uk/events/displayevent.php?id=265>
Presented and proceedings published

9. “Effectiveness of technology to support work based learning: the stakeholders’ perspective” at 18th International conference of the Association for Learning Technology (ALT-C 2011) at the University of Leeds, UK, 6-8 September 2011, 19 (1). pp. 134-144. ISSN 2156-7077
<http://repository.alt.ac.uk/2171/1/rlt7800.pdf>
Presented and proceedings published

10. “Can Sri Lanka Adapt Work-Based Learning? Insights from UK work-based learning cases” at 30th National IT Conference (NITC 2012) at Galadari Hotel, Colombo, 10-11 July 2012
Presented and proceedings published

11. “New Pedagogical Models Facilitated by Technology” at the 6th Conference of Learning International Networks Consortium ([LINC](#)) University Leadership: Bringing Technology-Enabled Education to Learners of All Ages from June 16 - 19, 2013 on the campus of the Massachusetts Institute of Technology in Cambridge, Massachusetts, USA.
Presented and proceedings published



Appendix XV – PGR Training Needs Assessment Form



POSTGRADUATE RESEARCH STUDENT SKILLS TRAINING PLAN

During your research degree programme you are expected to develop a range of skills to give breadth to your learning. This plan helps you evaluate your learning needs and develop a timetable for enhancing skills. You should work through the list and evaluate whether you already possess the skill, need to develop or enhance it. If you have achieved the skill mark this in the second column. Provide evidence for your achievement in the third column.

PGR Student's name: Lalith Liyanage

Principal Supervisor's name: Dr Rebecca Strachan

Academic Faculty: CEIS

Start date: 04 May 2010

Full time / Part time Part time

Supervisors should confirm that you have completed your skills training at each stage.

IPA stage	MPP stage	Final stage
Supervisor Signature	Supervisor Signature	Supervisor Signature

Induction/ IPA

Research Skills and Techniques – to be able to demonstrate skill in:	Achieved / Partly Achieved/ Not Achieved	Achievement / Enhancement programme
recognising and validating problems	Achieved	Previous study of MBA with a research project at University of Moratuwa, Sri Lanka in 2009 - Module CS 5192 Skills for Research Project PGR Training
the techniques available for keeping up to date in the area of research	Achieved	Previous study of MBA with a research project at University of Moratuwa, Sri Lanka in 2009 - Module CS 5192 Skills for Research Project PGR Training
relevant research methodologies, techniques and their application	Achieved	Previous study of MBA with a research project at University of Moratuwa, Sri Lanka in 2009 - Module CS 5192 Skills for Research Project PGR Training

Research Environment – to be able to develop:	Achieved / Partly Achieved/ Not Achieved	Achievement / Enhancement programme
awareness of issues relating to the rights of other researchers, research subjects, and those who may be affected by research, e.g. confidentiality, ethical issues, attribution, copyright, malpractice, ownership of data and the requirements of the Data Protection Act	Achieved	Previous study of MBA with a research project at University of Moratuwa, Sri Lanka in 2009 - Module CS 5192 Skills for Research Project Module of the MBA CS5154 Legal Framework for e-Governance covered the Data Protection Act of Sri Lanka
an appreciation of standards of good research practice in their institution and/or discipline	Achieved	Previous study of MBA with a research project at University of Moratuwa, Sri Lanka in 2009 CS 5192 Skills for Research Project

Research Management – to develop the skill to use:	Achieved / Partly Achieved/ Not Achieved	Achievement / Enhancement programme
effective project management through the setting of research goals, intermediate milestones and prioritisation of activities	Achieved	Previous study of MBA with a research project at University of Moratuwa, Sri Lanka in 2009 CS 5101 IT Project Management 10 years of experience as a IT Project Manager for ADB projects
appropriate resources and equipment to design and execute data collection	Achieved	Previous study of MBA with a research project at University of Moratuwa, Sri Lanka in 2009 CS 5192 Skills for Research Project
appropriate bibliographical resources, archives, and other sources of relevant information	Achieved	Previous study of MBA with a research project at University of Moratuwa, Sri Lanka in 2009 CS 5192 Skills for Research Project
information technology appropriately for data management, recording and presenting information	Achieved	Previous study of MSc in Computer Studies with a Distinction at University of Essex, UK in 2001 Previous study of MBA in e-Governance with a research project at University of Moratuwa, Sri Lanka in 2009 CS 5192 Skills for Research Project

Personal Effectiveness – to develop the skills of:	Achieved / Partly Achieved/ Not Achieved	Achievement / Enhancement programme
self-awareness and ability to identify learning needs	Achieved	Previous studies leading to BSc (Eng.), PG Diploma, 3 Masters programmes

self-discipline and motivation	Achieved	Previous studies leading to BSc (Eng.), PG Diploma, 3 Masters programmes
drawing upon sources of support and recognising boundaries	Achieved	Previous studies leading to BSc (Eng.), PG Diploma, 3 Masters programmes

Communication Skills – to develop the skills of:	Achieved / Partly Achieved/ Not Achieved	Achievement / Enhancement programme
clear writing in a style appropriate to the audience	Achieved	Previous studies leading to BSc (Eng.), PG Diploma, 3 Masters programmes
articulating ideas clearly using coherent arguments to a range of audiences	Achieved	Previous studies leading to BSc (Eng.), PG Diploma, 3 Masters programmes

Networking and Team working – to enhance the understanding of:	Achieved / Partly Achieved/ Not Achieved	Achievement / Enhancement programme
the ways in which co-operative networks and working relationships may be developed and maintained within the institution and the wider research community	Achieved	Previous studies leading to BSc (Eng.), PG Diploma, 3 Masters programmes Working in teams for last 14 years as an Engineer, Manager, Director
personal behaviour and its impact on others when contributing to team work	Achieved	Previous studies leading to BSc (Eng.), PG Diploma, 3 Masters programmes Working in teams for last 14 years as an Engineer, Manager, Director
the skills of listening, giving and receiving feedback in a perceptive and supportive way	Achieved	Previous studies leading to BSc (Eng.), PG Diploma, 3 Masters programmes Working in teams for last 14 years as an Engineer, Manager, Director

MPP Stage

Research Skills and Techniques – to be able to demonstrate skill in:	Achieved / Partly Achieved/ Not Achieved	Achievement / Enhancement programme
developing theoretical concepts	Achieved	Previous study of MBA with a research project at University of Moratuwa, Sri Lanka in 2009 Module CS 5192 Skills for Research Project PGR Training programme - Research Philosophies and Paradigms
the techniques available for keeping up to date in the area of research	Achieved	Previous study of MBA with a research project at University of Moratuwa, Sri Lanka in 2009 Module CS 5192 Skills for Research Project PGR Training programme - Research Philosophies and Paradigms
relevant research methodologies, techniques and their application	Achieved	Previous study of MBA with a research project at University of Moratuwa, Sri Lanka in 2009 Module CS 5192 Skills for Research Project PGR Training programme - Research Philosophies and Paradigms
critical analysis and evaluation of findings in relation to others	Achieved	Previous study of MBA with a research project at University of Moratuwa, Sri Lanka in 2009 Module CS 5192 Skills for Research Project PGR Training programme - Research Philosophies and Paradigms
summarising, documenting, reporting and reflecting on progress	Achieved	Previous study of MBA with a research project at University of Moratuwa, Sri Lanka in 2009 Module CS 5192 Skills for Research Project PGR Training programme - Research Philosophies and Paradigms

Research Environment – to be able to develop:	Achieved / Partly Achieved/ Not Achieved	Achievement / Enhancement programme
a broad understanding of the context, at national and international level, in which research takes place	Achieved	Previous study of MBA with a research project at University of Moratuwa, Sri Lanka in 2009 Module CS 5192 Skills for Research Project PGR Training programme - Research Philosophies and Paradigms
an understanding of the processes for funding and evaluation of research	Achieved	Previous study of MBA with a research project at University of Moratuwa, Sri Lanka in 2009 CS 5192 Skills for Research Project PGR Training programme - Research Philosophies and Paradigms
arguments to support their research approach based on sound principles.	Achieved	Previous study of MBA with a research project at University of Moratuwa, Sri Lanka in 2009 CS 5192 Skills for Research Project PGR Training programme - Research Philosophies and Paradigms

Research Management – to develop the skill to use:	Achieved / Partly Achieved/ Not Achieved	Achievement / Enhancement programme
effective project management through the setting of research goals, intermediate milestones and prioritisation of activities	Achieved	Previous study of MBA with a research project at University of Moratuwa, Sri Lanka in 2009 CS 5101 IT Project Management 10 years of experience as a IT Project Manager for ADB projects
appropriate resources and equipment to design	Achieved	Previous study of MBA with a research project at University of Moratuwa, Sri Lanka in

and execute data collection		2009 CS 5192 Skills for Research Project PGR Training – SNAP, NVivo
appropriate bibliographical resources, archives, and other sources of relevant information	Achieved	Previous study of MBA with a research project at University of Moratuwa, Sri Lanka in 2009 CS 5192 Skills for Research Project
information technology appropriately for data management, recording and presenting information	Achieved	Previous study of MSc in Computer Studies with a Distinction at University of Essex, UK in 2001 Previous study of MBA in e-Governance with a research project at University of Moratuwa, Sri Lanka in 2009 CS 5192 Skills for Research Project PGR Training - Information Management

Personal Effectiveness – to develop the skills of:	Achieved / Partly Achieved/ Not Achieved	Achievement / Enhancement programme
learning and acquiring knowledge	Achieved	Previous studies leading to BSc (Eng.), PG Diploma, 3 Masters programmes
creativity, innovation and originality in one's approach to research	Achieved	Previous studies leading to BSc (Eng.), PG Diploma, 3 Masters programmes
flexibility and open-mindedness	Achieved	Previous studies leading to BSc (Eng.), PG Diploma, 3 Masters programmes
drawing upon sources of support and recognising boundaries	Achieved	Previous studies leading to BSc (Eng.), PG Diploma, 3 Masters programmes
initiative, independent working and self-reliance	Achieved	Previous studies leading to BSc (Eng.), PG Diploma, 3 Masters programmes

Communication Skills – to develop the skills of:	Achieved / Partly Achieved/ Not Achieved	Achievement / Enhancement programme
clear writing in a style appropriate to the audience	Achieved	Previous studies leading to BSc (Eng.), PG Diploma, 3 Masters programmes PGR Training - Getting Published Successfully, Academic Writing
articulating ideas clearly using coherent arguments to a range of audiences	Achieved	Previous studies leading to BSc (Eng.), PG Diploma, 3 Masters programmes PGR Training - Getting Published Successfully, Academic Writing
constructively defending research outcomes at seminars and viva examination	Achieved	Previous studies leading to BSc (Eng.), PG Diploma, 3 Masters programmes PGR Training - Getting Published Successfully, Academic Writing, Public speaking and presenting at conferences

Networking and Teamworking – to enhance the understanding of:	Achieved / Partly Achieved/ Not Achieved	Achievement / Enhancement programme
personal behaviour and its impact on others when contributing to team work	Achieved	Previous studies leading to BSc (Eng.), PG Diploma, 3 Masters programmes Working in teams for last 15 years as an Engineer, Manager, Director, Lecturer
the skills of listening, giving and receiving feedback in a perceptive and supportive way	Achieved	Previous studies leading to BSc (Eng.), PG Diploma, 3 Masters programmes Working in teams for last 15 years as an Engineer, Manager, Director

Final Stage

Research Skills and Techniques – to be able to demonstrate skill in:	Achieved / Partly Achieved/ Not Achieved	Achievement / Enhancement programme
developing theoretical concepts	Achieved	Through my own research and from the researchers who presented papers at Research ² PhD Data Analysis Conference at Loughborough University from 7-8 July 2011
summarising, documenting, reporting and reflecting on progress	Achieved	Through monthly progress reports, MPP and Annual progress assessments and also from journal and conference papers
Research Environment – to be able to develop:	Achieved / Partly Achieved/ Not Achieved	Achievement / Enhancement programme
an understanding of the process of academic or commercial exploitation of research results	Achieved	Through PGR training programmes and weekly research seminars
Personal Effectiveness – to develop the skills of:	Achieved / Partly Achieved/ Not Achieved	Achievement / Enhancement programme
initiative, independent working and self-reliance	Achieved	Through journal and conference papers, own research and thesis writing
Communication Skills – to develop the skills of:	Achieved / Partly Achieved/ Not Achieved	Achievement / Enhancement programme
clear writing in a style appropriate to the audience	Achieved	Through Book, journal and conference papers, research thesis writing, and also through PGR training programmes

articulating ideas clearly using coherent arguments to a range of audiences	Achieved	Through journal and conference papers, own research and thesis writing, and also through PGR training programmes
constructively defending research outcomes at seminars and viva examination	Achieved	Through journal and conference papers, own research and thesis writing, and also through PGR training programmes on preparation for viva
promoting the public understanding of research	Achieved	Through PGR training programme on how to market our research on media
effectively support the learning of others through teaching or mentoring	Achieved	As a part-time lecturer, delivered the module “CM0160 – Human Computer Interactions” with Mr. Paul Irvine to 150 2 nd year Computer Science students. In this, I delivered 10 hours of lectures for part-timers and 26 hours of seminars for both full and part-timers. Marked 50 assignments each in two assignments. Also, supervised a Chinese student on an MSc project under CG0174 unit on “Image watermarking for copyright protection – Comparative analysis based on YUV and YCbCr”.

Networking and Teamworking – to enhance the understanding of:	Achieved / Partly Achieved/ Not Achieved	Achievement / Enhancement programme
the ways in which co-operative networks and working relationships may be developed and maintained within the institution and the wider research community	Achieved	Through weekly research seminars, various PGR training programmes, through interviews conducted for the research, through Teaching and Learning Research Group to which I belong and also through Community of Practice working group. I was invited by Shelagh Keogh to do a guest lecture on 04/11/2010 for final year Computer Science students on “Challenges faced in managing Asian Development Bank funded projects” on her ‘Project Management’ module.
personal behaviour and its impact on others when contributing to team work	Achieved	Through team work building PGR training programmes, through Teaching and Learning Research Group to which I belong and also through Community of Practice working group which organised brain storming sessions, assisting my supervisors’ workshop “Workshop on Peer Review of Assessment” presented at EARLI/Northumbria Assessment conference from 1-3 September 2010 at Slaley Hall Hotel, Northumberland

the skills of listening, giving and receiving feedback in a perceptive and supportive way		Through interview series for the research, while teaching and supervising MSc project
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Career Management – to:	Achieved / Partly Achieved/ Not Achieved	Achievement / Enhancement programme
appreciate the need for and show commitment to continued professional development	Achieved	Attending almost all PGR training programmes and training programmes conducted by LTech for academic/non-academic staff on this regard
take ownership for and manage career progression through set realistic and achievable career goals, and identifying ways to improve employability	Achieved	On my return to Sri Lanka in 2009 my current job as Head of IT under Ministry of Defense in Sri Lanka was waiting for me which shows the improvement of employability
demonstrate an insight into the transferable nature of research skills to other work environments and the range of career opportunities within and outside academia	Achieved	I always preferred a job outside academia which I found soon after coming to Sri Lanka where I contribute to research work being conducted for defense related projects under my perview
present one's skills, personal attributes and experiences through effective CVs, applications and interviews	Achieved	Through career guidance advisers at Student Union obtained help in theses areas
the ways in which co-operative networks and working relationships may be developed and maintained within the institution and the wider research community	Achieved	Through weekly research seminars, various PGR training programmes, through interviews conducted for the research, through Teaching and Learning Research Group to which I belong and also through Community of Practice working group. I was invited by Shelagh Keogh to do a guest lecture on 04/11/2010 for final year Computer Science students on “Challenges faced in managing Asian Development Bank funded projects” on her ‘Project Management’ module.

Details of courses / seminars / modules / activities completed or attended

Name of course / activity	Date(s) Attended
Public speaking and presenting at conferences	09/06/2010
Managing information effectively with mind mapping and speed	10/06/2010
Pebble Pad e-Portfolios	27/10/2010
Lecturing as Performance	11/11/2010
Getting Started with Blackboard	24/11/2010
Introduction to Wimba Create (Course Genie)	04/11/2010
Introduction to SNAP	23/07/2010
Academic Writing	22/02/2011
Research Philosophies and Paradigms	10/12/2010
PGR Induction	14/10/2010
Media Skills	16/11/2010
NVivo 8	29/09/2010
Academic Teaching Skills	09/03/2011
PASW: Statistics for Researchers	05/02/2011
Getting Published Successfully	21/02/2011
Information Management	10/06/2010
PGR Final year conference	19/05/2011
Enterprise for PGRs	31/05/2011
How to be an effective researcher for postgraduate researchers	26 and 27 April 2011
DATUM: Research Data Management Programme	14/04/2011
A beginner's guide to publishing in science and engineering	26/05/2011
Digital Preservation Coalition: Good Research needs Good Data	28/05/2011
Ethics in the Wider Context	20/05/2011

Appendix XVI – A Sample Toolkit for all Four Stakeholders based on the Proposed Four-Pillar Model

i. Learners

- Establishing a Learner Profile

It is important to have a good understanding of the learners with whom an institution will be working in order to determine learning objectives, and design WBL programmes to address the gaps that have been identified. Using this Learner Profile tool as shown in Table 0.1, institutions, employers and professional bodies will be able to get a better grip on the intended target audience, and help ensure that the programme to be designed is appropriate for the same audience.

Table 0.1 Establishing a Learner Profile

<p>Background of Learners - What are the age, gender, location, ethnicity, language, disability and level of education backgrounds of learners?</p>	
<p>Prior Experience - What prior knowledge, skills, experience will they have that is relevant? How will past experience influence their cognition and development? How can this experience be drawn out and integrated into the learning?</p>	
<p>Learners' Objectives - What the learners' objectives will be for completing the programme?</p>	
<p>Learners' Motivation - What will make the programme most relevant to the learners? What will prove meaningful, and provide motivation to learn?</p>	
<p>Success Factors - What factors might affect learner success or failure in the programme?</p>	
<p>Technology - Do the learners have access to learning technologies (e.g. computer, CD-ROM, Internet, video, etc.)? Are they pre-disposed to using these?</p>	
<p>Learning Strategies - How will they best learn through participation, self-reflection, activities, practice etc? How can different learning styles (e.g. visual, auditory, kinesthetic) be accommodated?</p>	
<p>Support - What kinds of support will be needed (academic, peer, supervisor/mentor, technical, etc.) to help ensure learner success?</p>	
<p>Desired Competencies - List the learner competencies/learning objectives that need to be achieved. State these as things that learner will be able to do after participating in the programme.</p>	

Source: (WBLOrganisation, 2013)

ii. Academic Institution

The Criteria are the core of the WBL maturity toolkit which helps institutions to strategically think and plan of their WBL programmes. The WBL maturity toolkit for HE institutions (Toolkit, 2011) identifies following criteria as key for an institution to consider in their WBL initiatives.

1 Institutional readiness

- 1.1 WBL strategy and plans
- 1.2 Organisation, resourcing and support for WBL
- 1.3 Innovation management
- 1.4 WBL Customer Focus
- 1.5 External marketing and communications
- 1.6 Processes and procedures for staffing WBL programmes
- 1.7 Staff development, recognition and reward
- 1.8 WBL procedures and processes for programme validation
- 1.9 QA for WBL
- 1.10 Systems to support WBL
- 1.11 Systems and processes to support registration and enrolment
- 1.12 Business, commercial and financial approaches
- 1.13 Cross institutional communication and collaboration

2. Faculty/department readiness

- 2.1 WBL strategy and implementation plan
- 2.2 Partnership working
- 2.3 Business and commercial approaches
- 2.4 Training and support for external staff and employers
- 2.5 Evaluation and review of programme and pedagogic research

3. Programme design for WBL

- 3.1 Alignment with employer and employee needs
- 3.2 Qualifications, pathways and credit
- 3.3 Development and planning for validation
- 3.4 Alignment with professional standards
- 3.5 APL
- 3.6 Curriculum design (structure)
- 3.7 Curriculum design (implications)
- 3.8 IT Support
- 3.9 Learning outcomes and progression

3.10 Business case

3.11 Learning materials and resources

4. Programme delivery and assessment for WBL

4.1 Transition and induction

4.2 Delivery

4.3 Assessment and progressive achievement

4.4 Student training and support

5. Effective partnerships

5.1 Long-term sustainable and strategic partnerships

5.2 Strategic sector initiatives

5.3 Business-oriented ways of working

5.4 Understanding employer and employee needs and readiness

5.5 Appropriate resourcing for forming partnerships

5.6 Co-ordinated approach to marketing and communications

6. Quality of the learner experience

6.1 Pre-Entry

6.2 Programme Induction

6.3 Programme Design, Review and Quality Enhancement

6.4 Programme Delivery and Support

6.5 Assessment and Progressive Achievement

6.6 Transition and Progression

7. Effective usable accessible technologies

7.1 Systems to support employer engagement

7.2 Tools to allow evidence collection, learner reflection and related dialogue

7.3 Assessment and feedback tools

7.4 Tools to support communication and knowledge-sharing

7.5 Management and monitoring of work-based learner data

7.6 Finance systems

7.7 Exchange of data between systems

7.8 Access to information, support, training and guidance

An example of one of the criterion which falls under the focus area of Institutional Readiness is shown in Table 0.2:

Table 0.2 An example of one of the criterion which falls under the focus area of Institutional Readiness

Area of focus	1 Institutional readiness
Criterion	1.2 Organisation, resourcing and support for WBL
Main statement	Organisational structures and mechanisms are in place to resource, support and co-ordinate the WBL strategy/business plan and activities across faculties and departments, through ensuring local ownership.
Self assessment guidelines	<ul style="list-style-type: none"> • The institution’s committee structure through to SMT/executive level has been reviewed so that agendas and reporting channels are designed to ensure that WBL development and progress receives appropriate scrutiny. • An institutional WBL business plan is in place and provides a framework within which Faculty plans are developed and monitored. • There could be a central unit to coordinate WBL activity across the faculties and departments and to lead WBL research, innovation, developments and implementation of effective practice throughout the institution. • Mechanisms are in place to resource, support and co-ordinate WBL activities across faculties and departments, through local ownership. • Mechanisms are in place to avoid duplication of effort in WBL through use of cross faculty modules and development of generic WBL modules that each faculty/department can incorporate into their programmes. • A business model and costing policy is in place which encompasses the provision of other WBL services such as the development of bespoke programmes and APEL and recognises the different resourcing model deployed when learning takes place on employer’s premises with WB mentor support.
Evidence to look for	<ul style="list-style-type: none"> • Existence of WBL-specific structures e.g. an Institute for WBL. • Existence of persons identified as having WBL specialist expertise that have WBL co-ordination responsibilities at Faculty and programme level. • Central support services with specialist WBL expertise. • Evidence of staff with WBL specialism as all or part of their role functioning as a community of practice. • An employer whose WBL needs may require expertise from more than one programme area/faculty/department would find: <ul style="list-style-type: none"> ○ Clear and unambiguous relationship management responsibilities. ○ Consistency of approach in respect of: <ul style="list-style-type: none"> ▪ Standards of service ▪ Models of provision ▪ Quality assurance ▪ Learner experience ▪ Staff expertise and credibility as practitioners ▪ Expectations of the employer (eg WB mentoring/learner support).
Further info and examples	

Source: (Toolkit, 2011)

iii. Employer/Workplace

The employers may use this tool as shown in Table 0.3 and Table 0.4 to meet their own objectives by putting in any workplace skill or knowledge requirements that are appropriate to the WBL projects on which their employees are working. This tool will help to identify key skills and knowledge gaps that must be addressed.

Data can be collected by observing the workplace, interviewing key stakeholders (e.g. employees, managers, supervisors, customers, etc.), and studying key documents (e.g. job descriptions, policy manuals, performance appraisals, trouble reports, specification documents, etc.).

Gaps are identified by comparing the existing state with the desired state. Working with stakeholders will allow assigning of priorities to these gaps and then design an approach to address them. This process can be done by individual worker, by position, or collectively for the entire organization.

Table 0.3 Tool to identify key skill and knowledge gaps

Skill / Knowledge Area	Data Collection			Analysis		
	Observation	Inter-view	Documen-tation	Current State	Desired State	Gap
Basic Workplace Skills						
Locates and Uses Resources						
Applies Mathematical Concepts and Operations						
Reads with Understanding						
Writes Clearly and Concisely						
Speaks Clearly and Concisely						
Listens with Understanding						
Observes Critically						
Uses Technology						
Basic Workplace Knowledge						
Applies Health and Safety Concepts						
Understands Processes and Product						
Demonstrates Quality Consciousness						
Understands Finances						
Works Within Organizational Structure and Culture						
Basic Employability Skills						
Demonstrates Effective Interpersonal Relations						

Table 0.4 Tool to identify key skills and knowledge gaps contd.

Skill / Knowledge Area	Data Collection			Analysis		
	Observation	Inter-view	Documen-tation	Current State	Desired State	Gap
Demonstrates Self-Management Strategies						
Works in Teams						
Solves Problems						
Makes Decisions						
Lifelong Learning Skills						
Knows How to Learn						
Manages Change						
Applies Skill and Knowledge in New Contexts						

Source: (WBLOrganisation, 2013)

Work-based Learning Plan

Once the learning needs gap analysis is done, and learner profile exercise is complete, it is appropriate to formulate a plan as shown in Table 0.5 on how one will begin closing these gaps. This tool will help to organize the thoughts in this regard.

The learning objectives statements should be constructed that can be entered below. It will be needed to determine, together with key stakeholders in the project, what measures will be used to monitor progress, and what targets for these measures will define success. It is important to think about how the project will be evaluated (e.g. tests, observations, supervisor / peer / customer feedback, performance objectives and specific business objectives) whether the learning intervention deployed has succeeded or not, and to what degree. The follow-up column is where the employer can record successes and failures in this pursuit, and record any additional actions required.

Table 0.5 WBL Plan template

Skill / Knowledge Area	Objectives (Closing the Gap)	Key Measures	Targets	Learning Intervention	Evaluation Plan	Follow-Up
Skill Gaps Priority 1 Priority 2 etc.						
Knowledge Gaps Priority 1 Priority 2 etc.						

Source: (WBL Organisation, 2013)

iv. Professional Body

The Evaluation Framework

In addition to carrying out a solid analysis of needs by the employers as given above, an organized and thorough approach to evaluation will help the PB in accreditation of WBL programmes.

In the late 1990s, Kirkpatrick (1996) developed one of the most popular models for evaluating workplace education programs. Kirkpatrick's system has four levels of evaluation, from the most simple (measuring learner response which will evaluate the academic institution's performance as well), to the most complex (measuring effects on business results for the employer) (see Table 0.6). Using Kirkpatrick's framework, the PB can measure the results of the WBL efforts of individual employees as well as the overall programmes developed by the academic institutions with the help of the employers. It is important to use as high a level of evaluation as possible by moving up Kirkpatrick's scale higher which will give better results.

Table 0.6 Kirkpatrick's model (1996) for evaluating workplace education programs

Level	What the Level Measures	Examples of How These Measures Can be Obtained	Remarks
1. Response	Was the employee satisfied with the workplace education and did employee complete it on time?	<ul style="list-style-type: none"> • Learner questionnaire • Discussion with learners • Learner focus group 	
2. Learning	What did the employee learn from the workplace education programme? Did it align with PB's professional registration requirements?	<ul style="list-style-type: none"> • Various tests (e.g. multiple choice, true / false, short answer, matching lists, role playing and simulated work situations) 	
3. Performance	How did the workplace education programme positively affect employee performance?	<ul style="list-style-type: none"> • Job performance (e.g. how much, how quickly, how well and compare to past performance) • On-the-job behavior • Feedback from supervisor, peers, customers • Monitoring action plans 	
4. Results	Did improvements in employee performance attributable to workplace education affect organizational performance?	<ul style="list-style-type: none"> • Return on investment calculations • Customer satisfaction ratings • Profit margins • Cost savings • Quality measures (of goods or services or both) 	