

Northumbria Research Link

Citation: Young, Robert and Hilton, Kevin (2003) The review of a design practice learning project to pilot heightened social responsibility and engagement. In: 5th International Conference of the European Academy of Design, 28-30 April 2003, Barcelona.

URL:

This version was downloaded from Northumbria Research Link:
<http://nrl.northumbria.ac.uk/id/eprint/494/>

Northumbria University has developed Northumbria Research Link (NRL) to enable users to access the University's research output. Copyright © and moral rights for items on NRL are retained by the individual author(s) and/or other copyright owners. Single copies of full items can be reproduced, displayed or performed, and given to third parties in any format or medium for personal research or study, educational, or not-for-profit purposes without prior permission or charge, provided the authors, title and full bibliographic details are given, as well as a hyperlink and/or URL to the original metadata page. The content must not be changed in any way. Full items must not be sold commercially in any format or medium without formal permission of the copyright holder. The full policy is available online: <http://nrl.northumbria.ac.uk/policies.html>

This document may differ from the final, published version of the research and has been made available online in accordance with publisher policies. To read and/or cite from the published version of the research, please visit the publisher's website (a subscription may be required.)

The Review of a Design Practice Learning Project to Pilot Heightened Social Responsibility and Engagement

Robert A Young and Kevin H Hilton

ABSTRACT

This paper describes the review of a design project devised to pilot a student community learning experience at a heightened level of social responsibility. There is evidence around the world that degree level programmes are beginning this process, albeit through initial discussions (Swan, 2000).

The project involved students in the use of open-space technology to promote creative team working and reflective practice reporting on the design project. The review involved a programme of qualitative research into the evidence and outputs created by the students and staff and compared these with interviews with the; participants, industrial sponsor, independent academic staff and professional designers. It was not possible to determine in the review whether the project had led to a greater level of creativity, but those involved described it as a profoundly creative experience. The findings showed that the project engendered truly effective team-working, complete consensus to solutions amongst the students and a heightened sensitivity to societal issues. The review makes recommendations for the future development of this form of design practice learning at appropriate levels of study.

INTRODUCTION

The four-year undergraduate industrial design course at Northumbria University (BA (Hon's) Design for Industry) ran an experimental design project as a formative assessment with twelve third year students over a seven week period from mid -January 2002. The project brief was devised to pioneer the teaching, learning and assessment process for team based, co-operative enquiry into 'real-world' holistic design issues. These issues are described in research into the levels of design practice, which begins at the ideological level of problem-solving (D3) and then moves into systems thinking (D2) before addressing the configuration of physical and virtual form (D1) (Young &

Blair, 2001) (see Figure 1). The approach of this student design project was radical because the majority of undergraduate industrial design project learning tends to be based at the D1 level. Growing awareness about changes in society and our environment dictate that design needs to revise the orthodoxy of its practice and develop methods to engage in problem solving at D3 (Young, Blair and Cooper, 2001).

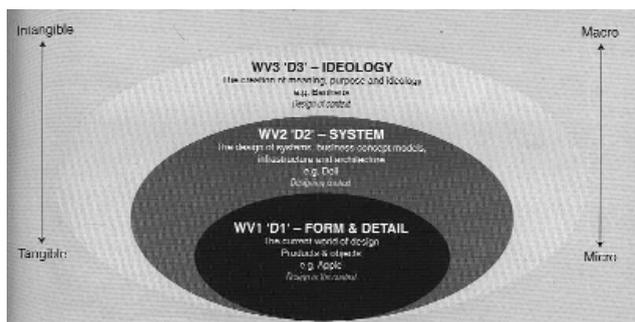


Figure 1 – Role of design within society

The project organisers were staff at Northumbria, School of Design and the Nowhere Foundation (a division of the Nowhere Limited group of companies, which is set up as a charitable foundation to further research into creativity, innovation and design practice), and Nokia, who sponsored the project and provided an industrial reference point for its review. The two project reviewers are the authors of this paper and remained independent of the project at all times.

The project was described as a Praxial Learning Experience (PLE) by the project organisers in reference to D3 level design problem solving. Praxial and Praxium are terms used to describe the different nature of design practice required at D3 compared to D1 and D2 (Young, Blair and Cooper, *ibid*). The students referred to the PLE as the 'Nowhere Praxial Design Quest' in their reporting in allusion to their aspiration to attempt creative break-through of the current design orthodoxy. The vehicle for the experiment was a design brief concerned with exploration of 'currency, exchange and value'. It was hoped that the PLE would result in outcomes representing greater integrity and depth of understanding than contemporary, orthodox design processes.

The first stage of the project lasted one week and was devised by the project tutors as a preparation for the PLE process. The tutors first explained the "rules of engagement" and the "roller coaster" that was to be followed throughout the following weeks. The rules of engagement suggested that there was to be no right and wrong, that to be truly creative the students had to free themselves of past preconceptions. The roller coaster was used as a metaphor to explain the process that students would go through and how it differed from that of the 'norm', where students are carried along a 'flat-line', a safe route that everyone knows, which is therefore comfortable. The idea of the roller coaster is that throughout the process insight is gained, which leads to emotional and creative highs, but these cannot be sustained for long so there will also be emotional and creative lows. The tutors also explained the methods to be used during the PLE. These were based on methods adopted and adapted by Nowhere which provide business organisations with a creative learning experience to further their productivity and team working capabilities. The principal method that was applied was Open Space Technology (OST) (Owen, 1997). The method was designed by the project tutors to bring a different level of consciousness to the students' thinking and interaction. It involved the nomination of a facilitator, for each day, who would also bring a 'gift' to the group to assist bonding and interaction. A typical day consisted of four sessions and three group meetings. The sessions often involved meditation and the group meetings involved critical reflective events at the beginning and end of the working day. At the beginning, key issues were raised and discussed by the student group members. Any student that then wished to mount and manage a session announced his or her intention to the group by posting it on a 'session board' at a set time. Those students that wished to participate in the session put their name against it and the sessions would then be carried out. The outcomes, discoveries, thoughts, comments and further issues were reported and reviewed at the end of the day. The sessions nominated and undertaken by the PLE students comprised; serious debates about specific topics relevant to the investigation, exploring new activities, recreational exercises to relax from the discipline of the process or to break normal patterns and assumptions, analysing films or something off-the-wall to bond the group (see Figure 2).



Following the first week, the group took increasing responsibility for the determination of the process and its development, including which methods to adhere to or discard. OST was utilised throughout the project. The next three weeks were spent working towards the resolution of the brief and the production of the outcomes for the presentation of the thinking. This required the group to work in a more structured way to meet its objectives. A significant difference in the organisation of this project

Figure 2 – Team-working event amongst the PEL student community

compared to typical design project briefs at Northumbria, was that the three remaining weeks were designated for presentation and reflection.

The project tutors advised the student group at the onset of the project that there were certain principles upon which they had to operate in order to promote the success of the PLE. These included; acting like a team, as opposed to a group working together on the same project in the same space to satisfy their own agendas. This was achieved to the extent that the students came to regard themselves as a 'community' and became completely honest and truthful with each other and themselves. This encouraged them; to reveal things about themselves that they would not normally think to reveal; to be considerate towards each other, not forcing each other to do or say things that they did not wish to volunteer; to put their egos or desires to one side; to be aware of each other and what was going on in the 'community' at large; to have patience with each other; to not force creativity; to let themselves become inspired and to be circumspect about the balance between intellectual enquiry and the fun side of the project. The concentration that the 'community' paid to adherence to these principles made the difference in the students' perception to the group working as a community and to success of the process.

METHODOLOGY OF THE REVIEW

This paper concentrates on what was mainly a qualitative case study research evaluation and review of the student experience of the project (Yin, 1993 & 1994). The review also conducted case study interviews with academic, industrial and professional designers, however, these are not dealt with in detail here.

The review conducted a direction attitude questionnaire (Oskamp, 1977) based on the aspects of evaluation, potency and activity of the students using semantic differential scales.

Case study data was then collected through four inter-related stages:

1. Semi-structured interviews with open-ended questions (Fielding, 1997) to allow comparability with the attitude questionnaire.
2. Reviews of documentary sources such as the student PLE reflection on practice reports, design files and the CD-ROM interactive presentation produced by the students of the project process.
3. Observational study of videos of the final project presentation.
4. Professional Experience Reports produced eight-months after the project.

A feedback analysis method (Heller 1969) was also used to validate the reaction of the PLE students and tutors to the initial interpretation of the above data by the authors in the form of draft paper. Email feedback and follow-up interviews enabled a more balanced reporting and interpretation to be achieved to reflect variations in viewpoint.

FINDINGS

The original anticipation of the project was that the PLE would have a positive affect on Creative Thinking, Group Bonding and Team Working. Responses from students to the questionnaire, which rated the affect of these aspects, showed that all were viewed as having a marked positive affect. The affect of the project on creative thinking was rated marginally more positive than team working, however comparison with the interview comments from the students and other groups did not bear this out as significant.

The greatest proportion of project time was spent on average on background research (27%) but this also represented the biggest percentage variation in responses. Creative flow consumed the second highest average amount of time in the project with almost the same variation as background research. Reflecting and Writing-up had

the third highest amount of project time spent on it on average. This is notable compared to the normal level of time spent on these activities during design practice projects. This proportion of time was mostly built into the project in the planning stage to ensure appropriate reflection and feedback for review purposes. Reflection on practice was seen to be a fundamental support methodology for the Open Space Technology of the PLE. Once in the habit of this process early in the project, the students were keen to maintain it throughout and again this strict adherence seems to be in contrast to the typical behaviour of student teams working on design practice projects. The commonality of view about the use of time in this regard is supported by the lowest standard deviation for the results, indicating a low level of variation in the percentage rating of students to the proportion of time spent on this activity.

Students maintained that they spent 15% of their project time on average waiting for Inspiration as opposed to 24% of their time in creative flow. The least amount of time spent by students on average was in working to hit a deadline. This is again in marked contrast to the situation typically found with other design practice projects. The variation in response to this rating was the lowest of any of the activities rated indicating a high consistency of response.

Students perceived that the PLE had affected their development most in terms of their personal awareness and least in terms of professional awareness and transferable skills. Design process understanding and subject-based knowledge were given a positive rating and seem to have had some influence on the approach of students to subsequent projects, but not as much influence on the choice of subject matter.

Students appear to have a clear perception of the value of the Praxial process to design, in terms of both divergent thinking and convergent thinking. The anticipation of the project was that the capacity of the project to stimulate divergent thinking around design issues would be higher than its capacity to assist convergent thinking of design solutions and their detail. This anticipation seems to be born out by the findings from the student survey of opinion to a high order. However, one student was keen to point out in his feedback analysis of the draft findings of the PLE Review that: '...for me the absolute validation of the project was not that it stimulated divergent thinking but that it facilitated such productive *convergent* thinking – and the output thereof.'

The responses from students concerning the appropriateness of PLE to different levels of study revealed a distinctive pattern. The pattern was clearly visible from the tabulation of the results, with the responses falling on and beyond a diagonal into the 'appropriate' half of the rating scale. This showed that the students felt that the PLE is more appropriate to postgraduate levels of study than undergraduate ones, with a correlation between increasing appropriateness and more senior levels of study. This was born out in the semi-structured interviews with students, which showed that the students equated the intensity and complexity of PLE designing with more advanced levels of study. In the feedback analysis of the PLE Review a student observed that: 'While students at a higher level of study would perhaps perform 'better' within such a process, I feel that the process can contribute significantly to an undergraduate program. I think that the crucial element with regard to how much a student can get out of participating is their *experience* in education, and the knowledge and confidence gained.'

The student rating of the appropriateness of the PLE to the different levels of designing described above, showed a bias towards D2 – design at the level of systems thinking and D3 – Design of Context, i.e.: policy formation. Students were not as confident about the appropriateness of PLE to D1 – design at the level of product configuration and detail. This view may have been biased by the fact that the project was directed more toward D3-2 thinking and students' predominant experience of PLE was with regard to these levels of thinking. They had also been made explicitly aware of the lack of tackling such issues in 'mainstream' student design practice.

The analysis of the findings shows that there seems to be a strong pattern match to the shape of the bar charts for the student's rating of the PLE to levels of study and their rating of the PLE to the levels of design practice. Contrasting these bar charts with the interview responses indicates that the students feel that the PLE design process is suitable for tackling more complex and advanced levels of study and design practice (see Figure 3).

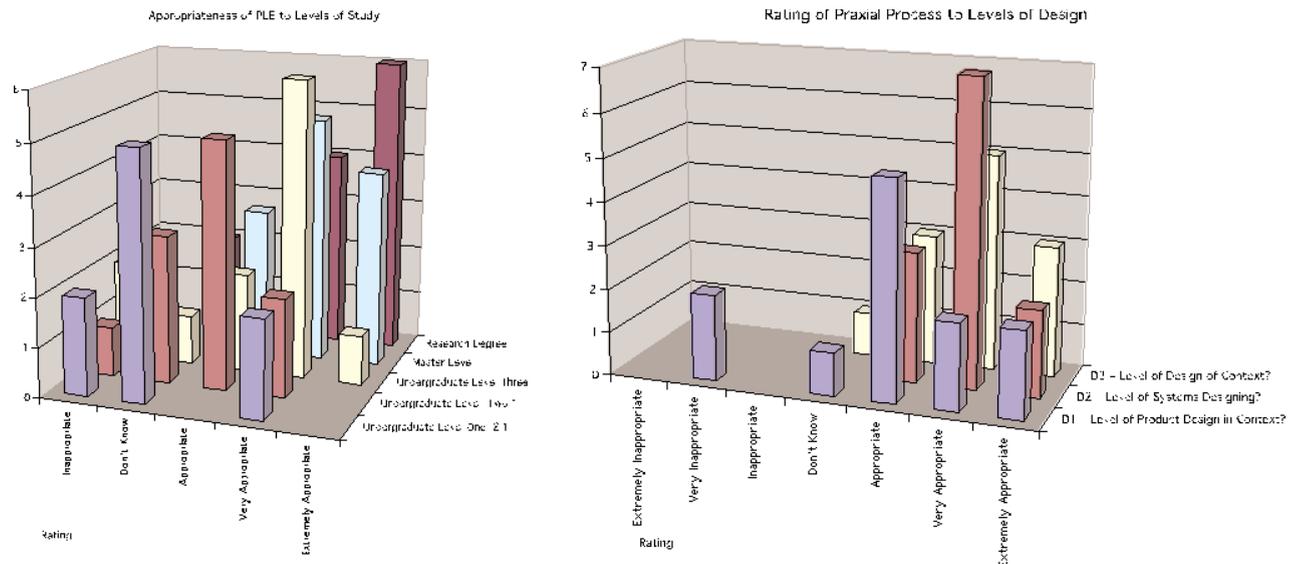


Figure 3 – Pattern match to bar charts of: students’ rating of the PLE to levels of study and students’ rating of the PLE to levels of design practice.

All students’ believed that their performance on the project merited a pass. Two-thirds of the student population felt that their pass was very high or extremely high, indicating a high confidence level in their performance and a positive attitude to the review of the project.

Students were asked to select five keywords, which summed up their experience on reflection of the PLE. On a rating scale that examined the positive and negative connotations of the words, it was found that 68% of the words inferred a positive or passive connotation to the students’ experiences, with 32% having a negative or passive connotation.

A meta-matrix was created for the analysis of the responses of the students to the semi-structured interviews (Yin, 1994), this indicated:

The discipline of reflective practice, which was advocated to the student group by the staff and adopted by them throughout the project, had a significant affect on the review of the creative process. All members of the group had felt the need to be there for these events. The demeanour of the group was felt to be different to that adopted in relation to previous design practice projects, including those that required team work by the students.

The team culture functioned along predominantly democratic lines. Some individuals were quite strong and vocal, but no-one adopted the permanent position of project leader. All dissent and contention was voiced and given a full airing by the student group. Everyone was heard, decisions were not found to be laboured, however, once research was complete the group was able to move quickly to synthesis of ideas with good unanimity of purpose and intent. There appears to have been much less contention in this respect compared to that found in other team-based design practice projects with student groups. There was a great interchange of roles and leadership. This was promoted by the role of the project facilitator, a position held by all of the students on a rotating basis.

The project tutors made observations to the group that assisted them in achieving resolution and reconciliation at certain critical points of the project. However, the prevailing view was that the creative process was on a ‘roller-coaster’ and that the influence of the project tutors was not significant to this, when the project got underway, that the PLE process and team had developed a life of its own. This was exemplified by the advice given to the main project tutor to ‘back off’ and not to take-over in an early meeting that occurred after the project had got underway. The project tutor recognised the ‘sovereignty’ of the group in coming to this conclusion and commended their forthrightness.

An unanticipated aspect of good practice and success of the project was that the group did not lose any sleep prior to the final presentation of the project. The students felt that this was a result of good and genuine teamwork! They had got to the point where they all felt strongly about the outcome of the project and their confidence in being able to present this to different audiences. There was no fighting over ideas or ownership, in fact, no overt competitiveness between the team members. The students felt that they had created their own agenda for the critique. They did not feel that this compromised the quality of the work or their approach to the project in any way.

PLE gives students an open-minded approach to design process thinking and the students considered that there is a lot of value in this approach. The value of suspending judgement about a design brief until the really fundamental issues underpinning it have been researched and understood is not typical of design practice learning projects (Rittel & Webber, 1984).

Students moved quickly from the PLE into on-going course work in the shape of their second industrial placement. Students reported that their attendance at interviews with industrial placement companies led to some awkward moments of explanation for them concerning the nature of the project, although this was deemed to be a function of the type of companies that these interviews were with (i.e.: organisations whose business process and outlook was rooted in D1).

The process that the project became was not the same as the levels of design model (Young & Blair, *ibid*) described by project tutors at the start of the project, but this was not regarded as a problem to the students. They felt that they had re-framed the project in the light of their team approach to the subject matter of the brief.

Students were generally in awe of the project at the time of its completion. However, the climb down from this was an awkward process of re-adjustment for around half of the members of the group. This was compounded by a cautious reaction to the project from the industries that a number of the students were involved with in subsequent industrial placements. Students were also surprised by a sceptical reaction to the project by those students and tutors who were not directly involved in it. Students contended that the PLE is a distinctly different experience to other methods of design project learning. It entailed real teamwork! real trust! real collaboration! It also differed from the experience of design practice in the majority of design and manufacturing industries.

The PLE has not had as much affect on the choice of projects by students as their approach to considering the issues relating to them. There has been an increase in socially responsible design issues in the formation and development of design briefs, in and beyond the PLE student community.

Review of the Professional Experience Report

The PLE students are now in the final year of their undergraduate studies. An assignment undertaken by students at the end of the first semester of the final year is a Professional Experience Report (PER). This report requires the students to develop their reflection on practice report-writing skills, in preparation for the production of a critical justification of a major design project. The assignment requires students to write about the learning experiences that they believe have had the greatest influence on their personal development as design professionals. No prompt was given to the students concerning the nature of their selection of experience(s) other than to reinforce the criterion that it or they should be deemed by them to be the most influential on their development.

Of the twelve students submitting this assignment involved in the original PLE, five of them made direct reference to the PLE as an influential experience: of these reports, one student devoted the report exclusively to the PLE, one contrasted the PLE with an industrial placement, two made reference to the PLE and contrasted this with two industrial placement experiences and another educational experience, and one contrasted it with an industrial placement and three other educational experiences. None of the three students from Malaysia who had joined

the course prior to the start of the PLE, and had elected to do the project, selected it as an influential experience in their reports.

Student Reference	PLE	Industrial Placement Experiences	Educational Experiences
A	1		
B	1	1	
C	1	2	1
D	1	2	1
E	1	1	3

These reports were thought to be a powerful indicator of unsolicited views concerning the impact of the PLE on the student's learning development. Critical observations are:

Student 'A' – regarded the PLE as the most fundamental experience of his degree. He remarked that as the project progressed the students increasingly seemed to be the 'right people for the job', they were a varied range of characters but with the right kind of disposition. The method of working advocated to and adopted by the group was physically, mentally and emotionally draining as a process. Each day the students left feeling very tired. However, the emotional bond encouraged between the students by the staff at the start of the project was instrumental in the group bonding as a team – as a 'community'. This was seen by the students to be quite different to the normal project experience. This observation also appears to fit the concept that Sternberg (1998) developed for describing interpersonal bonding and the experience of love. The elements involved were Intimacy, Passion and Commitment, where the strongest relationships formed and were maintained when people's triangles matched in proportion, offering significant contribution to the intent of that relationship.

The group were advised at the start of the project that the nature of the PLE might lead to scepticism or antipathy from those in the year group not engaged in the project. This manifested to a level that was greater than predicted by the staff. On reflection it was felt that this might have been due to the PLE's use of resources, the cult-like manner that the group adopted early on, e.g.: the language that student 'A' found himself using was later felt 'to be like the effects of brainwashing'.

Student 'A' felt that the project outcomes did have much more value than usual and the concepts were both thoughtful and very thought provoking, being a statement of philosophy and ideology as much as of design. On the other hand, the philosophical nature of the work meant that the statements were not altogether practical, which is a reflection on the project itself! The student's implication from this was that although PLE had changed his life, it was nevertheless not viable as a sustainable process for one group! It would have to evolve or hybridise for another group to experience it.

He felt that the PLE excelled in the respect that it enabled him to learn about himself to a far greater and more public extent than any previous learning experience. However, he experienced a great sense of loss of direction after the conclusion of the project. He felt that this happened because PLE had allowed him to scrutinise and question everything he had been taught about design previously. After the project, he had to start over again to build up his personal constructs (Kelly, 1955). His rationalisation of this loss of direction was due to; 'the clash of old and new ways of thinking'.

Student 'B' declared that the PLE had a significant and unexpected affect on him: ...'it completely drained my motivation to be a designer'. However, immediately after completing the PLE he realised that he had learned a huge amount about the other students, about the design profession, about himself, but that his D1 product design work had lost its sense of value. The PLE had offered him the chance to tackle enormous philosophical

issues surrounding design and next to these his usual work seemed to hold little significance. His subsequent reflection is that he is satisfied that he had the opportunity to apply the PLE process to his working methods but found them inappropriate for use in his work as a D1 product designer. He did a placement over the summer with a small two-man design group in Cambridge that helped to 'rehabilitate' his approach to product design as a worthwhile profession. His concluding statement in his report read: 'I have plenty of motivation again and am content to think of myself as a better-informed design professional with some unique experiences behind me.'

Student 'C' delighted in the PLE: '...the project was a dream come true; time to study philosophies I had dreamed about learning. I felt I was given the gift of empowerment in such a way that by the end of the project I had produced my favourite piece of work to date.'

Student 'D' found the exploration of new creative techniques very interesting but he was sceptical of the new levels of consciousness that the group was asked to achieve. He was also at odds with the language the project cultivated; ...'words like journey and quest were used to describe what we were doing. We were pioneers of a "new prototype play-space". We were told to "find our complete trust in each other", it felt very cult-like.' He left the project at the beginning of the third week to defer to a 'safer, conventional D1 transportation design project.' A decision that he later stated, in his PER, he regretted. The transportation project he completed was by contrast; 'a typical live project where I was working with people I knew well, using skills I felt comfortable with. ...the final piece...although interesting, failed to challenge my thinking in the way the PLE had.'

Student 'E' was a mature entrant to the course who found that the PLE fitted his broader interests in creative self-development. He contrasted the PLE with a range of different life shaping events. He believed a latent power, present in design, could and should be applied to more problems and opportunities than commercially driven product development. He explained that: '...the project was an opportunity to apply something I felt passionately about – the quintessence of the fundamentally human nature of design and the power it could hold beyond commerce.'

General comments reflecting on the PLE were that:

'...the project was a unique experience, but the likelihood of doing something similar in the future is low.'

'...We experienced this (the roller coaster) throughout the weeks. What we did come to realise is that generally the lows were very low. '

'...my eyes have been truly opened to the world I live in', the effect of the PLE process was; 'as if someone had turned up the volume and the brightness, I could see so much more for what it was, I could see so much more detail.'

'All in all the process was generally considered to have been a profound success, ...especially so for the twelve people that took part and was evident in the output, of which we are very proud.'

'The legacy of the experience was a confirmation of the power of possibilities without stricture or ulterior motive. Personally the project was a great boost to my self-belief and ambition.'

The comments of the PLE students in their PERs shows that they believed the project allowed for ideas, theories, opinions about industry, design and society to become significant. The views of the PLE students with the most positive recollections suggests that following it; they found difficulty going into a regular product design job concerning D1 activity only. They also held the opinion that design as a discipline has an excellent contribution to make to change the attitudes of society, but that this is not normally recognised and given an opportunity to happen.

CONCLUSION

The PLE enabled its students to profoundly question contemporary design practice. Through its process they had become more concerned with the resolution of humanitarian or environmental issues (D3 level design) and to offer strategic solutions that exist outside of commercial design. On completing the project, they felt a continued responsibility to work at this level on such issues. However, some students were unsure how to relate the experience to their previous product development activities, which left them momentarily disoriented and depressed, questioning whether or not they should become designers. They felt a need to apply their new approach to design but felt powerless to do so.

The research to evaluate and review the PLE has concluded that it is a powerful process for encouraging group bonding and teamwork to the point of subordinating individual actions and agendas in favour of team activity and group thinking. PLE creates a high level of confidence on the part of its team members, including marked improvement in interpersonal and intra-personal skills. All of its students claim to have improved their capacity to look more broadly at the context of their work and to articulate its issues. This resulted in an awkward process of re-acclimatisation for some group members immediately after the PLE has finished.

The purpose of the review was to evaluate the effectiveness of the learning and assessment process, the relevance and achievements of the project from academic, industrial and professional perspectives. It was not deemed possible to evaluate the quality of creativity produced by the PLE, or whether the level of creative output was greater than that from conventional design methods and approaches typically used by design students working in teams or as individuals. However, those involved described the PLE as a profoundly creative experience, which oscillated in direct relationship with the emotional highs and lows felt by the PLE group. The unanimity of purpose and consensus of the PLE students towards the outcomes is unusual and significant.

RECOMMENDATIONS

The PLE incorporated a novel and rigorous three week period of reflection supported by staff at the end of the project, however, the type of support for students to assist in their re-acclimatisation outside of the PLE and to understand their experience and the ways in which it should relate to their on-going design learning and personal professional development were probably underestimated. This led to the greatest level of criticism by students and complements the intense passion felt about the quality of personal learning development and creative breakthrough that they experienced. Future development of PLE must consider this as a consequence of the process and an important requirement of support for this kind of project.

It is recommended that further development of PLE should concentrate on its capacity to empower student groups and enable them to look at the context of design activity more broadly. That the process continues at a formative level of assessment only for undergraduate level at present and that it is considered as a method for facilitating postgraduate interaction on contextual issues for reflective design practice.

Further research into PLE should explore the group dynamics and team-working including facilitation methods, bonding mechanisms, decision making efficiency and effectiveness versus consensus building and inclusivity.

ACKNOWLEDGEMENTS

The authors would like to thank the students and staff who took part in the PLE project for their assistance in carrying out this review.

REFERENCES

- Heller, F.A (1969) 'Group Feedback Analysis: a method of field research', *Psychological Bulletin*, 72 (2), pp 108-117.
- Kelly, G. A. (1955) 'The Psychology of Personal Constructs'. Vol's 1 and 2. W. W. Norton.
- Oskamp, S. (1977) 'Attitudes and Opinions', Englewood Cliffs, N.J. Prentice Hall
- Owen, H. (1997) 'Open Space Technology: A Users Guide'
- Rittel, H. W. J. & Webber M (1984) 'Planning Problems are Wicked Problems', in Cross N (ed) *Developments in Design Methodology*, John Wiley & Son, Chichester, pp 135-144
- Sternberg, R. J. (1998) 'Cupid's Arrow: The course of love through time'. Mass.:Cambridge. Cambridge University Press.
- Swan 'Re-inventing Design Education in the University', Curtin University of Technology, Editors Cal Swann and Ellen Young
- Fielding, N., (1993) 'Qualitative Interviewing' in Hall, David and Hall, Irene (1996) *Practical Social Research: Project Work in the Community*, London: Macmillan Press Ltd.
- Yin, R.K., (1993) 'Application of Case Study Research', London: Sage.
- Yin, R.K., (1994) 'Case Study Research: Design and Methods' (2nd Ed), London: Sage.
- Young, R. A. & Blair S. (2001) 'What is new design?' Blair S. co-author. In *Newdesign* No.4, 2001
- Young, R.A., Cooper A. & Blair N.S.P. (2001) 'Re-designing Design Education', Keynote address. In: *ICSID Educational Seminar 2001* Seongnam, Korea

BIOGRAPHY

Dr Robert A Young



Director of Research, School of Design, Northumbria University

Bob Young is Director of the Centre for Design Research, a founding partner of the Sustainable Cities Research Institute at Northumbria University and sits on the Design Research Society Council.

His research interests include the promotion of socially, environmentally and technologically aware approaches to design, digital design methods, interface and interaction design. He is also involved in developing action research methods for design research and design practitioners and exploring the future of design praxis. He is engaged in medical design research and the management of professional design practice and has been the recipient of major European funding to develop medical product innovations for SME's. He has had considerable experience supervising research degree programmes.

Dr Kevin H Hilton



Dr. Hilton is the Second Stream Funding Director for the School of Design at Northumbria University, working from the Centre for Design Research. He was Co-Founder of the Centre for Industrial Design at the University and Co-Founder of Express Engineering Group's product development company XPD, later re-branded Virdev.

His field of research is the 'Psychology of Innovation', which encompasses a number of study areas within psychology, design and business. International interest in this field has been such that he has set up 'POINT', a network that seeks to encourage discussion, news and knowledge transfer between all interested members.

His focus within this field is individual differences and influences. The aim is to investigate and develop the intent to create change, through opportunity identification, communication, problem solving, and decision-making skills.