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Using 'flipped classroom' to place sport students' learning at centre stage: insights and food for thought

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Introduction

Considerable research reveals that 21st century employers are seeking to recruit graduates who are adaptable, are able to cope with challenging situations, show initiative, think strategically, are willing to try new things, are self-motivated and display efficient self- and time-management skills (Andrews and Higson, 2008; Bridgstock, 2009). If such dynamic and flexible work-ready individuals are to be created, there needs to be a Higher Education (HE) response to the growing body of evidence which emphasises the adoption of alternatives to traditional lecture/seminar formats, for those may no longer be fit for purpose in the learning and teaching context of the contemporary United Kingdom (UK) student population (McLaughlin *et al*, 2014; McLean *et al*, 2016; Reddan, McNally and Chipperfield, 2016).

What is 'flipped learning' and how does it differ from traditional teaching strategies?

Across the global HE sector, it is well accepted that effective teaching methods include a combination of active learning and interactive engagement between academic staff and students (Reddan *et al*, *op.cit*; Roach, 2014; Seery, 2015). The past decade has witnessed rapid growth in the use of flipped learning across diverse educational contexts and disciplines, with an emerging research base supporting the approach's positive impact upon promotion of student participation, attendance, engagement, achievement and deeper levels of learning (Findlay-Thompson and Mombourquette, 2014; O'Flaherty and Philips, 2015).

By this means, students are introduced to new materials outside formal class-based settings via completion of pre-assigned tasks and activities, either independently or in small groups, before they attend timetabled sessions (Gilboy, Heinerichs and Pazzaglia, 2015; Gunyo, 2015). Class time is spent on engagement within highly-participatory, interactive and student-led learning. Students then support each other to engage creatively in the application of theoretical concepts and subject matter to real-world settings, taking advantage of the consequently enhanced opportunity for theory to be applied in practice (Reddan *et al*, *op.cit*; Roehl, Reddy and Shannon, 2013). This requires students to take greater ownership of their studies and supports them to learn, independent of academic staff. The hands-on, blended-learning format enables students to experience the problem-based learning and inquiry-orientated strategies which are key drivers in nurturing critical-thinking and problem-solving skills (Butt, 2014; Mclean *et al*, *op.cit*).

Research investigating both student perceptions and the effectiveness of flipped learning is limited at present (Butt, *op.cit*; Seery, *op.cit*). Ryan (2013) reported that, through flipped learning, undergraduate biochemistry students succeeded in improving various soft skills, including time management and teamwork, appropriate for employment and lifelong learning. Mclean *et al*, (*op.cit*.) found that medical science students enjoyed the interactive and collaborative nature of flipped classes and refined their independent learning skills as a consequence. McLaughlin *et al*, (*op.cit*.) exposed a first-year pharmaceuticals cohort to self-

paced online videos instead of formal lectures and used subsequent class time to engage students in active-learning exercises. Class attendance, student achievement and perceived value of the model all increased as the module progressed.

Bates and Galloway (2012) reported that over eighty per cent of first-year physics undergraduates preferred flipped rather than traditional teaching methods. Butt (*op.cit.*) surveyed actuarial students at the start and end of a five-month semester to obtain views on their experiences of a flipped class. Feedback was mainly positive, with the majority indicating that they would like to encounter the approach again during the remainder of their degree programme. More recently in Australia, Reddan *et al* (*op.cit.*) undertook one of the few studies to focus on the impact of flipping the classroom with undergraduate sports students. Through quantitative surveys, students reported having more positive and sustained interactions with both academic staff and peers in flipped contexts than in the non-flipped modules in their degree programme; they acknowledged that flipped delivery was more enjoyable than were traditional approaches and had more helpful impact upon group work, discussions and practical applications.

Case study rationale

The past decade has seen an upsurge in quantitative studies investigating North American undergraduate science student reflections of flipped learning (Seery, *op.cit.*). Current research exploring student preferences for the approach across the UK HE sector is limited, particularly within sport – surprising, given the large student cohorts recruited annually to academic programmes within the discipline. This paper extends previous work undertaken by Reddan *et al*, (*op.cit.*) by qualitatively exploring how flipping the classroom in a final-year sports coaching module had positive impact upon the engagement, satisfaction and achievement of an under-represented sports-student population. It presents evidence, throughout the study, of partnership working between the module leader and students, who co-designed, planned and implemented the data-collection procedure, as well as identifying and sharing best practice.

Method: why flipped learning was employed

Over a twelve-week period between September 2015 and December 2015, sixty-nine students – enrolled at a post-92 university in northern England – completed a level-six sports coaching module, delivered using flipped learning. The decision to flip the learning was made after the module leader's critical reflections upon successive years of teaching the module and after careful consideration as to how best to improve declining student engagement, attendance and achievement. Historically, the module was delivered over a whole year by means of a two-hour lecture at the start of the week (Tuesday afternoon) and subsequent two-hour seminar format (Friday morning), on a fortnightly basis. Whilst student module evaluations and course representative committee feedback revealed the module topic and indicative content to be popular, the combination of excessive theory and tutor-led delivery styles was poorly received. The modified flipped-learning delivery method required completion of several pre-attendance activities and presence at a one-hour seminar (n=69) and subsequent ninety-minute tutorial (n=23) each week over a three-month period. Every class-based session was facilitated solely by the module leader (case study author).

What students did in and out of class

Students were placed at the heart of the learning experience and those who engaged with pre-attendance tasks came fully prepared in advance to construct their own learning. This enabled timetabled sessions to be facilitated in a highly-interactive and practically-applied manner, thus promoting independent learning and the development of desirable employability skills. Within all timetabled classes, students attempted various problem-based activities, including paired debates, quizzes, group-based tasks and whole-class discussions; to do so, they listened to weekly audio blogs (lasting no longer than five minutes and explaining the nature of activities to be completed) created by the module leader and uploaded as mp3 files to the module's *Blackboard* site. They also engaged with supplementary *PowerPoint* material and pre-assigned activities comprising several short, problem-based, real-world tasks. (Examples of activities completed are available from the author on email request.) All materials were uploaded to the institutional virtual learning environment in early September 2015. Elements of the pre-attendance workload were completed, either individually, in pairs or in small groups no larger than four. This encouraged the application of theory to practice and introduced students to the material to be debated, evaluated and critiqued in class. The participatory nature of timetabled sessions stimulated the sharing of thoughts, feelings and experiences and the application of key theories and concepts learned to real-world scenarios; students were thereby supported to consolidate and demonstrate knowledge and to discuss personal examples and anecdotes.

How academic staff and students worked in partnership

In recent times, across the UK HE landscape, academic staff and students have increasingly worked in partnership (Murphey, Nixon, Brooman and Fearon, 2017). Clear evidence confirms partnership working as an influential mechanism for greater student engagement and satisfaction, deeper learning and achievement (Delpish *et al*, 2010). Following institutional ethical clearance, the module leader invited, by email, each level 6 cohort member to take part in a teaching and learning staff-student partnership project. Interested students attended a face-to-face group meeting with the module leader, at which study aims, objectives and procedures to follow were presented. After this meeting, eight students agreed to participate and provided consent.

Working in partnership, students and the module leader decided that personalised audio blogs would be the most effective data collection tool to employ. The use of audio diaries and blogs across several social science disciplines, such as education (Worth, 2009), to capture accurate, rich and insightful anecdotes and occurrences as they unfold has increased noticeably in recent years (Crozier and Cassell, 2015). The approach provides heightened opportunity for construction of personal experience to be directed by participants as opposed to exposure to the influence of a researcher within more formal interview or focus-group settings. As such approaches are often retrospective, precision of data is adversely influenced by memory decay and bias; the shorter the interval – between events to be talked about and the recording of the recollections – the better!

A robust strategy was employed, in which blog questions were co-created, face to face, by the module leader and the students during another group session and then piloted and implemented. Adequate time and careful consideration ensured that all questions were sufficiently structured and worded to maximise the likelihood of capture of rich insights into

experiences and meaningful thoughts and opinions. Each student was provided with the option to self-record her/his three audio blogs or to be individually interviewed on three separate occasions by a trained postgraduate peer mentor or an academic staff member with experience of undertaking qualitative pedagogic research. In all cases, students preferred the option to self-record, using their own devices at times and locations suited to themselves.

Data collection

Eight sports students (six male and two female; mean age = 21.5 years) completed personalised audio blogs using their own phone or tablet or PC/laptop on three separate occasions: blog one during teaching week four (week commencing 12th October 2015 – baseline); blog two during teaching week eight (week commencing 9th November 2015 – midpoint of flipped intervention); blog three during teaching week twelve (week commencing 6th December 2015 – post intervention).

Blog one focused on gauging student awareness, knowledge and expectations of flipped learning. Topics addressed during this initial blog included: 1) Explain what flipped learning means to you; 2) Discuss your previous experiences of flipped learning; 3) Talk about your feelings towards encountering flipped learning; 4) Describe any challenges you anticipate the approach may create for you.

Blog two explored what initial experiences of engaging with the approach for the first time were like. Matters addressed by students in blog two comprised: 1) Discuss how you are finding flipped learning thus far; 2) Comment on whether or not the experience matches your expectations; 3) Talk about how the approach has had impact upon your relationship with the module leader; 4) Explain how the module leader encourages active student participation in class.

In blog three, students were encouraged to reflect critically upon the whole of their twelve-week exposure to flipped learning, discussing how they had developed as learners (or explaining why they had not) and assessing the subsequent impact of the approach upon their overall module experience.

Points addressed by students in the final blog included: 1) Discuss your overall experience of the module; 2) Explain how the experience of a flipped classroom compared with that of a traditional lecture-seminar approach; 3) Explain the impact of the approach upon your relationship with the module leader and your peers.

In mid-December 2015, each participant emailed her/his three completed audio blogs to the module leader, who then transcribed and interpreted the data. In total, twenty-four separate blogs were received, ranging between four and eight minutes in duration and lasting a combined duration of 109 minutes. The module leader scrutinised every blog transcript several times and annotated each with significant comments and interpretations. At this stage, each student individually met face-to-face with the module leader to discuss the accuracy of initial data analysis. This involved the answering of several questions for clarification as part of a member-checking procedure intended to provide greater depth of and accuracy in existing data (Lincoln and Gubba, 1985).

Results

Blog one: initial expectations

For all students, this was their first encounter with flipped learning. All had limited theoretical understanding and awareness of the approach and were initially overwhelmed and apprehensive about the perceived increase in workload, time demands, responsibility and independence placed upon them as learners. Hence, there was considerable student resistance and nervousness at first. Initially, buy-in – as demonstrated by completion of pre-attendance tasks – proved problematic, as students were accustomed to slower-paced modes of module delivery. Three students, unsuccessful in their attempt to complete all assigned pre-attendance activities during weeks one, two and three, consequently found subsequent class-based activities difficult to achieve, thus leaving with more limited understanding of the topics covered than peers who had engaged. However, gradually, as weeks passed, more and more grew to like being able to learn, whether in or out of class, at their own pace, in their own time, individually or with peers, and arriving at class with some prior knowledge of content to be covered.

All students increasingly felt in control of their learning in this module, in contrast to their experience in other level six modules' and liked the more frequent interaction with their peers in completing applied, real-world, problem-solving activities. They especially enjoyed the greater opportunity for open dialogue with the module leader and started to believe that time they committed to out-of-class tasks was very well spent. As the weeks passed, each student found engagement and compliance with the approach ever more fulfilling and worthwhile, enhancing as it did subject-specific knowledge, the quality of future assessment submissions across the degree programme and day-to-day coaching practice.

The following blog extracts capture students' initial expectations:

"I have to say that I am a still a bit nervous about the whole thing but still like it although I don't know where I will find the time to complete all the extra work that gets set"

"Until the other week, I had never even heard of flipped learning"

"I can see how not completing work outside of class can have a negative knock on effect on my learning as I won't have the answers needed to fully contribute and engage in the following weeks sessions"

"I think flipped learning will be better suited to students who are really motivated to do well in life and better academically"

"Up to now, the discussions we have had in class allowed us to share our ideas more and find out about what other students do in terms of coaching and hobbies. I learn lots from listening to what others do and didn't realise what other people in the class were doing in terms of coaching and gaining coaching qualifications"

"I can see how it [flipped learning] will be time consuming but I like the early feel and I can see how it should develop skills I will need outside of university life once I leave"

Case Studies

“I think it is not worth turning up to classes if you haven’t completed or even attempted the pre set work”

“Sometimes I just want to sit quietly in a lecture theatre and listen when I want to listen and switch off when I want to switch off. With the flipped classes, I feel I have to be fully engaged all the time and sometimes I don’t feel like doing that”

Blog two: early experiences

Student satisfaction and engagement increased steadily through to mid-module point. The approach had begun to exceed the early expectations of all students and encouraged confidence and greater freedom of speech in their discussions with peers and the module leader. For most, it proved to be an essential level-six wake-up call, for they had to be alert and to concentrate within class time; their overall module workload increased considerably, in contrast to that which they had experienced at levels four and five. They enthusiastically undertook, alone and in small groups, a larger proportion of practically-applied activities which were lively, academically stimulating and subtly linked to summative assessments and individual journeys. The implementation of weekly formative assessment, by means of spot tests and quizzes, proved worthwhile and popular with all eight students and promoted self-learning. However, not all students regarded the flipped classroom as appropriate for every module and five of them individually and privately (by both email and face-to-face dialogue) expressed their frustration to the module leader when the others attended sessions without having attempted the pre-attendance activities that they themselves had taken the time and effort to do.

Removing basic knowledge acquisition from the classroom and devoting class time to increasingly hands-on interactive learning encouraged the development of genuinely equal and much appreciated personal and professional inter-relationships between students and the module tutor. Flipped learning was deemed helpful by several students for nurturing various graduate employability attributes, including initiative, time management, problem-solving, reflection, emotional intelligence, team-based skills and creativity. Frank dialogue and open sharing of thoughts, feelings and experiences became characteristic of all sessions and of all students, regardless of individuals’ social backgrounds. The following blog extracts capture the essence of students’ early experiences:

“I am trying to do all the work we are given as I can see how doing it will help with my assessments for the module. It’s in my best interests really”

“So far, I have enjoyed flipped learning. It’s far different to other modules where I am used to only doing work when deadlines are due in and when its assessment season. It has definitely helped me improve my understanding of key concepts in the area of talent development which is great as I want to seek employment in this discipline”

“The tutor is really good at getting everyone involved in the sessions. You can’t really hide. They don’t pressure you to speak up in front of everyone though, but you feel confident in doing so as I turn up with a pretty good understanding after doing the pre class tasks”

“I am starting a teacher training course in September and I will take lots of ideas try to apply them myself like bingo and crosswords and quizzes”

Case Studies

“I get lots out of the module as I am more engaged and have better motivation to do things”

“I don’t think flipped learning would be useful for every module we do, like say dissertation”

“Up to now, I have completed every task and attended class more ready to learn but sometimes other students have not done the work we get set which can hold up the start of the session which can be frustrating”

“This is a more engaging module and not just reading from the board. I have remembered things so much more. It sticks better this way. A really efficient way of learning for me”

“The lecturer tends to take more of a back seat and lets us lead the way. It’s much more useful than writing down from slides”

“I am having a great experience so far. It’s a lot of work compared to other modules, but I am going well. The tasks have also helped for my dissertation”

“If you do the tasks before the class then everything just sort of clicks and sinks in during the activities we do in class and you can see we have done so much work but it has been no issue as its all fun and engaging”

Blog three: overall assessment and evaluation

Now more and more acknowledged by students and staff in HE as an outstanding – on account of its real-world focus and its academically-stimulating and memory-enhancing qualities – learning and teaching strategy, flipped learning did eventually win over all the students in this group. They documented repeatedly that all the pre-attendance activities and class-based sessions felt truly participatory and practical and a module initially perceived as somewhat daunting and overwhelming was ultimately found to be enriching, empowering and rewarding. In the long run, students valued learning collaboratively with peers and taking greater responsibility for their studies. The approach positioned them more centrally within the learning experience than previous teaching formats encountered at university had done.

All students felt exposure to flipped learning supported the nurturing of academic and personal skills’ development, including paraphrasing, reflection, referencing, evaluation, active listening, initiative, autonomy and self-regulation, all key attributes expected of graduates entering the contemporary world of work. They also saw the approach as more personalised than traditional ones and strongly recommended its integration into levels four and five of the degree programme. Two students interviewed for selection for a postgraduate teaching course discussed their ambition to deploy flipped learning in their own practice. The following blog extracts capture the students’ experiences overall:

“Completing all tasks has really worked well to chip away and prepare my assessment for this module”

Case Studies

“Through this module, I have formed a really great relationship with my tutor and improved my interactions with other students on my course. I think flipped learning should be used much more across our course and other courses across the university

“Despite my early worries, I have really enjoyed learning this way. It has never been boring and helped develop skills I think I will need to secure a job in the future”

“At first, I was sceptical and worried and a little anxious because we got so much work to do for the first tutorial. But it was all about managing my time. I was 50% for and 50% against flipped learning three months ago but now I am 100% for it. I want to be a teacher and will certainly look to use it myself with my own students”

“Bringing in flipped learning in year three was a shock to the system so maybe it could be introduced earlier in the degree in years one and two also”

“To be honest, I used to kind of only want to learn about what I needed to know for the assessments but this was not the case in this module at all”

“A lot of the modules I have done in the last two years I have been at university, well, I didn't really understand the content as well as I should have but got a 2:1 grade, so did well in terms of grade but poorly in terms of learning. But in this one, I have taken more responsibility to get to grips with the content and doing so has really cemented and grooved all the content we have covered. It has been time consuming though”

“I think the short quizzes we do each week would be beneficial in all modules on the degree as a way of checking knowledge and understanding more regularly”

“I talked about the top trump cards I made as part of my assignment at my teacher training interview and the panel really liked the idea and asked lots of questions about it and could see how it would be really fun for school children to do”

“The approach makes it able to talk and discuss things more. There are no barriers like in formal lectures where tutors will stand at the front, read from power-point and leave. We are able to speak with the tutor about his personal experiences and ask further questions”

Discussion

Flipped learning helped to transform a level six sports coaching module historically typified by student disengagement, intermittent attendance and underperformance to a programme exemplifying dynamic engagement and its consequent benefits: improvements in attendance, attitude, motivation to learn, achievement and employability skills development. All students in this group encountered flipped learning for the first time and many were initially overwhelmed by greater workload, responsibility and autonomy. Yet they started to like being able to study in their own time, whether alone or with friends, in a learning context both differentiated and student-led. Their completion of pre-arrival tasks meant that they arrived to classes engaged and excited to learn more about sports coaching and principles of high performance and talent-identification. Problem-based tasks, paired debates and whole-class discussions, supplemented by regular formative assessment, replaced tutor-led delivery, enabling greater opportunity to digest, consolidate, demonstrate and apply knowledge. This, in turn, placed students centrally within the learning experience,

encouraging greater collaborative inquiry and supporting the development of self-regulated independent learning.

Module leader reflections

Although it may have been time-demanding and workload-intensive, flipping the classroom for the first time had a positive influence on my motivation and satisfaction as a lecturer. The process supported me to become more student-centred and it stimulated me to think outside the box in much more innovative and creative ways. Implementing the approach encouraged in-depth critical reflection on current practice and enabled relationships with students to blossom more than ever before through regular and personalised face-to-face dialogue. As the module progressed, I found that my role, previously directive, became more supportive, in and out of class, with proportionate increase in student autonomy, empowerment and self-discovery.

I left 'PowerPoint karaoke' behind and started blending into the background, saying less but probing more. Peer-led questioning and feedback became the norm – to reinforce understanding, co-construct meaning and extend learning. As the weeks passed, I became accustomed to checking learner understanding with targeted questioning strategies far more regularly than at any other time during my academic career and I made greater use of practical examples and insights from industry and high-performance sport to consolidate learning. I delivered all sessions on the module alone, since achieving buy-in from fellow academic staff across both my discipline and wider departmental team had been generally challenging. However, having shared my experience by means of guest lectures, workshops, conference presentations and informal discussions, I have taken pleasure in directly supporting a small number of colleagues, across my institution and beyond, who are keen to learn more and experiment with the approach.

I must stress that the increase in module workload was particularly noticeable, especially leading up to the start of the semester in September 2015, when all audio blogs and resource development needed to be complete. I anticipate that the approach may also prove challenging to administer, coordinate and manage when there are significantly larger module cohorts (e.g. $n < 150$) and academic module-delivery teams.

Showcasing of best practice across the Higher Education sector

The flipped learning approach received excellent feedback in the form of 2015-2016 student module evaluations, peer-support sessions and external-examiner reports for its innovation, research-led vibe, practical application and industry relevance. It also contributed positively to departmental student satisfaction, performance and employability indicators. Key project findings, best practice and implications for employability, engagement, curriculum design, delivery and professional development have been disseminated widely across Northumbria University and the wider HE sector via several conference presentations and professional development workshops co-created by academic staff and students. The project has inspired several colleagues to experiment with their teaching and learning practice, with particular emphasis on supporting growth of student graduate attributes. Flipped learning will be rolled out for the first time across selected sports modules in years one and two, commencing academic year 2017-2018.

Case Studies

The case study confirmed the value of flipped learning in driving culture change and promoting best practice and there are several important 'take-home' messages and 'top tips' for maximising future student engagement. First, it is crucial that practitioners, in partnership with alumni, inform future cohorts about the very concept of flipped-learning, with especial focus upon the added responsibility, workload and independence required of students. Participants in this study believed that audio blogs explaining the compulsory nature and purpose of pre-attendance activities should last no longer than three minutes; additionally, they recommended the co-creation of peer student learning teams so that students needing extra support to rectify errors and omissions in their understanding can ring, email or meet each other in person; they also emphasised, as a vitally important strategy for maximising student engagement, the masking or disguising of theory integrated into learning resources.

To have academic staff offering face-to-face and email assistance during the opening weeks was identified as a worthwhile policy to adopt. Seven of the students reported that their optimal class length was sixty minutes and advised the timetabling of sessions within open plan settings and with information technology facilities available. Several students argued for inviting industry colleagues and sports employers to partner academic staff and students to co-create new resources, as well as to team teach. All students further believed that staff utilising flipped learning must be approachable, empathetic, emotionally intelligent, outgoing, caring and sensitive; professional development opportunities for staff to upskill themselves in these qualities should be provided. Finally, several students confirmed that they gained from the module leader's having also completed all assigned pre-attendance tasks, as all could then, as equals, discuss openly their own experiences.

Student involvement in driving change and enhancement

Between February and April 2016, the module leader and eight student participants worked closely in partnership to co-create a range of new learning resources to be embedded within future delivery of the level six talent-identification and high-performance coaching module. Students played a leading role in advising on resource development and tailoring those resources to the needs of fellow peers; they drove discussions and decision-making relating to preferred content and format. For example, they realised that to create high-quality teaching materials would demand time, thought and application and determined that such resources should be in nature exclusively constructivist, evidence-based, academically-challenging, stimulating yet fun and designed to nurture higher-order thinking skills, including creativity, evaluation, analysis and application, as well as subject-specific knowledge.

Eighteen resources, all aligned to content within the indicative module syllabus, were co-created. Their work on all this exemplifies best practice in involving active participation by students in all stages of curriculum design and delivery, from planning to implementation; it may well stimulate staff and students across the sector to co-create and develop teaching materials using similar approaches; it certainly demonstrates Northumbria University's commitment to teaching excellence and student engagement.

An evaluation of this research project will be co-designed and presented by the module leader and two case study participants at national and international teaching and learning conferences over the 2017 summer period. The dissemination of such outputs will enhance the University's profile, both regionally and nationally, for integrating students into educational change. It may also provide networking opportunities for further student and staff

Case Studies

partnerships and co-authored publications that may positively enhance the overall university experience of future generations.

In conclusion, this project listened to and carefully considered the student voice as to their opinions about and expectations of flipped learning, as well as to their experiences of it. It also used students as collaborative partners, co-creators and co-constructors to bring about positive change. Key findings have started to inform future curriculum restructure, design, reform and delivery, together with the re-tooling and professional development of academic and support staff across Northumbria University and beyond. For example, after June 2017, the author will mentor several Department of Sport, Exercise and Rehabilitation colleagues who decided to employ flipped classrooms for the first time in their delivery of undergraduate and postgraduate provision commencing academic year 2017-2018. Furthermore, and in conjunction with student participants from the case study, the author has accepted invitations to facilitate several teaching and learning showcase events across several UK universities over the coming months. Specifically, key findings from and personal experiences of using and experiencing flipped classrooms will be discussed. Such practically-applied events are primarily intended to encourage the changing of perceptions about flipped learning and provide guidance on how to intertwine the approach successfully with current teaching practice. Attendees will comprise colleagues across all spheres of the academic staff population including Lecturers, Senior Lecturers, Teaching Fellows, Head of Departments, Associate Deans for Teaching and Learning and senior members of University Executive Management teams.

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Case Studies

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