How Active Student Engagement can make Learning Effective?

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ABSTRACT

The focal argument for this paper is that the format, duration and delivery of a course are most effective when the underlying philosophy is to actively engage students in their learning. This should be at the heart of the design, development and delivery of a higher education course.

The author has drawn on his experiences of higher education in the UK, USSR, India and Sri Lanka and across full-time, part time, distance learning and work based learning to illustrate that a variety of formats and delivery approaches are possible, but the crucial element is to ensure that students are active not passive learners. This aligns with a learner centered constructivist approach and lends itself to more authentic learning.

Using examples from a number of different disciplines, supported by literature from leading experts in the field, the author has discussed the variation that can occur in course delivery and format whilst still encouraging and supporting an active learning approach. Active learning is not without its critics and this paper has attempted to address these building on earlier work.

The final section of the paper has focused on how this approach may require staff to adopt new methods of learning, teaching and assessment and how staff development can play a crucial role. This also includes the challenges staff face in adopting technology to provide an active learning student experience. Examples have been provided to illustrate this drawing on the author's own experience in different countries as well as the wider literature.

1.0 INTRODUCTION

The focal argument of this paper is that the format, duration and delivery of a course are most effective when the underlying philosophy is to actively engage students in their learning. This should be at the heart of the design, development and delivery of a higher education course including non-traditional formats and is illustrated by the following student comment: "To be engaged with my studies is to …understand it and enjoy it and feel a connection between myself and what I am studying, rather than just learning" (Student Engagement at UBC Okanagan) [45].

The paper begins with exploring the notion of active learning. This aligns with a learner centered constructivist approach and lends itself to more authentic learning. This idea of active learning is developed further by providing evidence and examples to illustrate that a variety of formats and delivery approaches are possible, but the crucial element is to ensure that students are active not passive learners. This section draws on the author's own considerable experiences of higher education in the UK, USSR, India and Sri Lanka and across full-time, part time, distance learning and work based learning combined with examples from a number of different disciplines, supported by literature from leading experts in the field. Active learning is not without its critics and this paper also addresses these concerns by building on earlier work such as that by Prince [35] and Michael [31].

The final section of the paper focuses on how this approach may require staff to adopt new methods of learning, teaching and assessment and how staff development can play a crucial role. This also includes the challenges staff face in adopting technology to provide an active learning student experience. Examples are provided to illustrate this again drawing on the author's own experiences in different countries as well as the wider literature.

The following outlines the structure of the paper: Active & Passive Learning Defined; Good Practice Examples (across full-time, part-time, distance and

work based learning); The Downside of Passive Learning; Remarks and Conclusions.

2.0 A DEFINITION OF ACTIVE AND PASSIVE LEARNING

The philosophy underlying active learning can be seen in this quote attributed to Confucius, Chinese Philosopher and reformer (551BC – 479BC) "I hear and I forget. I see and I remember. I do and I understand". Active Learning is "generally defined as any instructional method that engages students in the learning process. In short, active learning requires students to do meaningful learning activities and think about what they are doing" (quoted in Prince [35]). Within the last decade, there has been a wealth of academic publications on the subject of active learning with strong evidence to support the view that active learning can be beneficial and lead to higher level learning (Prince [35]; Felder and Brent [11]; Strachan, Pickard and Laing [43]; Shieh, Chang and Liu [42]).

Active learning is the antithesis of passive learning. In a passive learning experience, students do not actively engage in the learning process, but they may absorb some of the information being presented. Examples of passive learning include attending a lecture, reading a paper, or watching a video. All of these activities can become more active experience for the student but they can also be very passive activities requiring little interaction from the student. This inertia can be a barrier to deep learning and can also make it difficult for the lecturer to determine the level of learning and understanding that is taking place.

It is important that students do more than just listen and are active participants in their learning. Previous research (Charlton et al [4]; Dori et al [9]) has shown that greater learning is achieved when students are exposed to active learning methods, where students are actively engaged in obtaining, sharing, creating and applying knowledge and information, and when students use higher order thinking such as analysis, synthesis, reflection and evaluation.

It is often the student who decides their level of learning activity. Mayer emphasizes that "learning may be best supported by methods of instruction that involve cognitive activity rather than behavioural activity" [29]. The key to active learning is that learning activity is taking place within the student's brain. This may be difficult to observe and thus noting that students are active in their behaviour may not be a true representation of whether they are 'actively' learning.

As an example, a traditional lecture format may look to the external observer that it is a passive form of learning. However students may be active in their listening and note taking and thus be engaged in active learning. A lecture can also be transformed into a more interactive session by breaking it into smaller segments and introducing opportunities for students to actively participate and/or feedback.

This third area where students and lecturers are truly interacting offers benefits to both parties. It provides the opportunity for lecturers to receive feedback from students and thus adapt their teaching to that particular set of students. For the students, it can make them feel valued as they can see that their participation and actions are making a real difference.

It is also useful to explore the relationship between active learning and student engagement. Kuh et al. define student engagement as "participation in educationally effective practices, both inside and outside the classroom, which leads to a range of measurable outcomes" (quoted in Trowler [47]). This definition aligns closely with the definition of active learning and the two are inextricably linked. Active learning can be viewed as an essential element of student engagement. Both the National Survey of Student Engagement (NSSE), an annual survey conducted among public and private higher education institutions in the US and Canada, and the Australasian Survey of Student Engagement (AUSSE) include active learning as one of the key facets for student engagement in their learning (Coates "A Model for Online" [6] and Coates "Engaging Students" [7]).

The four remaining facets of student engagement in the NSSE are participation in challenging academic activities; formative communication with academic staff; involvement in enriching educational experiences; and feeling legitimated and supported by university learning communities, each of which are also closely aligned to active

learning. The AUSSE adds a further facet not present in the NSSE: work-integrated learning (integration of employment-focused work experience into study).

Finally a mention should be made of the link between active learning and constructivism. Constructivism is a paradigm that suggests learning is an active, constructive process and thus people construct their own understanding and knowledge of the world, through experiencing things and reflecting on those experiences. Constructivism means that when people encounter something new, they have to reconcile it with their previous experience and ideas and this may lead them to change what they believe and/or discard some information as irrelevant. In essence people are active creators of their own knowledge and thus need to ask questions, explore and assess what they know (Thirteen Ed Online (2004)) [46].

A common misunderstanding about constructivism is that staff should always allow students to construct knowledge for themselves and not tell them anything directly. This though is not accurate and is mixing a theory of knowing with a theory of learning. Constructivism assumes that all knowledge is constructed from the learner's previous knowledge, regardless of how one is taught. Thus, even listening to a lecture can involve active attempts to construct new knowledge (Learning-Theories.com) [23].

Active learning can thus be seen as an approach to learning and teaching that aligns with constructivism by providing an environment in which learners can interact, participate, ask questions, explore, experience, innovate, be curious and reflect on all of this. Thus it can support, encourage and help these learners to be active creators of their own knowledge.

Active learning may or may not be assisted by technology and can be used in a variety of settings from the lecture theatre to the virtual campus and out in the workplace. When designed to meet the required learning outcomes, it can reap real benefits to both the students and the academic staff.

3.0 GOOD PRACTICE IN ACTIVE LEARNING

Active learning can be designed into a course irrespective of the mode of delivery. However it may require a more innovative and creative approach compared to more conventional and passive forms of education. The following outlines examples of successful active learning approaches that have been adopted to support non-traditional formats of learning both on and off campus.

3.1 On Campus

The traditional format of learning and teaching delivery on campus comprises a lecture supported by one or more seminars, tutorials, studio workshops and laboratories. However even the conventional lecture can be transformed. In recent years the introduction of 'clickers' to the lecture environment has been well documented (Hockstra [16]). More recently the idea of the flipped or inverted classroom has developed momentum particularly in the Science, Technology, Engineering and Mathematics (STEM) area with recent examples from Simon Bates and Ross Galloway [2] at the University of Edinburgh and the work of Eric Mayer [29] over a number of years at Harvard University. In the 'flipped' classroom, the typical lecture and post homework elements are reversed. Short video lectures and other pre 'class' activities are completed by students before the class session allowing the in-class time to be used for exercises, projects and/or discussions. Students can find this approach difficult at first but over time, they become positive about the benefits of it as illustrated by these two quotes:

"The style took some time to grow on me, but I now prefer it"

"Really like that you need to prepare for lectures as the lectures themselves were much more interesting. Have decided I am really not a fan of the traditional "take notes from a slideshow" lecture – not much thinking ends up being done and it makes it far too tempting to skip the lecture altogether and just pick the notes up online" (Bates and Galloway [2]).

This idea has been taken further by initiatives such as the Technology Enabled Active Learning (TEAL) project at the Massachusetts Institute of Technology (MIT). This uses a teaching format

that merges lectures, simulations and hands-on desktop experiments to create a rich collaborative learning experience. It was introduced to address a number of concerns with the first year physics programme at MIT including low attendance rates (40 – 50% average attendance at lectures), failure rates of 10% or more, pedagogic research showing active learning can lead to higher learning gains and improved pass rates and the lack of any laboratory experience in the current first year programme. TEAL classes feature the following:

I. Collaborative learning—students working during class in small groups with shared laptop computers

II. Desktop experiments with data acquisition links to laptops

III. Media-rich visualizations and simulations delivered via laptops and the Internet

IV. Personal response systems that stimulate interaction between students and lecturers

The TEAL project supports social constructivism and active learning by fostering individual and group thinking, supported by educational technology, and small and large group discussions for knowledge building. Dori and Belcher established that the TEAL approach had a significant and strong positive effect on the students [8]. They found that the failure rate of students decreased substantially with the learning gains, measured by standard assessment instruments, had almost doubled.

TEAL is one example of using technology to support learning and teaching. Information and digital technology has evolved rapidly over the last 20 years and now permeates everyday life. Devices are so small and light that they can be carried everywhere. Wireless networks allow devices to be connected 24/7 and cloud computing offers a range of services, resources and information. This 'digital' age has also influenced learning and teaching in higher education. HEFCE's report 'Enhancing learning and teaching through the use of technology' [13] highlights three different levels of benefits from technology:

I. Efficiency (existing processes carried out in a more cost-effective, time-effective, sustainable or scalable manner) e.g. e-assessment

II. Enhancement (improving existing processes and the outcomes) e.g. lecture capture

III. Transformation (radical, positive change in existing processes or introducing new processes).

Currently technology is used within the higher education sector to help with the first two benefits but to date there has been less evidence of transformation. This situation may change over the next decade.

One example of using technology to transform the learning experience is the use of Massively Multiplayer Online Role Playing Games (MMORPGs) to support language learning. Sara Lightfoot comments that "Learning is at its best when it is deadly serious and very playful at the same time" (quoted in Kafai [20]). MMORPGs offer these two elements for second language learning by providing a virtual environment in which students can 'play' and 'practice' their language skills with native speakers. In a three year project Kongmee et al. explored the use of MMORPGs to support second language learning among Thai students [22]. These online games offer an informal, fun, safe and community based learning environment that mirrors a number of elements from the real world. Students gain confidence in using their second language through a variety of communication mechanisms and can also explore cultural aspects. These skills are transferable between the virtual and real world and from game to game. In addition, students find this method of learning enjoyable and this motivates them to engage with their language learning leading to visible improvements in their language proficiency. As one of the students explained "playing MMORPGs were difficult but it is also the place where I can practice my English language with native speakers. I think the game challenges me to learn new things." Another student commented "I thought of playing an international server MMORPGs but I was too afraid of using English. Now reading is not that hard anymore I can do many quests. Players are nicer than I thought" [20]).

Gaming is yet to become a mainstream part of higher education yet its benefits are tangible. Serious gaming and simulation are on the increase but these tend to require substantial investment of time and resources. However, as the above example illustrates, widely and freely available social games can also be used to good effect in higher education.

3.2 Off Campus

The original 'off campus' learning programmes were provided by distance learning through 'correspondence study'. Today there are very few purely 'correspondence study' programmes, and the concept of the 'distance learning study pack' is being relegated to the archive shelves as technology, open access and work based learning influence the new generation of 'off campus' provision.

As Moore, Dickson-Deane and Galyen found in their study, distance learning, online learning and e-learning are difficult to define precisely but together with work based learning all have their role in 'off campus' learning provision [32]. Here the emphasis is looking at how to achieve student engagement and active learning when the students and academic staff are not in physical face to face contact. The danger when physical face to face contact is absent is that it is easy to adopt a more passive learning approach. This is clearly demonstrated through Hiltz et al's study which reported that when "simply receiving posted material and sending back individual work, results are poorer than in traditional classrooms" [15]. Hrastinki provides compelling evidence that "if we want to enhance online learning, we need to enhance online learner participation" [17].

Liyanage found that the students' main criticism of online content is 'it's boring flatness' but when it is converted into 'interactive activity-rich learning material', these criticisms dissipates rapidly [24] and [27]. Thus it is essential that if technology is used in off campus provision, the pedagogical arguments must be used in an engaging manner and that passive items such as online lectures, videos, photos, podcasts should be supplemented or incorporated into a more active resource that encourages learners to interact, question, apply, discuss, reflect and evaluate on the subject.

For example, Edirisingha and Salmon outline four approaches to using podcasting with undergraduate students both on campus and at a distance [10]. Their article clearly demonstrates that it is critical to have a clear pedagogical rationale at the outset to inform how podcasts should be used within the learning process, and this applies to other forms of technology. It is essential to consider the pedagogy and use this to drive the use of technology rather than the other way round.

Looking at the development of Massively Online Open Courses (MOOCs), these started out as mainly content based but are increasingly moving to a more collaborative and connected online learning environment providing greater opportunities for non-traditional forms of teaching approaches and learner-centered pedagogy where students learn from one another. "Online communities' 'crowd-source' answers to problems, creating networks that distribute learning in ways that seldom occur in traditional classrooms in universities" (Yuan and Powell [51]). Higher education institutions such as MIT and Edinburgh University are using MOOCs as an experimental platform to engage in emerging pedagogical models, exploit peer support and use peer assessment techniques. MOOCs have traditionally had very low retention and progression rates but this move to using a more interactive, engaging and collaborative experience may change this situation.

3.3 Active Learning and Assessment

Assessment is a key element of higher education programmes. There have been a number of initiatives in recent years to improve assessment and feedback, particularly in the UK in light of the lower scores in the Assessment and Feedback elements of the National Student Survey. However, a notable approach to assessment is the Re-engineering Assessment Practice in Higher Education (REAP) project in Scotland which has devised a set of principles for good feedback practice based on a self-regulation model.

"Research in higher education shows that learning is deeper, more sustainable and satisfying when students become responsible partners in their learning. The most powerful way to achieve this is to involve students actively in assessment processes, that is, by giving them regular

opportunities to make assessment judgments about their own work and the work of others. This will develop their ability to monitor, evaluate and manage their own learning without relying on the expertise of the teacher. Over time, students will become independent and self-regulated learners with the confidence, self-reliance and collaborative skills necessary for life beyond graduation" (REAP) [37].

Peer Evaluation in Education Review (PEER) is a follow on project which has investigated which models of student peer evaluation and feedback work best. Strachan used peer assessment at the formative stage in a distance learning programme [44]. Students were asked to provide feedback on a draft of their final assignment. The aim was to engage students with their assessment criteria, provide effective formative feedback for each other and also improve students' self analysis of their work and through this, improve the standards of their assessed work. This was achieved by introducing a student peer review element to a module. Students reviewed each others' drafts online in small groups with each student providing individual written peer feedback to others in their group. Following this the academic staff also provided feedback. As one student commented "Reading others' draft ... helped me get the final structure right. Being forced to give feedback to my peers helped me polish my critical analysis & evaluation skills. It provided the needed interaction". Another student observed "it was nice to compare my draft with others. I picked up a few tips ... about addressing the assignment requirements" (Strachan) [44]. This approach also ensured students engaged with their learning and assessment process from an early point in their programme of study.

According to Mueller, authentic assessment is "forms of assessment in which students are asked to perform real-world tasks that demonstrate meaningful application of essential knowledge and skills" [33]. Mueller further describes it as "...Engaging and worthy problems or questions of importance, in which students must use knowledge to fashion performances effectively and creatively. The tasks are either replicas of or analogous to the kinds of problems faced by adult citizens and consumers or professionals in the field" [33].

The justification for providing authentic assessment opportunities is supported by the considerable body of research on learning and teaching that has demonstrated that learners need to be able to construct their own meaning of the world, using information they have gathered and been taught, and their own experiences with the world (Mueller [33]). This also supports an active learning approach.

Strachan, Pickard and Laing implemented an active learning and authentic assessment approach in a technical authoring module delivered to computing students (Bringing Technical Authoring) [43]. Firstly the weekly lecture/seminar session was altered to use a more inquiry based approach where presentation of new ideas and information by the academic tutor took up less than 50% of the time, and even then the presentation included opportunities for student involvement and engagement. The remaining time in seminars was geared towards student led activities, some requiring preparation outside the class as in previous years, others using a more problem based approach to engage students in their learning and enabling them to take responsibility for their learning. Changes were also made to the module assessment and a conference was set up aimed at external employers from business, industry and the public sector. This conference provided a vehicle for students to present their final assessments from the module, providing a much more authentic assessment opportunity than in previous years. The team found that this approach helped with student motivation and engagement and provided a realism and professionalism that would not have been possible through a more conventional assessment strategy. Other benefits included a greater sense of community within the student body, and individually students gained in confidence both through the conference presentation and also by attending the conference itself. Student feedback was positive and constructive.

This section has outlined a number of examples and approaches to incorporating a more active learning approach within programme design, delivery and assessment. This has demonstrated that it is possible to incorporate active learning in both traditional and non-traditional approaches and there are clear benefits resulting from doing this.

The next section looks at some of the criticisms of taking an active learning approach.

4.0 DOES ACTIVE LEARNING WORK?

While there is anecdotal evidence suggesting that active learning is effective (Knypstra [21]; Bates Prins [1]) and that students' exam scores improve when an active learning approach is adopted compared to a more traditional approach (e.g., Christopher and Marek [5]; Steinhorst and Keeler quoted in Carlson and Winquist [3]; Ryan [39]; Yoder and Hochevar [50]). others have found it to have no effect (Pfaff and Weinberg [34]) or even to have a detrimental effect on student performance (Weltman and Whiteside [48]). This controversy seems to stem from the fact that there is a diverse set of approaches that can be referred to as 'active learning' unified by the concept that students are asked to 'do something'. Thus each study can adopt a different approach to active learning and establishing a comparison to other forms of learning can be difficult. Furthermore each is often contextualized within a specific discipline. This debate continues with Carlson and Winquist [3] for example providing a set of results that differ from Weltman and Whiteside's [48] study and which show positive benefits of employing active learning in the statistics discipline.

Carlson and Winquist's work [3] together with others have accumulated a large body of research showing positive results from an active learning approach. There are some barriers though to active learning. These broadly fall into three areas:-

1. Student attitudes and perception
2. Staff attitudes and perception
3. Staff time and effort

Each of these will be explored in turn. Students' attitudes and perception may not be conducive to active learning. This has been reported in a number of studies, for example Zepke [52]. In Liyanage [26] this is illustrated by the following comment from a distance learning student "Although all your learning materials are around you online, it gives you an extra burden that you have to totally organize your learning yourself which is not my preferred style". This leads to expectations that their programmes will be instructor led rather than learner centered. To address this issue, academic staff may need to spend some time explaining what an active learning approach is with students before expecting them to engage with the process. One of the authors experienced this in their own institution. Using an active learning approach with a certain cohort, it was clear that students were not engaging in the process and although attendance was very good, they were turning up to class expecting to receive an instructor led session and not prepared to participate actively either in or outside the classroom environment. To alter this situation, the author spent the first 30 minutes of the next session exploring learning styles and methods of learning and teaching with the students, including explaining the benefits of being an active learner. This resulted in a much improved attitude from students, greater participation in the programme sessions and ultimately a stronger final set of student assessments. Ensuring that students understand how they learn and that learning requires their participation is key to a successful learning experience but it is often one that is overlooked by both students and academics.

One of the reasons for the inconsistent results in the active learning literature is the enormous diversity of approaches that are referred to as 'active learning'. The only unifying characteristic seems to be that students are asked to "do something" (Carlson and Winquist [3]) but it is difficult to compare findings as each instance of active learning is contextualized within the specific discipline.

Michael explored some of the barriers to active learning and noted that two of the key concerns for staff are the ability to deliver enough content and the loss of control in the classroom situation [30]. It is true that the use of in-class active learning strategies will reduce the available time for the traditional lecture but it has also been shown by Rowe [38] that student learning during a fifty minute class can be enhanced simply by pausing for around three minutes, at three different times during the class. Thus although the quantity of information may be less, the quality of learning is enhanced. Furthermore active learning often provides more opportunities for students to explore and learn outside the classroom thus there is less need to 'fill' the classroom time with content.

The second concern from staff is the loss of control within the classroom environment. Active learning does result in less structure but there are real benefits. Carol Hurney has adopted an active learning and student centered approach [18]. She reflects on this "And so I made the dive and it was a spectacular experience. The best pedagogical shift I had ever made. The experience was so powerful, I felt like running to the top of cliff and diving off again, and again. Now each semester I reflect on past experiences, explore the literature, and walk into the classroom fully prepared to design learning WITH my students, not for them."

Carol further reflects:

"I continue to shift the balance of power and the role of the instructor for both of these courses toward the learner-centered end of the pedagogical spectrum. Now for each course, I talk less, they talk more, and they participate more meaningfully in their learning. Swimming in the learner-centered waters is still a challenge for me. It is hard to resist the urge to answer student questions during the course of the lab that they could answer for themselves by reviewing the lab manual. It is also hard to watch the students struggle with a complex, application-based assignment without trying to help them. But if I am patient and resist the urge to "tell" them or "help" them, I begin to see my students swimming alongside me in the learner-centered ocean and although it is a struggle, we celebrate the experience and seek out new waters and future dives. Working with my students to make my courses learner-centered still sustains me." [18]

A final concern from staff is the time and effort taken to engage in active learning. Some academic staff say that active learning would be great 'if they had the time' but it should be remembered that delivering content to students in an instructional manner does not mean that students have 'learnt' that content. By delivering less content, more time can be spent on activities that engage students and encourage deeper learning.

5.0 IMPLICATIONS FOR STAFF AND THEIR INSTITUTION

So what are the implications for staff of adopting an active learning approach? It is interesting to note that it is only in recent years that higher education institutions have committed to training new academic staff in learning and teaching. Previously it has been assumed that academic staff would be able to teach with no specific training or help. This is in sharp contrast to the way academic staff approach their own subject research. In this latter case, academic staff uses the literature and previous studies to inform their practice and find techniques and approaches that are appropriate and effective. Although there is literature on how to teach effectively and on how people learn (Handelsman et al [12]; Race [36]), there is still a reluctance for academic staff to engage in this process. As Wood [49] comments "medical people are now encouraged to carry out 'evidence-based medicine', so why do we not carry out 'evidence-based teaching'?".

There have been developments over recent years. In the UK this has primarily been led by national organizations such as the Higher Education Academy (HEA) [14] and Staff Educational Development Association (SEDA) [41] with higher education institutions implementing their principles and guidance within their own staff development programmes. However with advances in technology, is staff development keeping pace? Both HEFCE's [13] strategy and JISC's [19] publication on Effective Practice in a Digital Age emphasized 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 maximize the benefits of technology enhanced learning tools and their incorporation into learning and teaching. These findings are also supported by the study of work based learning by Liyanage [25] and [28] which also highlights the need for investment in technology itself and in specialist technical support staff to improve the use of technology in learning, teaching and assessment practice.

There have also been claims that young people today have poorer concentration skills but observe a young person playing an online game and they can concentrate for long periods of time. Thus it is essential to look at how that interest and engagement can be replicated within their academic programmes. This means transforming from traditional formats to take advantage of

current and emerging technologies and how we can communicate, interact and engage in the modern world. This should also inform the design of learning spaces. The traditional lecture theatre and rooms with rows of desks still dominate higher education campuses yet are these appropriate learning spaces? The Student-Centered Active Learning Environment for Undergraduate Programs (SCALE-UP) Project has examples of more innovative learning spaces in higher education that have adopted new technology and also explored how to use these in a classroom setting in a more informed and effective pedagogical manner [40]. Libraries and some schools have also adopted these more flexible, creative and innovative learning space designs. Other universities should now follow suit.

Thus there are two key requirements for staff development, one around pedagogy and the other around technology. Ideally these should be viewed as an integrated whole and not as two separate areas of development. Then pedagogy can be used to underpin technology rather than using technology for its own sake. Alongside these, there should be the development of appropriate learning spaces and suitably qualified technical support staff to help academic staff in their take up of current and emerging technologies to support innovative and engaging learning and teaching practice.

6.0 FINAL REMARKS AND CONCLUSIONS

This paper has explored active learning and illustrated how it can be applied even in non-traditional formats like distance learning, part-time learning and work-based learning. Staff development was identified as vital with two key requirements: one around pedagogy and the other around technology. Most importantly, these should be viewed as an integrated whole and pedagogy can be used to underpin technology rather than using technology for its own sake.

An active learning approach can present challenges to both students and staff, but the long term benefits of such an approach over passive learning to students and their learning means that these challenges should be tackled. As Richard Branson once remarked "You don't learn to walk by following rules. You learn by doing and by falling over."

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