

Active learning design at Abertay University

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1. Context

1.1 Background to the University

Abertay is a relatively small university (approximately 4000 undergraduate students) situated in the centre of Dundee, Scotland and in 2016 was shortlisted as Times Higher University of the Year for the transformation of its teaching and learning. It has a long history of vocational education and was founded in 1888 as the Dundee Technical Institute gaining university title in 1994. The university has an international reputation in computer games technology (the only European institution in the top 50 of the 2015 and 2016 Princeton Review) but it offers students a broad portfolio for its size comprising disciplines such as Law, Psychology, Sociology, Business, Engineering, Food and Drink, Forensic Science and Sport as well as Computing. Abertay is also one of Scotland's leading universities for widening access and in 2016/17 over one third of entrants came into stages two and three of programmes, many of whom were articulating from higher national courses delivered in the two local partner colleges: Fife and Dundee and Angus. In terms of structure, the university comprises of five academic Schools: Art Media and Computer Games (AMG); Dundee Business School (DBS); Science, Engineering and Technology (SET); Social and Health Sciences (SHS) and the Graduate School. The Schools have a degree of autonomy but there is a strong culture of centralisation of academic policy and consistency in practice.

1.2 A new pedagogic approach for Abertay

In 2012, a new Principal, Professor Nigel Seaton, was appointed following a difficult time for the university, in terms of disagreement amongst Court members regarding the strategic direction of the institution and variable student satisfaction/ league table performance. A number of key senior management appointments were made by the new Principal, many of whom were external and this included the new role of "Director of Teaching and Learning Enhancement" (DTLE). The DTLE was tasked with leading the development and implementation of a new pedagogic approach for the University and, following extensive consultation with key stakeholders across the university, a new TLE strategy was agreed by Senate in December 2013. The TLE strategy is focussed on three strategic priorities:

1. Reforming our Curriculum
2. Incentivising Student Performance
3. Raising the status of teaching.

A full account of the development of Abertay's TLE strategy and the associated change management approach has been published elsewhere [1] and a short accompanying video is available on the university's website [2]. The TLE strategy is distinctive in that it is very concise (850 words) but it has been the catalyst which has transformed teaching and learning policy and practice. The TLE strategy and the associated changes which have been implemented over the last three years can be summarised as follows:

1. **Reforming our curriculum** to revolutionise the delivery and design of our programmes, which will advance students' knowledge; enhance students' preparedness for post-graduation and the world of work; and that recognises and facilitates different modes of learner journey.

Features include:

- New programmes that offer increased flexibility and student choice (from 2016/17)
- A suite of new interdisciplinary electives for years one and two of all programmes (from 2016/17)
- Move from 15 to 20 credit modular structure (from 2016/17)
- A suite of seven new accelerated degrees (from 2016)
- New academic calendar including mid-term feedback weeks (from 2014/15)

2. ***Incentivising students' performance through a new integrated approach to all aspects of assessment (formative, summative and recording achievement) with a focus on programme level learning outcomes, joint Honours/ Grade Point Average (GPA) degree classification and implementation of the Higher Education Achievement Report (HEAR) [3] for 2014-15 entrants.***

Features include:

- New assessment principles, policy and practice to support deeper student learning (from 2014/15)
- New literal grading scale and implementation of Grade Point Average (GPA) for degree awards (from 2014/15)
- Implementation of the HEAR to recognise students' wider achievements (from 2014/15)

3. ***Raising the status of teaching in the institution in terms of: leadership, professional recognition, reward and development by developing a holistic, staff-centred approach to learning and teaching CPD from 2014-15.***

Features include:

- Staff centred approach to academic professional development
- Professional recognition CPD scheme aligned to all four descriptors of the UK Professional Standards Framework for teaching and supporting learning in higher education (UKPSF) [4]
- Support for scholarly communities of practice including seminars, workshops, resources, blog, new funding scheme for teaching and learning innovation

1.3 Has it made a difference?

In a word, yes! In particular, despite the very short timescale since implementation began, there has been a sharp rise in student satisfaction, as measured through the National Student Survey, and in 2016 Abertay was the top scoring modern Scottish university with 88% overall satisfaction (it was 82% in 2012). Satisfaction over the last few years has increased across all scales but it has been particularly marked for assessment and feedback. For example, comparing NSS 2013- 2016:

q.7 "feedback on my work has been prompt" rose from 44% to 70%

q.8 "I have received detailed comments on my work" rose from 57% to 74%

q.9 "feedback on my work has helped me clarify things I did not understand" rose from 54% to 70%.

The causes of these significant improvements are a combination of a new 10 working day for feedback on in-module assignment (15 working days for end of module assignments), a concerted effort on enhancement of assessment practices with academic staff in the Schools and the implementation in 2015-16 of Electronic Management of Assessment (EMA). EMA is a system for students to electronically submit assignments and receive feedback from academic staff. EMA has necessitated staff to change their working practices and, in many cases, become familiar with new hardware and software. The direct cost to the university has been relatively low (two screens for all academics, some tablet and laptop computers) in comparison to staff time for support and development, particularly from the small team of learning technologists. There was some staff resistance, particularly from some disciplines, however, as practice as become more embedded so buy in has

increased and EMA has been accepted as opening up new opportunities for delivering teaching and supporting student learning.

Impact has not been limited to enhanced student satisfaction and experience, there has also been an increase in student attainment due to a combination of the new grading scale, improvements in practice and student entrance requirements.

As part of “Raising the status of teaching” the university has invested significantly in providing new staff development opportunities and this has included building a vibrant community of practice in the scholarship of teaching (NetTLE, Network for Teaching and Learning Enhancement), funding for innovative projects aligned to university strategic priorities (ATLEF, Abertay T&L Fund) and a new Higher Education Academy (HEA)- accredited CPD scheme for national professional recognition and career development. Consequently, the number of staff with HEA recognition is now over 50% (projected to reach around 70% in the next 12-18 months) which is around double the UK average.

Abertay’s national profile for teaching and learning has also been raised over the last few years, not just in terms of rising up the league tables but also in terms of invited conference presentations, academic papers, articles and occasional opinion pieces in high profile magazines such as the Times Higher Education and WonkHE.

1.4 Drivers for change for learning spaces’ investment

In reading the above, one might think that the university has everything in hand, however, this is not the case; there is recognition that in order to make the next step change on our enhancement journey and capitalise on the significant progress which has been made over the last few years, the estate needs to be upgraded. The aim is to create a “sticky campus” [5] which, put simply, is a place where our students will want to come and stay, somewhere that offers our students a diverse range of learning environments for both formal contact with staff and private study but also more opportunities for informal, social learning.

Investment in the student-facing estate of the university has been relatively modest in recent years. There was a major ICT Transformation Programme in 2013 (£.284M) which included four projects on classroom AV technology, end user computing; network infrastructure and security; and storage back-up and servers. In 2014 and 2015, the university spent £4.2M on building maintenance, renewing and refurbishing multi-use flexible space and two key projects creating a new Graduate School and a one stop shop “Support Enquiry Zone” in the library. In 2015/ 2016, there was recognition by the University Executive that the teaching spaces on campus were at best variable and there was an urgent need to review and make targeted investment. This would include undertaking an audit of existing space, looking at space utilisation, redevelopment of key facilities and the creation of new, experimental, technology-rich classrooms.

Campus development at Abertay has been influenced by the following sector-wide trends:

- **Solutions should be pedagogic-led rather than estates-led or technology-led.** The right pedagogic model is fundamental, technology and estates then play a critical role to create the right environment which support new pedagogic approaches.
- **More active, collaborative learning environments** lead to higher student engagement and better learning outcomes. Active learning environments are not as space efficient as, say, lectures i.e. the room’s capacity is reduced, however, overall space utilisation is better i.e. it is used more by students for informal learning outside of class time. The trend seems to be creating spaces for 40-60 students.
- **Lecture theatres still have a place but** there is a trend towards creating spaces with low angle seating tiers, seating in groups with tables, curved set ups which may be used in didactic

or collaborative learning modes. Lighting can be controlled by the lecturer and might include spotlights on particular tables as they report back.

- **Technology is key.** Trends include improved connectivity and power to enable “bring your own device”, “flipped classroom” (active learning), online and blended learning, lecture capture (especially short video summaries rather than full blown lecture recording) and learning analytics. Interactive smartboards are excellent tools to promote collaboration and creativity between instructor and students or in team meetings.
- **Notion of well-being leading to better productivity/ better learning.** This includes a number of environmental factors such as air quality, lighting, temperature, acoustics and smell! Also the need to factor in spaces which facilitate brief interactions/ chance meetings, circulation routes through buildings, areas which promote collaboration and flexibility of set-ups.

This case study outlines how the university is responding to these challenges in a way that is most appropriate to its context. By way of final scene-setting, it is important to highlight that Abertay cohorts are relatively small leading to smaller class sizes; the most common module size is in the range of 11-20 students. 80% of all 491 modules running in 2016/17 have fewer than 60 students and only about 6% have more than 100 students. This is clearly an important factor in allowing staff and students to have richer, more personal interactions and Abertay was ranked in the top 20 in the UK for student support according to the 2016 Whatuni Student Awards [6]. Space utilisation has been identified as an issue and in 2016 was round 26%; the challenge is not therefore that there is a lack of space overall on campus but rather there is not enough of the right kind of space!

2. The change journey

2.1 Stakeholder engagement

For all of Abertay’s recent academic reforms, the university has gone back to first principles in terms of asking what are we trying to achieve, who are the key stakeholders which need to be involved and what are the practical implications of any change? The objective of this strategic initiative is to create our own ‘sticky’ campus, as outlined above. An analysis of who was regarded as the key stakeholders and why they were felt to be important is provided below:

- ✓ Students- our learners. Intention is to create new environments which improve and encourage new ways of learning, attainment, progression and enhancement of their university experience more generally.
- ✓ Student representatives- Student Association sabbaticals (and staff members). Similar reasons as for students.
- ✓ Academic staff- responsible for delivery of teaching and supporting their students’ learning. Their buy-in was felt to be critical for successful implementation. New learning environments and learning technologies afford academics with opportunities for innovation, improved student engagement and understanding as well as more enjoyable/ rewarding/ effective forms of teaching. Staff who have leadership/ co-ordination roles in teaching delivery have particular key roles within this stakeholder group.
- ✓ Academic Managers- who line manage academic staff and are responsible for workload allocation. At Abertay these tend to be Heads of Division. As middle managers with both strategic and operational responsibilities they need to see the value, benefits and opportunities afforded by new learning spaces, to allocate the necessary staff resource.

- ✓ Academic Leaders- with School level strategic responsibility for teaching and Learning. These are positions of significant influence and in Abertay are Heads of School and School Academic Curriculum managers- in larger universities these are likely to be Deans and Associate Deans of t&l, respectively.
- ✓ Heads of Professional Services- particularly Estates, Information Services, Registry (timetabling) and Finance. These colleagues are all key, particularly Estates and Information Services as they were responsible for implementing agreed plans and provided expertise in what was possible given constraints (finances available, existing building and infrastructure etc)
- ✓ University Executive- Principal and Vice Principals. Strategic decision makers in the institution with responsibility for allocating the necessary resource and also responsible for line management of all key senior managers (academic and professional services).

In terms of how these key stakeholders were engaged in the initiative, a differential approach was adopted. The DTLE was tasked by the University Executive to lead on a position paper for learning space development at the university in early 2016 with a steer of the need to deliver at least one new, experimental digital classroom for the next academic year. New science labs had already been agreed as a priority for completion in early 2017. Helpfully, and coincidentally, learning spaces was a key policy priority of the incoming Student Association President and Vice President in 2015/16 and this combination of the Executive and the student body both championing change coupled by the vision held by teaching and learning specialists in the university, resulted in a powerful recipe for change. A number of academic staff also felt that teaching spaces in the university were inadequate which meant that, with the exception of some individuals, little energy was required to convince colleagues of the need for change.

Scoping work was initiated through discussions involving the DTLE, Head of Estates, Information Services, Registrar, Vice Principal (Academic), Student Association sabbaticals and a couple of academic champions. This group agreed the following principles for taking things forward:

1. Involve key stakeholders
2. Develop leading edge spaces which are accessible and which will genuinely enrich student learning
3. Look externally i.e. learn from others
4. Develop a variety of spaces over the next few years which are pathfinders for possible wider implementation in the University i.e. not a one size fits all approach.
5. Harness the potential of modern technologies.

One of the first activities run was an open invitation two hour workshop in early March 2016 entitled "Rethinking our Learning Environment". The workshop objectives were to:

1. widen awareness and engagement in the university around learning spaces
2. review current learning spaces in the university- what is good, what is less so
3. re-imagine what might be possible
4. discuss and share ideas
5. prioritise our wish list.

This workshop formed part of Abertay's existing, very successful TLE monthly seminar series which had the benefit of have a local following and being an active community of practice in teaching and learning. Over 50 staff (academic and professional services) plus several student representatives attended the event. The workshop produced the following shortlist of priority ideas:

- a) Wet labs

- b) Dedicated online learning, recording facilities
- c) Flexible, problem-based learning spaces
- d) “Ted talk”-type lecture theatre [7]
- e) Various technologies to promote student engagement in and out of the classroom
- f) More informal learning spaces
- g) Better IT infrastructure to support “bring your own device”
- h) Review of the Library Building

Reflecting on this list almost 12 months later and what the university has finally implemented shows remarkable synergy with this list. The only development on the list which has not yet been taken forward is a “Ted talk-type” lecture theatre although there are plans to systematically record lectures from 2017/18. Other reflections are that the initial paper submitted to the Executive in spring 2016 was perhaps overly ambitious in terms of the number of new spaces so, for example, where eight dedicated recording facilities for online learning were originally proposed, the university has decided to pilot one and then increase as required, based on demands. It is also important to highlight that a number of the priorities which the stakeholders identified such as technologies which promote deeper student engagement, spaces which lend themselves to problem-based learning and more flexible areas all align with the new pedagogic approaches encapsulated in Abertay’s TLE strategy. In other words, new learning spaces were not seen as an add-on or separate- they were identified as key for the university to realise its strategic vision.

The three key learning points from this exercise were: the need to build upon existing institutional strengths and priorities (how can these new spaces help us to achieve what we are already trying to do); to involve, mobilise and enthuse the academic community as without them any investment in new spaces would be wasted and thirdly, it was right to be ambitious but also to be flexible and temper enthusiasm slightly if delivery of key objectives are put at risk.

2.2 Peering over the neighbour’s fence

Clearly, it has been vital to learn from others and external engagement has played a critical part of informing Abertay’s learning spaces strategy and thinking. It has also helped avoid re-inventing wheels and helped to reduce falling into similar traps. Specifically, desk-based research, existing contacts, extending networks, attending conferences and targeted site visits have all proven fruitful.

In particular, a conference on “Next Generation Learning Spaces” in late March 2016 was timely and presentations at the event helped cement a lot of Abertay’s thinking at the time in terms of sector trends and directions of travel. A key contact for Abertay has been Duncan Peberdy at Droitwich [8] and a pivotal moment for us was attending the “Digital Active Learning Classroom” roadshow at Heriot Watt University which was organized by Duncan and supported by JISC [9]. By this point, Abertay’s Executive had approved the funding for one problem-based learning digital classroom and a possible room for redevelopment had been earmarked although no decision had been made about the technology or furniture to fit it out with. A task group involving Estates, Information Services (IS) and TLE was set up to oversee the delivery of this new room, chaired by the Director of TLE, and a delegation was sent to the roadshow to experience the technology on offer first hand. Feedback from everyone who attended was very positive but some concerns were raised about costs and IS was tasked with investigating alternative AV solutions. After testing of other options and consultation with the task group, and in recognition that this was to be a pilot area for the university, it was decided and agreed by the Executive that it was important to use a technology that was tried and tested and that had the functionality that was required. One of the objectives of Abertay’s new digital classroom was to inform future such learning spaces and scale-up options formed part of the spec but this area was a “sand pit” for experimentation and institutional learning.

Site visits have also proven extremely beneficial as Abertay considers the redevelopment of our library (scheduled for September 2017) and these have included international visits to the University of Amsterdam and Maynooth University in Dublin. What was particularly helpful was the opportunity to experience these spaces first hand, to see how students were using them and to have a rich dialogue with colleagues about their change journey, challenges faced, lessons learned and possible unintended consequences. Although the literature has been helpful, everyone on the task group has agreed that there has been no substitute to “experiential learning”.

2.3 Strategic Review on Space

In spring/ summer 2016/17 the University undertook a holistic strategic review exercise with the intention of identifying progress towards 2015-20 strategic plan objectives and collective actions for the next three years. Several priority areas were identified for the strategic review and associated short life working groups were established, each led by a member of the University Executive and composed of various members of the Senior Management Group (Heads of School and Professional Services). A specific working group on Space Strategy was tasked by the Executive to “*agree how we will develop and manage our space strategy in future, separating the focus on strategy and priorities from operational delivery of the estates projects*”. The scope of the group was all aspects of the University estate i.e. teaching spaces (formal and informal), staff accommodation, social spaces for staff and students and sports facilities.

In terms of teaching-related issues, a key theme of space utilisation was identified by the group. A recent audit showed space utilisation overall at Abertay is around 26%. A sub group on space utilisation has subsequently been set up which comprises the Vice Principal (University Services), Director of Operations, Registrar and DTLE. The work of this group is still very much in progress at the time of writing but is considering a variety of measures to increase space utilisation such as a new timetabling and scheduling system, extending core teaching hours (currently 9-5, Monday- Friday), decommissioning some teaching rooms from the timetable and prioritising others for development. In other words, to move towards creating a smaller, but higher quality, teaching estate.

3. Abertay’s Collaborative Learning Suite

The Collaborative Learning Suite (CLS) is the first of a new generation of technology-rich interactive classrooms for Abertay, which was heavily influenced by the set up in the Digital Classroom Roadshow at Heriot Watt University, spring 2016 [9]. A suitable room was identified in late spring 2016 and building work was undertaken in the summer with the room being completed in September 2016. The idea of the new CLS was to create a sand pit for staff and students to experiment with new ways of teaching and supporting learning, to build capacity within the University for collaborative learning in technology-rich environments and to use the learning gained through use of the new space to inform future learning spaces design. A key decision made early on was that the CLS should not be a one-off although there was recognition that future spaces may not use the exact same layout and technologies. It was made clear to all users of the room (academic and support staff and students) that this was a learning process for all concerned and we may not get everything right from the outset i.e. the CLS was our “best guess”!

3.1 Communications

A variety of communications have been used to raise awareness within the University on the CLS at all stages of its development. This has included initially an open call for academic volunteers to pilot teaching in the room (October-December 2016), regular briefings for the Senior Management Group and Executive on progress, a series of blog posts (September 2016) updating staff and students on the state of progress with the room. Subsequently there have been a number of information and training sessions for staff, sharing practice workshops, online user guides and, most recently, case

studies from users of the room based upon their experience. The room has also been showcased to University Court and there have been approaches from staff at two local Universities requesting a guided tour and possible usage.

Regular formal and informal communication through a variety of channels, including face-to-face, has been found to be a vital component of the project and is still an ongoing challenge, particularly amongst a small number of hard-to-reach academic staff.

3.2 Staff development

Staff development has been the most important aspect of the pilot, as expected. The pilot has taken the strategy of working with a group of self-nominated volunteers and trying to raise awareness amongst the rest of the academic community. The intention is that these volunteers will grow in confidence and expertise in the use of the CLS, identify possible new ways of teaching and supporting learning and act as champions within their School which will hopefully lead to wider interest and take up. There is evidence that this approach is already proving successful- more detail in the evaluation section below.

The call for academic volunteers was made in summer 2016 and a group of around 13 expressed an interest in taking part in the pilot which was scheduled for October-December 2016. These colleagues were sent a short briefing on the room, its layout, seating capacity, the technology (Top Tec furniture and Kramer Via) and were also sent a questionnaire in advance of the pilot start-up meeting asking some initial questions about how staff intended to use the room, any specific questions they might have and how they might evaluate the impact of the room on their teaching. Interestingly, volunteers arose from all Schools in the university so there was no apparent discipline-bias.

Staff volunteers were brought together for a two hour project initiation meeting at the beginning of September to make sure that everyone understood the vision of the CLS, to brief colleagues on the three staff training sessions which were planned for late September and respond to any questions or areas of concern. This was the first time that all volunteers had been brought together to discuss how they were intending to use the room and it was felt to be a useful networking opportunity and icebreaker for the initiative.

The most intensive training provided to staff was a three day session in late September 2016 which was facilitated by Duncan Peberdy, Droitwich. Duncan was commissioned by Abertay to design and deliver the three days based upon the University's very positive experience of the Digital Classroom Roadshow a few months previously. A blend of sessions were offered to staff: a series of one hour "taster sessions" which were open to all staff not just the 13 academic volunteers, 2.5 hour sessions which were specifically aimed at the volunteers and allowed more hands-on sessions with the technology and then a number of on-demand clinics for one to one support. These sessions were also helpful for training the trainers in Information Services and the Technology Enhanced Learning Support team. The sessions were very successful in terms of raising awareness within the university of the room's existence, its capability and they succeeded in giving colleagues a flavour of the technology. The sessions also identified a number of snagging issues with the technology so it proved a useful rapid learning process for all involved.

It is now University policy that any staff member who wishes to use the CLS, books in a training session with the TELS team beforehand and TELS are notified whenever staff book the room through timetabling. This means that a member of support staff is on hand in case they or their students face any IT glitches on the day and feedback from staff using the room suggests that this degree of support is appreciated and needed at least for the first few times they have used the room.

An online user guide for both staff and students has been developed, in consultation with users, and this is being extended with short case studies (written and video) from a selection of the academic volunteers.

3.3 CLS room usage, to date

The primary focus of the CLS is for the teaching of students and more specific examples are provided below. It is important to point out, however, that the room has also proved very beneficial for other uses e.g. it has been used for several TLE workshops (not just those on the use of the CLS), grant writing workshops, staff development sessions run by HR, and hosting interactive sessions during visits from other Universities. Students are allowed access to the room when it is not in use and it is now a regular occurrence to see self-organised groups of students working collaboratively in the room on various projects. The varied (academic) subject matter occasionally found on the write-on walls is further evidence of the range of disciplines using the room!

The room has been used to teach students at all stages (first year undergraduates through to Masters students) and by all Schools. Some vignettes of specific practice from the term 1 pilot include:

- a) Interdisciplinary elective module on “Games for change” for first and second year students. In two hour sessions, groups of around 30 students used the monitors and laptops to play, critique and analyse games. The walls were used to write notes which has proven popular and a fun dimension for students, adding to their experience.
- b) BSc Psychology. The CLS was used with third year students to run a personality workshop where students had to work in groups according to their personality types; the CLS proved ideal as students had to keep changing groups as they progressed through the exercises. The CLS was also used in the same module for a peer review session where students were shown the draft scientific posters of the other groups and were asked to collaborate together to leave feedback. Students in this module helped devise the marking criteria for posters and videos and again the CLS proved ideal for promoting interactivity and dynamism.
- c) BSc Biomedical Science. Students were required to undertake solving a problem in groups of 4-6 (“what is in milk”) through laboratory experimentation. This required them to plan their research, coming up with their experimental question, undertake H&S risk assessments. CLS sessions were 1 hour per week with the lecturer and students also used the space outwith this time (by their own choice)-instead of using the library.
- d) MSc Counselling. Students worked on a quasi-judicial group analysis of a research case study. Students were tasked with evidencing either a positive case outcome where counselling was responsible for client change, or a negative case outcome, where factors un-related to counselling affected the client change. They were required to work in small analysis groups before forming two larger opposing groups of sceptics and affirmatives. The sceptic and affirmative groups then presented their evidence before an independent ‘jury’ of academics. The jury decided whether the sceptic or affirmative argument was most compelling and pass verdict accordingly. The task was spread over a number of weeks.
- e) MSc Psychology. The room was used for three types of teaching- (1) 1 hr lecture style teaching, with students sitting at the tables and lecture sides being presented on the screens. (2) 90 min collaborative learning where students investigated research within small groups, attempting to use some function of the Via system including screen share and collaborate. (3) 30 min large group sharing of the small group work utilising the technology that enabled the screens of tables to be shared to other tables.

3.4 CLS evaluation and impact to date

In terms of evaluation, clearly the university is at a relatively early stage of development, however, already there is evidence that significant institutional learning and capacity-building has already taken place. Ongoing support and engagement with users (individually and collectively) have been key features of our approach to the pilot. An evaluative questionnaire was sent out to all 13 volunteers and seven responses were received representing the views of nine staff (two sent in joint responses). The questionnaire asked colleagues for information on why they volunteered to take part, how they were using the room, the quality of support they had received, successes, challenges, hints and tips they would offer staff wishing to get involved and any recommendations they might have for the university going forward. The key points raised for each of these topics are summarised below.

3.4.1 Motivation for getting involved

Respondents outlined several reasons for their interest in being CLS pathfinders at Abertay. Some staff were already teaching problem-based learning in spaces at the university which were not ideal and the CLS was attractive as it was felt to be *“a great environment designed from the outset for collaborative learning. I am also a keen technology enthusiast and see the advantages of this across teaching and learning, work and personally”*. The layout and technology of the CLS featured in several other respondents' comments and so the CLS was clearly meeting an appetite and demand from these staff.

The volunteers also tended to be pedagogic innovators and were attracted to the opportunity *“to experiment with the new learning environment and find out how we can use it this and potentially other modules”*.

3.4.2 Usage of the CLS

As outlined in section 3.2 above, staff used the room for a range of subjects with students from all levels. In all cases, the volunteers used the room to deliver existing modules and tweaked their teaching delivery and student support rather than reconceptualised their pedagogic approach in light of the new space. This was as expected given the facts that: the CLS was only available early in term 1 of the new academic year, it was the first of its kind at Abertay and institutional QA processes would not allow a more radical approach (although lessons learned from the pilot could feed into teaching delivery for the following academic year)

3.4.3 Staff support

Staff were asked *“Did you feel that you received adequate support? Was anything particularly helpful or missing?”*

All respondents were positive about the support they had received both in terms of formal training sessions but also the one to one follow-up support for staff from both the AV and TLE teams once they began to teach in the CLS. A couple of colleagues commented that the support they received was good but nothing could replace actually learning through using the space with their students. Students received no real formal support or training before the staff taught in the room yet they appeared to have got to grips with the technology quickly and started to use the system outwith formal classes and staff support.

Some staff commented on initial teething difficulties related to logging on, use of the software, the lack of a dedicated laptop per table and no main screen in the room. Laptops have since been

provided for all tables to address these concerns and a pull-down screen is planned for installation, as staff often deliver a short introductory talk/ briefing before moving on to collaborative group work.

The TLE team has since rolled out more face-to-face training sessions for term 2 users and has developed an online learning object which comprises a user guide, troubleshooting advice and some short video case studies from academic volunteers.

3.4.4 Key initial successes

Staff were asked to highlight key successes to date and if any of these were unexpected. A number of benefits of teaching in the new space were highlighted by respondents. One common theme was that the general *“atmosphere in the room was a lot more pleasant than many Abertay classrooms”* pointing to the improved general environmental features of the room (lighting, acoustics and climate control) and quality furnishings. Another common theme was the students’ positive engagement in the CLS with several staff commenting that their *“students seem to be enjoying the space and are more readily engaging in discussion”* and that they *“feel a bit more relaxed in this room”*. As well as the technology, the write-on walls have received a lot of positive feedback and been very popular with students.

One respondent importantly felt that the pace of student learning was also better in the CLS than in the same module in previous years, presumably a result of the observed enhanced engagement; it *“allowed much more of the milestones to be achieved quicker (e.g. writing a risk assessment and COSHH as a group) in the room than leaving it to individuals- or collaborating in other spaces”* Also, students’ engagement did not limit itself to formal class contact and staff found students using the room in their own time which was not necessarily expected *“I did not expect students to use the room outside class time but found them in there several times, using this room as a good learning space they obviously wanted to be in (promoting the ‘sticky campus’)”*.

3.4.5 Key challenges of the CLS

Staff were asked what the key challenges had been using the CLS during the initial pilot and also if there particular constraints in the room.

The lack of a dedicated laptop at each of the tables at the outset of the pilot was possibly the most common challenge identified by staff as not all students bring a suitable internet-enabled device on to campus and a laptop was found to be required for true collaborative work due to its increased functionality of a tablet or smartphone. This led to some initial frustration by students and staff, hence this issue was resolved within a few weeks of teaching beginning in the CLS. A related challenge has been the technical specification and software provided on the CLS laptops, and lessons learned are being fed into the requirements for future CLS-type spaces at the university.

Another point raised was that a one hour session in the CLS was not long enough to allow for system start up, logging on by everyone and deliver the session required etc. In order to get the most out of the room’s functionality and the type of teaching which it is ideally suited to (collaborative group work/ problem solving), two hour blocks were felt to be required and this issue has been fed back to Registry for timetabling going forward.

3.4.6 Advice to new CLS users

Staff were asked *“what hints and tips they would give staff interested in using the space?”*. The number one theme that emerged from almost all the responses was that preparation was key. Preparation included going to the training, gaining confidence in using the technology, experimentation beforehand so that any limitations of the system are identified and ironed out. One staff member recommended to *“find a learning activity you have confidence or experience running at first, then think how you can adapt this to use the collaborative learning space- in order to gain confidence in using the technology or promoting its use in aid group work- with me this had led to new ideas of how I can use the space in future teaching.”*

Some comments were also made that students may not be familiar with group work, particularly those in first year, and the lecturer should also not assume that the students know each other; some general ice-breakers were found to be beneficial in such situations.

The final words of advice provided by pilot users pertained to encouraging colleagues to have a go and *“embrace the technology, being aware that there’s lots of support and to be creative with what they can do with the space”*.

3.4.7 Recommendations to the university going forward

Finally, pilot users were asked what recommendations they would make to the university going forward, in terms of future technology-rich learning environments.

There was a clear steer from those involved that the university ought to develop more such spaces and that the CLS should not be unique at Abertay. The key benefits were the type of teaching and support for student learning which the CLS offers, the flexible nature of the space and that it was allowing staff to reflect upon their own practice and change their models of delivery. The technology in the room received fairly positive feedback, however, it was interesting that some low tech features of the room were found to be particularly welcome- its atmosphere, lighting, furnishings, flexibility and, of course, the write-on walls.

“The writable paint on the walls is excellent! It is great for allowing thoughts to develop with groups, creativity, brain storming and planning to be undertaken- and is relatively low tech!”

There was a feeling that although the CLS was excellent, the ethos of the CLS (flexible spaces designed to support active student learning and collaboration) might also be achieved through low tech solutions and the university should not be afraid of experimenting with future designs to accommodate different class sizes and a wider taxonomy of teaching delivery.

In addition to recommendations about future learning spaces, the need for continued staff support and development in new ways of working was commented upon e.g. *“Staff need training, not only in the IT aspects but in group teaching as this may be out of the comfort zone for many staff members if they have only ever used traditional methods”*.

Finally there was praise for the way in which the CLS pilot had operated and a feeling that *“the sand pit nature of the CLS was great- trialling the technology before a wider roll out is the way to introduce new spaces.”*

3.4.8 Reflections on the CLS pilot and next steps

First of all, it is gratifying and indeed a relief that the pilot has been seen by all involved (staff and students) as successful. In addition to their positive experience, albeit with occasional glitches, everyone who took part has reported that they have learned a lot and they were not put off using such spaces in the future. Further there has been significant institutional learning which could not have

been achieved without this hands-on pilot, proving that there really is no substitute to experiential learning [10].

Secondly, there is a recognised need to widen the number of staff (and students) using the room and, for term 2, a further six or so staff have started to use the room for their teaching following induction. In order to expose more staff to the CLS and raise interest, it is being used regularly for teaching of Abertay's new lecturer programme (postgraduate certificate in higher education teaching) and two of the university's popular TLE seminars have been held in the room recently- one on social media and one to showcase how staff are already using the room in practice.

In terms of barriers, the timetabling system and timing of room requirements has been a bit of an issue for this academic year as the room was only ready part way through term 1- this should be resolved for 2017/18. Another issue is related to intra-institutional quality assurance processes and the need for any major changes to modules, including assessments to be approved in January for delivery in September. Clearly only staff who have used the CLS before January this year will be in a position to have used the CLS, reflected upon their experience and potentially redesign their module with use of the CLS in mind. For new users in 2017/18 it will be more a case of delivering modules they already teach and which may be finely tweaked only for the space. Finally, inherent conservatism amongst some staff in terms of their preferred teaching delivery is an issue as many colleagues are more comfortable teaching didactically [11]. However, given the proposed direction of travel and expansion of active learning environments which are planned for the near future (see below), hopefully confidence will grow and this barrier reduced in time.

4. Future plans- where next for active learning at Abertay?

As outlined in section 1.4, Abertay is embarking on a multi-million pound campus development strategic initiative over the next few years of which the implementation of the CLS has been a successful start. The following developments are intended to give a flavour of our direction of travel.

4.1 New Science Laboratories

In parallel with the creation of the CLS has been the much needed refurbishment of several science teaching laboratories for students studying Food, Forensic and Biomedical Sciences. The design of the new laboratories has been done in full consultation with academic staff, technicians and students through various meetings, focus groups and a multi-stakeholder project board etc. As well as traditional wet lab fittings and equipment, new learning technologies have been installed to promote more active student engagement and collaborative working. This has included the same software (Kramer) as used in the CLS, a zone for desk-based work (e.g. lab report writing and data analysis) and an informal area with soft seating, kitchen etc. Across all of these areas has been the installation of more power sockets (including USB charging points), in response to student feedback and to incentivise students to Bring Your Own Device (BYOD).

4.2 More Collaborative Learning Suites

It has always been the intention that the CLS should not be a one-off. Rather it was a sandpit and an experimental area. From the staff involved in the CLS pilot, there has been a clear signal to the university that more such spaces are required although in designing new spaces, the actual spec and layout ought to vary so that we have a greater understanding of what works and new such spaces need not have the same technology/ furniture fit out as the CLS. This is very much work in progress at the time of writing and we are deliberating as to whether or not to have several CLs, each with a slightly different focus but common set of principles, in a concentrated area or to have them spread

out across the university. It has been agreed in the first instance to build another CLS opposite the pilot space to be operational for early 2018 and re-evaluate future spaces then. Although the university is encouraging students to bring their own devices it is also recognised, particularly for Computer Gaming and Cyber Security students, that there is a need to provide high specification computing facilities on campus and again, in refurbishing existing computing laboratories we are incorporating lessons learned and the design principles of the CLS into future planning.

4.3 Library refurbishment

The redevelopment of the library was highlighted at the beginning of the learning space initiative as being a priority and work will commence on a complete refurbishment in May 2017 with a budget of £4.5M. The work is anticipated to last over two summers and to be complete for September 2018. The vision is to create a student learning hub which epitomises the notion of a sticky campus and to provide students with a range of new formal and informal learning spaces which support traditional private study but also active, collaborative learning and new ways of teaching/ supporting learning. There are a number of strands to the project and a similar change management strategy has been taken as outlined in section 2. There is a multi-stakeholder project board and the views, concerns and ideas from staff and students have been fed into the design process, for consideration by the architects and project board.

One new learning space in the new library is particularly relevant to this case study and that is a proposed new creative design space or “war room”. The focus of this space is to create somewhere which is flexible, which will support formal and informal learning with an emphasis on collaborative learning, project planning and design thinking. It is intended to be used for workshops, seminars, tutorials, meetings as well as informal study outwith timetabled bookings. Drawing on lessons learned from the pilot CLS in terms of getting the environmental factors right, the intention is to provide an attractive and comfortable space which includes varied furnishings (e.g. moveable tables and chairs, bar stools and a sofa to permit a combination of stand-up and seated configurations), “write-on” walls, several interconnected smartboards on the wall and a few fixed workstations. The idea is to create a space that should facilitate scholarship rather than relaxation, however, there will be facilities for informal discussions if required.

4.4 Communities of practice

There is clearly considerable interest in the sector in technology-enhanced active learning spaces which promote student engagement, richer collaboration and deeper approaches to learning, as evidenced by the number of institutions piloting spaces of the kind that are being trialled at Abertay. Although the capacity of such spaces is reduced for active learning configurations compared with didactic set-ups, the overall space utilisation is invariably greater as students are able to use the space outside of formal contact with staff etc. There are also potential advantages in terms of new more effective ways of working, enhancing the digital literacy of students and staff, innovation etc. However, as the sector is still at a relatively early stage of development (widespread pilots), there are considerable opportunities for sharing practice and working with colleagues at other institutions.

At Abertay, external engagement has been a key feature of our change management approach, however, this has been limited mainly to colleagues in central positions (e.g. DTLE, learning technologists, information professionals, estates managers). In terms of engagement of academic staff at Abertay, until now, we have concentrated upon building an active community of practice of “learning space scholars” within the university but going forward we have recognised the need for staff at the discipline level to look externally and extend their networks, perhaps facilitated through TLE.

5. References (all websites accessed 28th February 2017)

- [1] A.D. Robertson, [Developing a new whole institutional approach to Teaching and Learning Enhancement](#), Higher Education Academy, 2016.
- [2] <http://www.abertay.ac.uk/studying/learning-experience/>
- [3] <http://www.hear.ac.uk>
- [4] <https://www.heacademy.ac.uk/ukpsf>
- [5] See for example, <https://student-strategy.uq.edu.au/>
- [6] <https://www.whatuni.com/student-awards-winners/student-support/>
- [7] <https://www.ted.com/>
- [8] <http://www.droitwich.net/>
- [9] <http://www.digitalclassroomroadshow.co.uk>
- [10] Kolb, D.A. 1984. *Experiential learning: experience as the source of learning and development*. Englewood Cliffs, NJ: Prentice Hall.
- [11] Kember, D. 2001. Beliefs about knowledge and the process of teaching and learning as a factor in adjusting to study in higher education. *Studies in Higher Education* 26 (2), 205-221.