

Report on the Video-Linked Teaching (VLT) Project: Staff and Student Experiences During the Experimental Pilot

Maggie Hartnett, Mark Brown, Scott Symonds and Philippa Butler

1. Executive Summary

Massey University, as an institution, has invested significantly in the implementation of the video-linked teaching (VLT) facilities between 2010 and 2012. The VLT project initially comprised the development of two purpose-designed rooms at the Manawatu and Albany campuses. The intention is for these rooms to be used to establish a strong presence and sense of connection between teachers and students located at each site, offering the ability to teach two (or more) physically distanced classes synchronously with a focus on rich interaction and collaboration. They will also be able to connect people to other remote sites for teaching and learning purposes and assist the University to broaden the range and scope of remotely taught papers.

The VLT pilot project represented the first phase of providing these innovative learning spaces for flexible, interactive, video-linked teaching. The experimental phase of the pilot took place in semester one, 2012, while the rooms were still under development. During this period, several academic staff volunteered to teach their classes in the VLT rooms in conjunction with their colleague(s) teaching the same paper at another campus. In order to inform the ongoing development and use of the VLT rooms, an investigation was undertaken to explore the experiences of staff and students involved in this first phase. Anonymous student surveys, student focus groups and staff interviews were used to gain feedback from the first users of these new facilities. This report shares the experiences of those involved and identifies a number of affordances and challenges of using the VLT rooms from technical, physical, pedagogical and ongoing training perspectives.

While the VLT rooms can be complex and demanding places in which to teach and learn, staff and students involved described their experiences positively. One of the primary technical goals of the project was the creation of as seamless a connection between locations as possible. Feedback indicates that this was achieved though some technical adjustments are needed. This is not surprising given the facilities were being developed while classes were taking place. Dedicated technical support at each location proved to be invaluable and academic staff stressed the importance of its continuation beyond the pilot phase of the project.

The physical flexibility of these spaces (i.e. being able to configure the furniture in various layouts) was also highlighted in positive terms by staff and students. However, this flexibility did introduce additional teaching considerations (e.g. where to stand, where to look, voice and body direction) that academic staff needed to be aware of.

From a pedagogical perspective, participants highlighted that discursive, active and interactive teaching and learning approaches were well-suited to the affordances of the rooms and traditional lecture style approaches were not. Students valued the interaction with their teachers and collaborative/facilitative teaching strategies helped to encourage student engagement in these technology immersive classrooms.

Supporting academic staff through a professional development process was also highlighted as important and necessary for the ongoing success and viability of the technology. Furthermore, students, even technologically able ones, require some initial training when taking classes in VLT rooms for the first time.

Notwithstanding the above, a notable difference in feedback emerged from academic staff involved in teaching the paper on the Manawatu and Wellington campuses (a VLT room is not currently available on Wellington campus and a video conferencing system was used). All involved agreed that the lack of a VLT facility at the Wellington campus constrained the options open to them from technical, physical and pedagogical perspectives.

Overall, evidence from this investigation suggests there has been some initial success in bridging the physical space between groups of students and staff across campuses. To this end, the report presents data, reflections and recommendations to inform the next phase of VLT implementation at Massey.

2. Background

2.1. Context

A small group consisting of three undergraduate cohorts of Massey University students along with their lecturers and one teaching consultant participated in the experimental pilot phase of the VLT project. Two of the papers were taught on a weekly basis between the Manawatu and Albany VLT rooms while the third was taught weekly between the Manawatu VLT room and a standard video conferencing room in Wellington.

Teaching usage for the semester totalled 66 hours across 25 live classes. It should be noted that construction and testing were still happening around scheduled classes and several components of the final build such as interactive whiteboards, document cameras and room presets were not available.

The formal evaluation of the pilot was undertaken on completion of semester one, utilising a mixed methods approach. Quantitative data from an anonymous student survey were collected alongside in-depth qualitative data gathered through semi-structured student focus groups and staff interviews.

2.2. Participants

Across the three cohorts using the VLT rooms during the experimental pilot phase, all but one staff member agreed to be interviewed. Of the students eligible to complete the anonymous survey, 26% (n=17) responded. Of these, 65% rated themselves as experienced/very experienced technology users while only 12% considered themselves to be very inexperienced. Survey responses were received for all three papers involved in the experimental pilot phase, with 47% from one paper taught between the Manawatu and Albany campuses. Remaining responses were split between the second paper taught between Manawatu and Albany (18%) and the paper taught between Manawatu and Wellington campuses (35%). Four students from one paper took part in a follow-up focus group interview. While student feedback (from surveys and focus group) is based on a relatively small sample of students, the data collected provide some useful insights into the initial implementation and use of VLT at Massey.

3. Results

Students and staff were asked questions about multiple factors relating to technical, physical, training as well as teaching and learning considerations associated with the VLT rooms. Survey questions asked students to rate the importance of these factors. Focus group and interview questions were used to gather more in-depth information about participants' experiences in these spaces. Results are presented here.

3.1 Technical considerations

The overwhelming presence of technology is the first thing that confronts you in VLT rooms. This was seen as both a strength and a challenge by participants who were teaching and learning in these spaces for the first time. The immediacy of the experience: *“you feel like you're really there. There is absolutely no delay”* (Staff member 3) and the state-of-the-art nature of the spaces: *“the room has an incredible functionality to it”* (Staff member 7) were highlighted as positive aspects by participants involved in the project.

At the same time, the technologically complex nature of the rooms was identified as a potential barrier by staff. The key aspect that mitigated this concern was the immediate availability of technical support. The importance of having appropriate support onsite on an ongoing basis is clear from the following examples:

... it was good having the technicians there because a couple of times, we just weren't used to how to bring up the technology or how to bring up the presentations and sometimes it went blank and we lost Wellington a couple of times. But having the technicians there, having X there was really great. Just pop out and get him and he'd come in and fix anything up. So that support was really good. (Staff member 1)

... that kind of technical support really needs to be there and ongoing ... in case unforeseen things happen. (Staff member 2)

The reliability of the technology and availability of immediate technical support were also important considerations to students as indicated by the survey responses (see Figure 1).

In terms of other technical considerations of the VLT spaces, student survey responses placed an emphasis on the audio capabilities of the rooms, with four out of the top seven technical considerations being audio-based (quality of audio, ability to hear natural speech levels, room audio at comfortable level, ability to reduce or mute background noise) compared to only two visual concerns (quality of the visual display, position of displays).

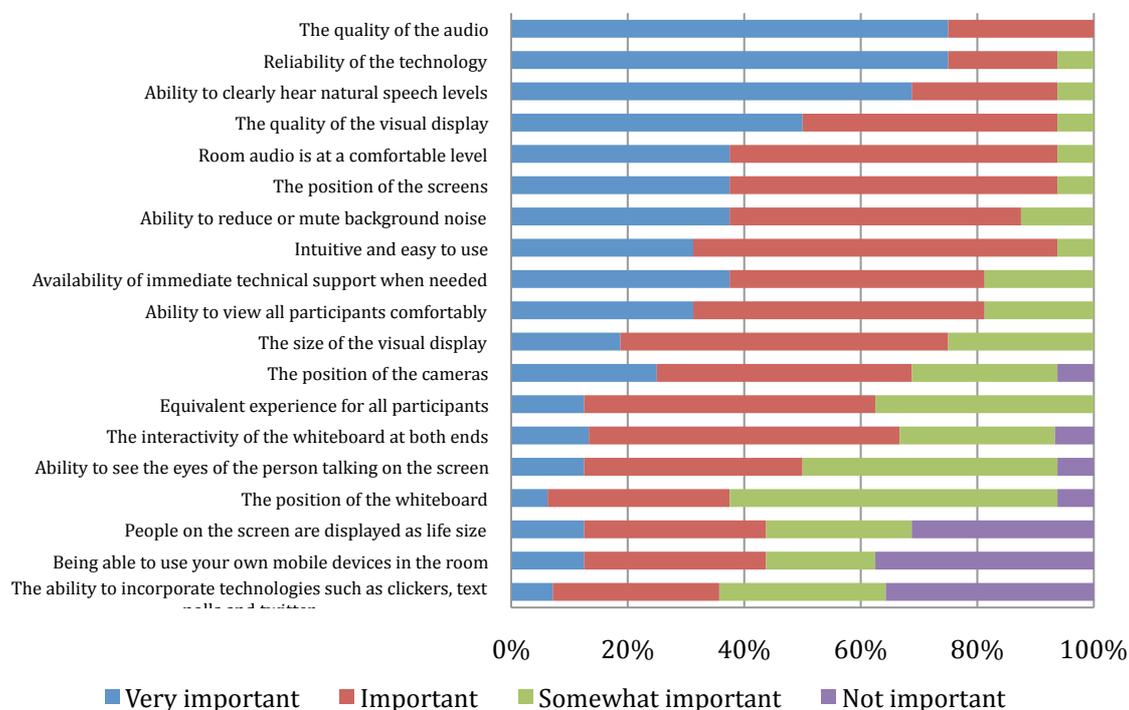


Figure 1: Student survey results: Technical considerations

Interview data offers further insight into these findings. Both staff and students mentioned the super-sensitive nature of the microphones and how ambient sounds were picked up and

amplified to the other location. The following example was indicative of comments made across cohorts:

... the microphones are super sensitive, and they pick up absolutely everything so you know, in a normal tutorial, even when someone's speaking often they'll be little sort of whispered conversations or, people will lean over and chat to one another. Well a lot of that was kind of gone because, anything you said like that was going to be picked up by the microphone ... along with rustling of paper of course and all of these sorts of things. (Staff member 2)

In some instances this resulted in perceptions of a more 'stilted' environment as academic staff took turns to speak with students needing to remain silent while they were talking. Being able to mute the microphones when required was considered helpful. Apart from the distraction aspect of background noise, a student with a slight hearing impairment talked about the difficulty of picking up what was being said in this environment:

I have a slight loss of hearing or perhaps more than a slight loss of hearing in one ear, and I think that disadvantaged me because I didn't catch everything. (Student 3)

The quality of the visual display was also highlighted as important in the survey results and commented on in the follow-up interviews. Multiple screens and cameras meant that participants could see a lot and this provided a sense of connection with those at the other location, as the following comments indicate: "*it was like being with them*" (Staff member 3) and "*you thought he [lecturer in the other room] was here*" (Student 1).

Given the developmental nature of the pilot phase, several technical aspects were also identified that would improve the experience. These included: a full wall projection of the remote room rather than a half-wall display; improved visual clarity for students with special learning needs (such as English second language speakers and hearing impaired who may need to lip-read); control of the resident computer from both rooms (for ease of transitions from either room); the ability to record sessions within the rooms; having distance students participate in classes; being able to 'see' what the other room has on their screens; and greater flexibility to change the room configuration *during* class which required technical as well as physical changes (such as camera angles). It was acknowledged though that there was sufficient flexibility to change the room setup *prior* to a class commencing.

3.2 Physical considerations

Participants were also asked about physical aspects of the VLT spaces. Staff and students talked in positive terms about the consistent design and décor of the rooms which made it feel "*like you're almost looking through a window to another part of the room. ... [there is] less of a sense of distance or disconnection*" (Staff member 3). The flexibility of the rooms in terms of the ability to move the furniture into various configurations to suit different teaching activities was also highlighted in positive terms.

Several staff talked about experimenting with different layouts within the VLT rooms in order to create a "*conversational space where the students could be aggregated ... in many different ways*" (Staff member 6). In one instance this was dubbed 'café style' and consisted of students sitting together in small groups at each location. It was viewed as an informal,

relaxed seating arrangement which “*created that flow, it gave a connection between the two of us [rooms]*” (Student 2).

As the above comments indicate, the most important consideration associated with the physical aspects of the rooms related to the impact on teaching and learning. Knowing “*where to stand ... and where to look*” (Staff member 1) and “*the mix of camera angles, where you teach from, where the students are looking, what you’ve got up on all the displays*” (Staff member 5) were important considerations for academic staff when teaching in the VLT rooms.

Knowing where to stand and look was particularly important because lecturers needed to ensure they remained in “*the line of sight*” (Staff member 7) for students at the remote location so all participants felt as though they were being addressed equally. Academic staff also reported how the flexible physical nature of the rooms (space, furniture, displays) was reduced somewhat by such factors.

Student survey results (see Figure 2) and focus group comments confirm that this was the most important consideration over and above the comfort level and mobility of the furniture:

... where he used to stand was quite good because he was at sort of the front of our screen and you noticed when he changed position, like if he’d go and stand at the back of the room, you did feel a lot more disconnected. But when he was down at the front there, you sort of felt like he was standing at the front of our room too. (Student 2)

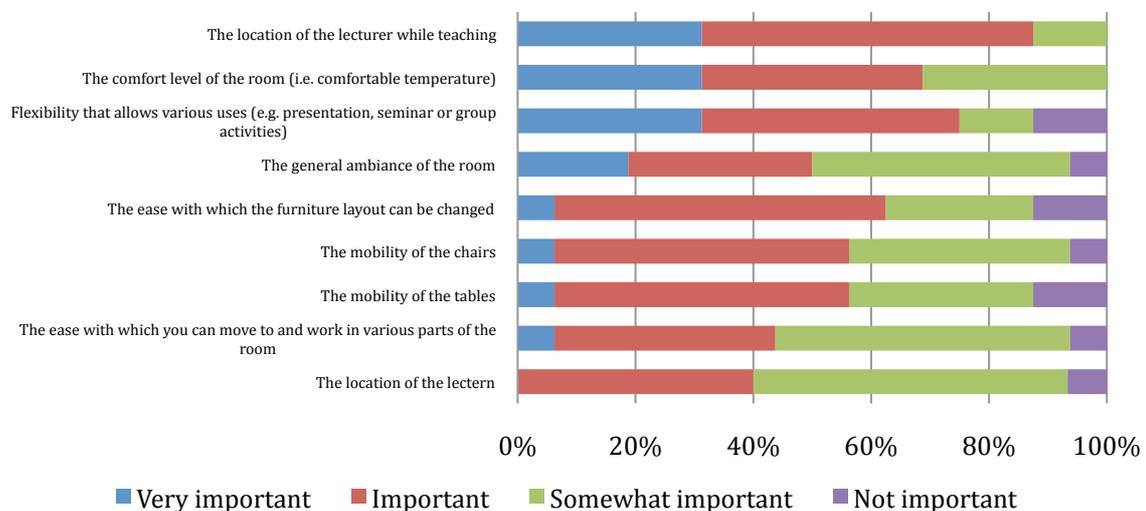


Figure 2: Student survey results: Physical considerations

The general comfort level and ambience of the room were also commented on by participants involved in the pilot. The lack of air conditioning in the VLT room was consistently mentioned by participants located at the Manawatu campus. Other, more minor, areas for improvement included the need for greater control over the lighting in the rooms as, in some cases, glare from the tables could be uncomfortable and, in others, there appeared to be lighting ‘dead spots’; override control over the automatically locking doors so that students could return to the room after a break without the need for someone to let them in; and a

clock in the Albany room. Several participants also questioned the value of including a lectern in the room.

3.3 Teaching and learning considerations

Staff and students talked at length about their teaching and learning experiences in the VLT rooms throughout the follow-up interviews. It is perhaps unsurprising that discursive, active and interactive teaching and learning approaches were seen as most effective as this is what the spaces were designed to facilitate. Comments such as *“for me it really helped in that discussion interaction between the campuses”* (Staff member 4) and *“just how interactive it was, it was really good for me, I thought that was much better than just having a lecture”* (Student 4), were indicative of comments made by all participants.

Student survey results (see Figure 3) support interview findings. Interaction with lecturers topped the responses closely followed by interaction with classmates. It indicates the need for teaching staff to allocate plenty of time to student discussion and questions, and to make the most of the potential the rooms offer in this regard. Students also highlighted the importance of a variety of teaching approaches and activities. Conversely, traditional lecture-style approaches and presentations were of much less importance to students. Staff also indicated VLT spaces are not well suited to a *“stand and deliver content type lecture”* (Staff member 3) approach.

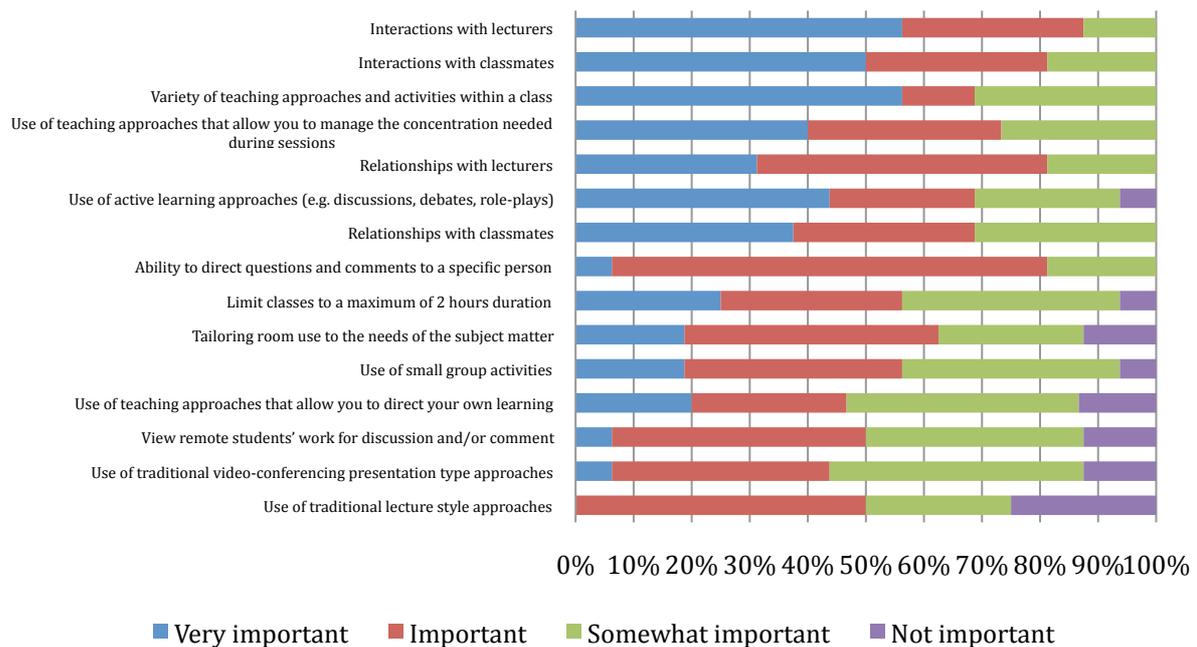


Figure 3: Student survey: Teaching and learning considerations

To establish an interactive teaching space in the VLT rooms, academic staff talked about the need to keep the other location constantly in mind otherwise it was easy to *“slip into just your local mind”* (Staff member 4). They also stressed that its success *“hinges on staff facilitation ... you have to be quite proactive”* (Staff member 4) and *“modelling the interaction in the room because the more that we could move the kind of locus of activity backwards and forwards between us, the more we could animate the whole room as a single room”* (Staff member 7).

In terms of creating a “*single learning environment where everyone feels that they’re part of one large discussion group or whatever it might be*” (Staff member 1) some academic staff felt they were able to achieve this while others felt they were less successful. For those that felt they were able to unify the rooms, the lecturers involved described it as an ongoing process of collaborative decision-making both in planning and undertaking classes. This was challenging because it was “*difficult to make those decisions when you are two of you who are doing this*” (Staff member 7). It also had the effect of making the design of the learning more visible “*it’s as if the architecture of the learning environment is there to be seen by everybody all the time*” (Staff member 7).

Those who felt they had been less successful at achieving whole group interaction identified the requirement to take turns when speaking resulting in a more stilted environment that discouraged informal student interaction as a possible reason for this. This was supported by the observation that “*it was quite common for them [the students] to become a little bit more animated ... once the video connection was cut*” (Staff member 2).

Discursive, active and interactive teaching and learning approaches were perceived as promoting student engagement by the majority of participants (including students) but with a proviso best summed up by a comment from one of the lecturers involved: “*what this place does is ... it almost forces you into a choice; you either participate or you get thrown to the margins of it, there’s kind of no way around it*” (Staff member 7). For those students who did choose to participate, engagement was evident “*I really enjoyed it, I had a really good time in this environment*” (Student 2). For others, there was a reluctance to participate for fear of giving the “*wrong answer back and [making] fools of ourselves or we were a little bit timid*” (Student 3). This suggests that in order to encourage engagement, students require guidelines and clear expectations of what learning in these rooms will involve early on in the learning process.

Staff and students also talked about students having access to a broader range of discipline expertise (i.e. with more than one lecturer involved in teaching the whole group), greater access to guest experts and access to a wider range of student perspectives (i.e. at the different campuses) as other advantages of using the VLT spaces.

In addition to highlighting the pedagogical strengths of the VLT rooms, several concerns were raised including the demanding nature of the environment mentioned previously. But the primary concern was that these high-tech spaces could be used as a way of reducing teaching costs in the future. The concern that this could result in remote classes (i.e. one lecturer teaching classes across multiple campuses from one location) was raised by several students and is encapsulated in the following comment:

... if I [am] coming in to an internal paper and I have no lecturer every week, just looking at a lecturer on the screen, ... I might as well watch lecturers on YouTube ... not have a lecturer in your room every week would just be horrible. (Student 2)

This concern was echoed by some of the academic staff involved in the pilot, though not by all. Those who did not want to see a remote teaching approach adopted argued that the most “*important resource ... that [the] University’s got ... is us, they [the students] come, they want to meet us, so it has to always be something that empowers that meeting*” (Staff member 6). Others saw it as an opportunity to make the best use of discipline expertise by using an

alternating teaching approach (i.e. staff taking turns to teach across both locations). One academic staff member saw distinct advantages to remote class teaching approaches as a way of making effective use of finite teaching resources.

3.4 Training considerations for students

Students were also asked about what they considered important in terms of things that they needed to know when using the VLT spaces for the first time. Students who participated in the focus group talked about how valuable it would be to have some time set aside, prior to course commencement, to familiarise themselves with various aspects of the rooms, as the following comment indicates:

... have a look at the technology when you first start, you almost need to ... have a, hey we're going to work in this room and this is the sound, and this is the different lighting ... you know. Just to get used to being in the space because you just feel like you've been thrown in the deep end. (Student 2)

Survey results (see Figure 4) further support the need for some kind of orientation process for all students. Knowing where to look, stand or sit when addressing the other room, mechanisms for being able to judge when the other room is ready (to listen, take their turn, etc.) and protocols for talking when someone else is speaking (given the sensitive nature of the microphones) were among those considered most important. Gaining the attention of the remote room was particularly important when the sound from the other room was muted to allow group activities to take place at each location prior to coming back together. Given that each room could not 'un-mute' the other room's sound, capturing the attention of participants at the other end proved tricky at times.

Survey results also show students don't necessarily think this initial familiarisation process needs to be in the form of a formal induction session. It could be something that is built into their few first classes in the rooms.

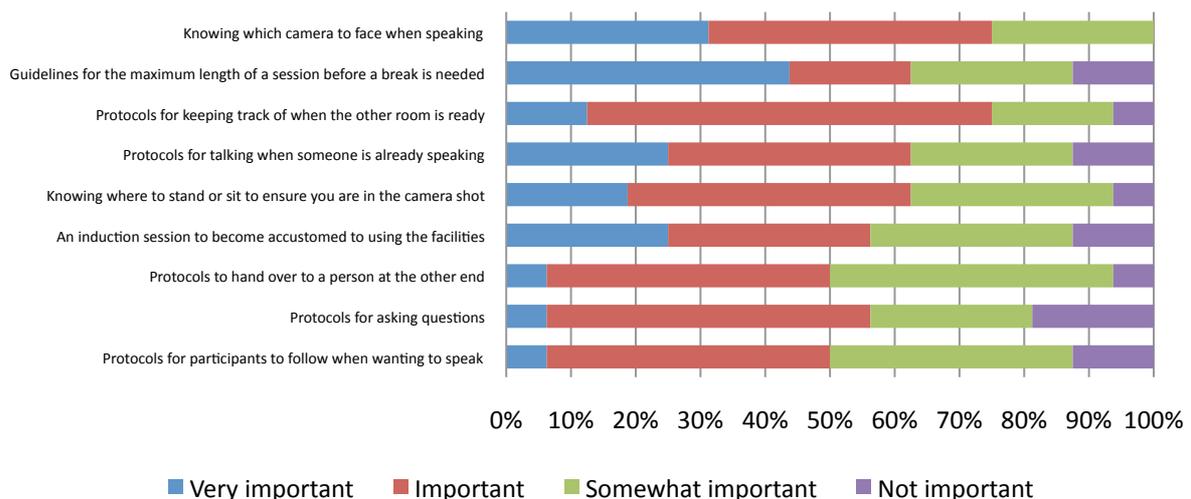


Figure 4: Student survey: Training considerations

Student focus group and survey feedback also highlighted the need for regular breaks (two continuous hours was mentioned as a maximum) as the media-rich, immersive nature of the

environment was considered demanding and tiring by students. This did tend to dissipate somewhat though as the semester progressed.

3.5 Wellington campus

Staff involved in teaching the paper on the Wellington and Manawatu campuses all agreed that the technical capabilities of the video conferencing system at the Wellington campus impacted on their teaching experiences. In particular, academic staff felt that a sense of ‘virtual presence’ between locations (a goal of the project) had only been partially established at the Wellington campus:

I think we were short changed a little bit with the current arrangements, which were much closer to conventional video conferencing. Although the fact that you’ve got a much larger screen and there’s no lag and you know, there’s no issues with displaying a presentation at the same time all of those made it a good video conferencing experience. But there was still that sense of distance, and ... I think with a proper VLT setup here in Wellington, hopefully we can get a bit more, a greater sense of immediacy and presence and sort of build ... a cohesive sort of continuous classroom environment. (Staff member 2)

The constraints that the video conferencing setup placed on the physical configuration of the Wellington room also limited the ways in which the Manawatu room could be used: *“I have to be in like a fixed place, you couldn’t move, there’s also like no interactive whiteboard there. There’s only the two small screens [in Wellington] so you don’t, you can’t see everyone”* (Staff member 3).

The types of teaching and learning approaches that could be used were also constrained because of the need to accommodate the Wellington facilities: *“I’m pretty sure it would be totally different if we had a VLT room in Wellington. I think we could work it to be a lot more interactive”* (Staff member 1). Collectively, academic staff perceived the facilities in Wellington being less than optimal, this is summed by the following comment *“I want a room in Wellington”* (Staff member 3).

4. Reflections

The VLT pilot project represented the first phase of providing innovative learning spaces for flexible, interactive, video-linked teaching primarily at the Manawatu and Albany campuses, while existing video conferencing infrastructure was used on the Wellington campus. The intention was to establish a strong sense of presence and connection between teachers and students located at each site while offering more interactivity for classes.

Academic staff involved described their experiences of teaching in the VLT rooms positively. One of the primary technical goals of the project was the creation of as seamless a connection between locations as possible. Clarity of audio and video, large displays to give remote participants more presence, and décor, intended to give the impression of linked classes being virtual extensions of one another, were given priority. Feedback from lecturers indicates that, from their perspectives, these goals have been achieved though some adjustments, to the audio capabilities in particular, are indicated.

The project had dedicated technical support at each location and this proved to be invaluable. Technical support was on-hand to assist with set up prior to the start of a class and remained

on-site for the duration of classes to ensure a swift response should any technical issues arise. This helped to alleviate the sense of ‘technical complexity’ that academic staff experienced, particularly early on. The subsequent introduction of one-touch user presets has also helped to make VLT a more teacher-friendly experience. Notwithstanding this automation, staff stressed the importance of that technical support continuing beyond the pilot project phase.

Feedback from students needs to be treated with some caution given the relatively small numbers involved in this investigation. Given that, student feedback aligned with lecturers’ views about the technical aspects of the VLT rooms.

The physical flexibility of these spaces (being able to configure the layout in various ways) was also highlighted in positive terms by staff and students. This flexibility did introduce additional considerations that academic staff involved needed to be aware of. Both staff and students alike highlighted that knowing where to place him or herself in the room, to ensure that lines of sight and a sense of connection were maintained, was more important than the actual ability to rearrange the furniture. General comfort levels and décor were seen in a positive light though it was generally agreed that the Manawatu room requires air conditioning.

From a pedagogical perspective, academic staff highlighted that the VLT rooms were well-suited to discursive, active and interactive teaching and learning approaches and traditional lecture style approaches were not. In line with this, students valued the interaction with their teachers and enjoyed having the opportunity to develop closer relationships with them and cautioned against the use of these spaces for remote teaching, or cost reduction purposes. Collaborative/facilitative teaching strategies encouraged student engagement in these technology immersive classrooms. This finding indicates that supporting academic staff through a professional development process will be important to the ongoing success and viability of the technology.

Furthermore, students, even technologically able ones, also need some initial training when coming into the VLT rooms for the first time. This would help to address the feeling of being ‘thrown in the deep end’ that the technical complexity of the rooms can engender.

Finally, staff involved in the paper taught at the Manawatu and Wellington campuses all agreed that the lack of a VLT facility in Wellington limited the options open to them from technical, physical and pedagogical perspectives.

5. Recommendations

The evaluation of the experimental phase of the pilot project has gathered valuable feedback, from both staff and students, which will help to inform the ongoing development and use of the VLT facilities as the project moves into the full pilot phase and beyond.

On the whole, participants were positive about their experiences in these technically immersive environments. Nevertheless, it is very early days and in order to better support staff and provide students with consistent and coherent learning experiences the following recommendations should be considered.

- 1. Provide professional development opportunities for staff using the VLT rooms*
Staff wanting to teach in the VLT rooms will require professional development support both in terms of using the technology but perhaps more importantly, with

discursive, interactive and collaborative teaching approaches within the context of these high-tech environments. To-date, on-demand web-based and mobile resources, planning materials and guides have been produced. These resources, along with one-to-one consultations, monthly hands-on professional development sessions and heuristic opportunities for academics to review and re-imagine their VLT classes, will enable teaching staff to more fully exploit the interactive and collaborative potential that the rooms offer. Pre-set guides, room planning documentation and 'visual planners' have also been developed as aids in the design of VLT lessons.

2. *Maintain on-site, at-hand technical support beyond the pilot project*

Given the technical complexity of the facilities, having expert technical expertise at hand whenever it was needed was seen as crucial to the success of the teaching and learning that occurred within the VLT rooms. During the pilot project, funding has been allocated for an IT technician to be available both prior to and during classes to help with setup as well any technical difficulties where needed. The introduction of room pre-sets have proved valuable in simplifying the setup process but do not negate the need for ongoing technical expertise on-site.

3. *Establish a VLT facility on the Wellington campus*

The original intention of the project was to also build a VLT room on the Wellington campus but budget constraints meant the decision was made to construct just two spaces on the Albany and Manawatu campuses with an eye to adding a third room in Wellington at a later date. This evaluation has shown that this need remains as current video conferencing arrangements on the Wellington campus resulted in constrained technical, physical and pedagogical options for all involved.

4. *Provide orientation training for students*

Students coming into the rooms for the first time require some kind of orientation session prior to classes commencing. This could be a more formal orientation session conducted by technical staff and/or the teaching consultants. Alternatively, a less formal acclimatisation process could be incorporated within the first few classes of a given paper.

5. *Future requirements*

In general, participants in this study were satisfied with the facilities available within the current VLT rooms. However, there is a need for air-conditioning in the Manawatu room, particularly during the summer months, as the 'sealed' nature of the room can result in hot and uncomfortable environment for academic staff and students. Beyond that, greater audio control so that ambient noise can be filtered out would help to create a less formal, more relaxed environment conducive to the kinds of truly interactive forms of learning that participants want and that these rooms were designed to encourage.

We extend our thanks to all students and staff who participated in the study