



Retrofitting teaching spaces: Did our dreams come true?

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Using Appreciative Inquiry an evaluation of newly retrofitted and upgraded centrally timetabled teaching spaces took place following the first semester of use. Survey instrument items and interview prompts were derived from a metasynthesis of relevant reviews, each informed by current 'learning spaces' literature. Teaching staff (N=28) completed an online questionnaire and/or attended interviews (N=4). Their experiences and opinions with regard to the technology; the fitness for teaching purposes; the room layout, décor and furniture; and the support offered is discussed. Implications and future directions are indicated.

Keywords: teaching spaces, learning spaces, evaluation.

Introduction

Charles Darwin University (CDU) located in tropical Darwin, Northern Territory, is one of 5 dual sector tertiary providers in Australia. Billany (2012) reported at *ascilite* 2012 on the factors that informed the design principles that were used in the retrofitting of a large number of learning and teaching spaces at the main campus. A comprehensive review of the centrally managed teaching spaces, and their use, was undertaken by members of the Office of Learning and Teaching (OLT) (West, Billany, & Garnett, 2012). It involved consultative interviews with teaching staff using questions derived from an Appreciative Inquiry, a positive approach to change, (Whitney, & Trosten-Bloom, 2010) to focus on the positive aspects of retrofitting and the 'Dream' factor of the 4-D cycle (Discovery, Dream, Design, Destiny) rather than reflecting on a deficit model. The teaching spaces were subsequently retrofitted and made available for teaching in Semester 1 2013 followed by the evaluation phase of the project.

The stated main aims of the evaluation were to identify:

- the usefulness of each technology in the rooms
- the fitness of the rooms for their teaching practice and student learning
- any changes in their teaching practice or student behaviour
- the strengths of the improvements to inform future planning.

Evaluation of University Learning Spaces

The literature that informed the evaluation of teaching and learning spaces incorporated a number of reviews (Mitchell et al., 2010a; McNamara, & Rosenwax, 2012; Pearshouse et al., 2009; Swinburne University, 2011). Recurring common themes included the complexity of the phenomena under evaluation and whether it is possible to evaluate the effect of teaching spaces on actual student learning outcomes.

This project was complicated by the requirements of timing and budget constraints which meant that a range of types of teaching spaces were retrofitted simultaneously. It is due to these reasons that this evaluation focusses on the experiences and opinions of the teaching staff and their perceptions of the effects of the retrofitting.

The Framework for the Evaluation of Learning Spaces (FELS) (Pearshouse et al., 2009) provides a useful and practical guide through a common vocabulary, a checklist of issues to be considered, and a structure to follow.

The evaluation proposal for this project involved a number of parts:

1. Questionnaire
2. Follow up interviews with individual lecturers
3. Review of incidents with new equipment as reported to the Teaching Space Support Team Help Desk
4. A comparison of timetable bookings with equivalent semester last year
5. Pre and post comparison with the Association of Educational Technology Managers (AETM) guidelines (AETM, 2012).

This paper describes the method and results from parts 1 and 2 only.

Method

Participants

This is a dual sector university and the target population ratio (92:19) of lecturers Higher Education (HE): Vocational Education & Training (VET) was represented in the questionnaire sample (23:4, plus one unknown) of 28 participants from 10 of the 18 Schools and Institutes. The School of origin was not reported by two participants. The HE subsample was equally distributed across the two HE Faculties at the university (43%;36%), with a higher proportion from one school in each Faculty (18% from Education and 25% of total sample from Psychological and Clinical Sciences). The reported student groups taught in the rooms were 59% (16/27) internal and 41% (11/27) both internal and external. Participants mean rating of their general teaching style was 66.0 (SD = 19.6) on a continuum from unstructured and strongly student-centred (0) to structured and teacher led (100). Four staff members offered to participate in a follow up interview.

Design

A mixed methods approach has been used for the evaluation eliciting both quantitative and qualitative data. Analysis of the quantitative data involved descriptive statistics and analysis of the qualitative data from both the questionnaire and interviews employed content analysis.

Measures

A metasynthesis of four reviews, each providing a current and critical review of the literature from different perspectives was the basis for the survey design. These four frameworks included the:

1. Five issues raised from the outcomes of the design of the retrofitted teaching spaces (Billany, 2012): the types and layout of technology in the room; the interaction between the student groups; the multiple roles of the lecturer; the pedagogical strategies used in the room; and, the support requirements.
2. Eight key pedagogical principles (Mitchell et al., 2010b) specifically based around the retrofitting of university learning spaces. Spaces should: support a range of learners and learning activities; provide a quality experience for users; help foster a sense of emotional and cultural safety; enable easy access by everyone; emphasize simplicity of design; integrate seamlessly with other physical and virtual spaces; be fit-for-purpose, now and into the future; and, embed a range of appropriate, reliable and effective technologies.
3. Six key areas of activity for the teacher as summarised by Harden, and Crosby (2000): information provider; role model; facilitator; assessor; planner; and, resource developer.
4. Six key principles which have been identified at CDU as a current focus for learning and teaching: active learning, structured learning, feedback, teacher presence, collaboration, inclusiveness.

A matrix was used to map these 25 issues, principles, and areas. There were commonalities and differences which led to development of the survey tool. The questionnaire consisted of a series of blocks of items covering the following domains: Participant information (including an item on teaching style); Technology; Fitness for teaching purpose; Room layout, décor and furniture; Support; and a set of Miscellaneous questions. The interview prompt guide followed the same design.

Procedure

At the end of the first semester, 111 academic staff timetabled to teach in any of the retrofitted rooms (the target population) were invited by email, to participate in the evaluation. A link to the online questionnaire, administered using Qualtrics (www.qualtrics.com), enabled them to participate in their own time and space. There were also invited to be interviewed in depth about the impact of the retrofitting. Inductive and deductive thematic analysis followed and exemplar phrases included.

Results

Qualitative information from the textual responses in the questionnaire and the interviews have been aggregated and interpreted with the quantitative items to explain the experiences and opinions about the retrofitted rooms.

Technology

The overall mean of positive rating for Technology was 74.6% and fulfils the first aim (the usefulness of each technology). Of the new and upgraded technologies placed in the rooms all were rated useful to very useful. The four considered most useful were: the support telephone (previously only one support telephone per building); the in-built presenter computer (previously not all rooms had an in-built computer); the document camera/visualizer; and, the cameras and microphones designed for use with Blackboard Collaborate.

Fitness for teaching purpose

The overall mean of positive rating for Fitness for teaching purpose was 73.5% which addresses the second aim (fitness of the rooms for their teaching practice and student learning). Sixty-four percent of the participants responded to the 'what types of learning activities do you find this room has facilitated well?' A comparison between the number of activities pre and post retro-fitting produced an average increase of 1.7 activities. It seems more than didactic teaching is taking place with comments stressing facilitation of group work due to the flexibility to rearrange the desks and chairs. However, one room, a large flat seminar room was strongly critiqued as "this technology isn't conducive to interactivity. It still orients learners to the walls - it directs their gaze away from one another and from dialogue".

There was a favourable response at rate of two positive to one negative comment regarding the ease to make transitions between the different learning activities the room afforded. One participant added the new touch pad enabled seamless transitions, however, another noted a lag time and that "the technology made 'hot swapping' more like cold starting".

In response to the changes they have made to their teaching 25% of the participants reported the flexibility to use different learning activities and make seamless transitions between them was important. The following provide examples of changed teaching practice (part of aim 3). In particular one lecturer stated the "wireless presenter facilitated using the tablet and hence it was easier to show calculations and record the lectures for external students through Collaborate at the same time". To balance this only 18% noted a retrograde step, one adding "(e.g. the Epson iPad app does not equate to screen mirroring via a bulk-standard VGA connector: there is no VGA connector now!)".

An open ended question about the impact of the room retrofitting on their role as a teacher elicited twelve textual comments. A number were lengthy responses (one nearly 300 words). Three revealed more about anxiety related to potential equipment failure, in contrast two reported less embarrassment now about inviting guest lecturers and confidence in the multimedia. Unfortunately one lecturer plans "to make absolutely minimal use of the equipment in this room owing to the presence of multiple 'single points of failure'; the potential for tampering with equipment or theft of critical components (e.g. pens and batteries) is a significant disincentive".

Room layout, décor and furniture

Ninety percent of participants responded to questions about these qualities of the room post retrofit, 81% agree the room is comfortable; 77% welcoming and 71% adaptable.

Twice as many participants responded that they would be proud to show their family and friends the room in which they teach. One lecturer said "the upgrades are fantastic!", another that the "furniture is great", more added a vote of thanks which was unsolicited. Others report it is too dark or too bright, noisy, boring, had no clock and was like kindergarten. An unexpected and positive response was the "new furnishings ... made us all feel happier in the room", adding to an affective (emotional) aspect of the space for users which is often under-

reported and should be investigated further.

Support

Ninety-three percent responded to the question to rate the training sessions held for staff at the start of semester one 2013 and on average rated the sessions above 80% (4.83/6). More importantly, 96% rated them positively. Possibly due in part to the training 39% of the participants reported no technical issues throughout the semester, however, seventeen (61%) reported at least one.

Considering there were 28 respondents to the evaluation survey and each was asked to nominate three technical issues only 37 were listed. The most common was the touch pad and logging in (9 reports, with 3 from one respondent). Eighty-nine percent of these were resolved by phoning IT for support. In an interview the participant who had 3 such issues said that the response was swift and hardly interrupted the session. The next most often reported issue was the batteries (6 reports) which were solved 67% of the time by themselves. Problems with acoustics generated 4 reports which were solved by them self or by phoning for IT support.

Miscellaneous

For additions to the room, of the 89% of respondents, there were 67% (N=16) who would add on average 1.6 items. Only 20% of the same 89% of respondents suggested 1.1 changes to the room. The most commonly requested items (23%; 11/47) for addition or change were related to microphones and monitors. Other technological additions/changes related to user-friendly SmartBoards, better connectivity to alternate devices, providing spare batteries, making all rooms Blackboard Collaborate compliant and ensuring reliable equipment. The non-technological additions/changes accounted for 34% (16/47) of the items. Thus these must be almost as important to the lecturers. They included more and larger desks, staff seating on podium, swivel chairs, a clock, thermostat and a door stop.

Only 18% of the lectures would remove anything from the room and 75% of these suggest there is an issue of old and potentially unsafe furniture remaining that needs to be cleared. Two reported unexpected uses and both noted the room unlocked, one saying the equipment was still on.

Some 14% (N=4) added a textual response to the open-ended final question about anything important that had not been raised in the survey. One lecturer adds a thank you and asks if Blackboard Collaborate capability will be extended to all small rooms in due course. A second suggests concerns might have been ameliorated if a consultative process was undertaken at the outset. A third wrote nearly 200 words, acknowledged all the work put into the project but, given budgetary constraints, would have liked more reliable and robust equipment in fewer rooms. In their text they use the words 'feel' and 'disappointed' which adds resonance to a missing affective component. This is reinforced by a lecture who would like more SmartBoard features and then adds 'hope' the prior user docked the mouse for charging.

Discussion and Conclusion

This paper reports only a preliminary interrogation of the data which shows approx. 75% of the sample were satisfied in the room retrofit to meet their needs as teachers. It is encouraging to report that external students have been brought in to the campus classroom as was a key requirement for this project (Billany, 2012).

There is still further analysis to undertake on the current data set, e.g. a more thorough inferential statistical analysis by room type, school, teaching style, student type. Also, discourse analysis of the textual and interview responses may reveal more about the latent affective component.

A threat to external validity might be the sample size, however it was representative of the dual sector nature of the institution. Opportunistic sampling of the target population revealed that many of the staff invited chose not to participate. Speculation might infer they were just too busy or were indeed satisfied with the rooms and how they facilitated their teaching. However, this paper has provided some useful guidance in relation to the fourth aim (strengths of the improvements to inform future planning). Future training and further updates that can be made to the rooms and how to adjust this design for future retrofitting. Future training sessions might also include actions that can potentially ameliorate any anxiety felt by lecturers and provide them with more confidence to have a go with more and different activities that these new technologies afford.

We thank the lecturers for their time (ranging from 2 to 42 minutes [mean = 17 min; SD = 11 min]) to complete the online evaluation. Their responses have been valuable in fulfilling the four aims of the paper. And the final word goes to a lecturer with many years of experience teaching in rooms at CDU who stated "Thank you a great

room to teach in I have worked at CDU for 13 years and this has been the best room by far to teach in”.

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