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Investigating the Dynamics of an Integrated Learning Space at James Cook University

What it is?

The overall design of the James Cook University (JCU) Cairns Library has resulted in a student learning hub being established where “the entire complex is a learning environment and supports the learning process from space to space” (Dittoe, 2002, p. 87). According to Dews and Clark (2000), the JCU Cairns Library was designed to play an important social and academic role. “In the context of the Cairns campus, this new building had to make a strong contribution toward building a sense of academic community and establishing a culture of learning” (p. 2).

The Library is a three storey building of 6,600 square meters. It is still the largest building on the Cairns campus. Completed in 2000 the whole project cost AUD\$12.7 million, with the building and associated consultancy fees costing AUD\$10 million. Designed on a ‘learning centre model’, the building brings together a range of resources, services and facilities. These include resource collections, information, help desk and reference services, computing facilities for general access and teaching, assistive technologies for students with disabilities and videoconferencing facilities.

Why it is?

The vision and leadership for the project was provided by Judith Clark, Manager, Information Services and Ted Dews, Director Central Services Office. Both were involved in the project from beginning to end: from the initial vision, development of the brief for the design consultants, project meetings throughout the construction phase through to the building occupation and post-occupancy survey. It was Judith Clark in particular who facilitated extensive collaboration between the staff, students, architects, program managers and facilities personnel at the University.

The Cairns Library provides spaces to encourage collaborative learning, those “educational activities in which human relationships are the key to welfare, achievement, and mastery” (Bruffee, 1999 cited in Graetz & Goliber, 2002, p. 83). Cornell (2002) argues that when “... people feel comfortable and valued they will come, stay and return. Learning communities will result” (p. 37). This approach is in keeping with research which suggests that because we learn through talking with others, we should plan interactive coffee shop-like spaces

It is interesting to note that one area, the Learning Centre, acts as both a social, collaborative study area in addition to a support service area. A total of nine Teaching and Learning Development staff members share seven offices that adjoin an open plan general service point area. Computer login data (Adams, 2004) and user traffic counts (Anders *et al.*, 2005) confirm that students prefer to access computers in spaces where support is located. Thus, by staff and students sharing common spaces, the staff becomes more accessible and the learning space design removes the traditional power structure implicit in the separation of staff offices and student learning spaces (Jamieson, 2003).

Tuan (1974) has explained how people develop affective bonds with a place or setting, whilst other researchers identify the need for an increased acknowledgement by institutions of the importance of learning spaces and resources “to understand better how learning does take place and the role of physical space in the learning process” (Chism & Bickford, 2002, p. 95). It is argued that changes from transmission models of teaching to constructivist thinking “where teachers serve as facilitators for active student engagement, where learning occurs in many locations, and where power is distributed across actors”, means that “learning space needs are seen to be far more dynamic and situational” (Chism, 2002, p. 10). Common factors amongst the many principles put forward by educators regarding effective learning spaces include a stress on flexibility, access to technology and interaction support as well as a match to learning goals (Chism & Bickford, 2002, p. 93).

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Social spaces include a café and the striking foyer atrium which is also used for exhibitions and other cultural events. The co-location of staff with different professional backgrounds was a workplace design goal to facilitate better integration of services.

where students and staff can interact informally (Schank, cited in Fielding, 1999). The Library contains specifically designed collaborative areas (Learning Centre, group study rooms, coffee shop, and lounge chairs) where students gather for social learning or noisy activities. There are also ‘support service areas’ where students go for specific purposes (Loans Desk, Info/Help Desk, Disabilities Resources, Learning Centre). Finally there are the study areas on the top floor for quiet independent study (carrels, tables, special collection).

What happens here?

The quantitative measures suggest that the Cairns Library is indeed functioning as a student-learning hub. On a campus with approximately 3000 students, the weekly Library user traffic was 6744 in the week studied, with 1421 movements into the Learning Centre, 483 enquiries at the InfoHelp Desk, 1211 library resources borrowed and a total of 3317 computer logins registered in the building's computer workstations.

Focus group reflective diaries show that fifteen distinct learning spaces were identified and used by the participants during the monitoring period. Table 1 shows how the 253.8 hours that the twenty participants spent in the Library building were distributed amongst these fifteen learning spaces over the seven-day period. The focus group participants spent an average of 12.7 hours per week in Library learning spaces.

How is the space used?

A number of themes emerged from the focus group transcripts and these are summarised below.

The Library as a social learning hub “One thing I like is that it [the Library] can be formal to do your things, but if you want to be social you can be social too, you can choose in-between (sic) them as you want.”

Many students indicated that they primarily used the Library for academic activities and that their purpose in coming to the building was to avoid distractions that were in the home such as partners, children, housework, computer games, telephones and television. There appeared to be a general agreement however, that social activities were also numerous in the Library due to the inevitable relationships that develop upon seeing the same people frequently in the Library space, or seeing people from the same class. Some students indicated a higher level of social interaction than others and cited reasons such as the nature of their study or their role as a Student Mentor that required them to approach, or be approached, by first-year students in need of assistance. One Student Mentor said that “the social aspect comes into it and it can be along the lines of academic stuff or just like, ah, who do I see about this? So that’s why I say mine is more in-between [social and academic], ‘cause I play different roles when I come here”. It was clear from

the comments and examples raised by students in all three focus groups that a high level of informal social interaction exists between student users of the Library, captured in the following statement by a student: “the social and the academic motivation is somehow linked to produce a good study outcome”.

Individual learning space needs “Certain places for certain things”

From the explanations given in the focus groups regarding areas of the Library used, it was clear that students moved from space to space within the building according to their specific need or purpose. One student mentioned being able to study quietly in a silent area, talk about what you’re doing with friends in another area, and then return to quiet study, “whereas at home you can’t share what you’re doing and then you might start doing something then think Oh, I’ve got washing, you just focus”. Although not asked by the focus group convenors, students in each of the focus groups mentioned that they move to alternate spaces when they needed a ‘break’ or ‘distraction’, for example the reference section, the reading room or the new books’ stand. Many students also mentioned enjoying being able to

Table 1: Hours Spent by Twenty Focus Group Participants in Cairns Library Learning Spaces from 29 September - 5 October 2005. One student spent 52 hours in the Learning Centre during the monitoring period

GROUND FLOOR						
Foyer	Learning Centre	Loans Desk	Reserve/ newspapers	Jacs Coffee Shop		TOTAL GROUND FLOOR
5.7	92.8*	3.9	10.5	2		114.9
MIDDLE FLOOR						
Infohelp Desk	Group study tables	Group study room	Blue lounges	Computer lab	General access computers	TOTAL MIDDLE FLOOR
3.5	4.8	3.2	3	0.8	43.5	58.8
TOP FLOOR						
Quiet study carrels	General Access Computers	Book Collection	Journals			TOTAL TOP FLOOR
24.3	45.8	6.2	4.7			81

talk freely in the Learning Centre, with one student saying that “I can’t work in complete silence because it drives me nuts”. Another student, however, mentioned that the conversation in the Learning Centre was the reason that they avoided the space. And yet another student said that they “generally head towards one particular area, like close to exam time I like peace and quiet, but during the semester I like the Learning Centre ‘cause you can talk”.

Interestingly, one student mentioned that they liked the social aspect of the top floor and yet admitted that this did not necessarily involve talking: “because going upstairs ‘cause most of your friends are up there, not that you talk upstairs but it’s just reassuring to see them”. This aspect of silent peer support was raised by another student who said that it was the presence of numerous fellow students similarly engaged in study/ concentration on the top floor that they found motivated them to study. It was apparent from the focus group discussions, that students self-selected spaces in the Library according to their own learning style or study pattern.

The nature of the learning task **“If you take the trek up there, you’re actually up there to do some work.”**

The specific nature of an assignment also seemed to directly dictate student use of space in the Library. Students indicated that conversation was allowed on the ground floor and a quiet level of conversation was tolerated on the middle floor but conversation was definitely not allowed on the top floor: “if you make the trek up there, you’re actually up there to do some work”. The top floor is good when “you’re trying to work on this big assignment and it’s so in-depth” whereas for reflective tasks, less formal spaces seemed to be preferred.

The blue lounge chairs on the middle floor were frequently mentioned as a space for group-work, quiet reflection before a tutorial, for going through “what I have to talk about” or “if you’re all studying, you can just sit down and sort of go

over where you’re at with each other and what assignment you’ve got due next”.

The year of study **“It took me a long time to feel brave enough to venture upstairs.”**

A key finding from the focus group discussions was that student use of the Library space not only changed according to specific need or purpose but also tended to correlate with the length of time spent studying/enrolled at university. Students commented that they initially studied on the ground floor close to the support services of the Learning Centre, or the middle floor close to the support services of InfoHelp, and only after they felt confident did they move or ‘graduate’ to the top floor of the Library. This suggests that student pattern of movement within the Library is also influenced by their confidence and transition to a self-directed and independent learner.

The ambience of a learning space **“I love coming to the Library. I love the space, I love the people, I love the whole, probably ambience of the whole thing and the academic side of it.”**

“And sometimes the artwork is like the looking out at the window sort of thing, sometimes it’s an inspiration, you need a splash of colour, and you go - ahhh - connection.”

A point consistently emphasised in each of the focus groups was the attraction of sitting beside a window or being able to see outside. For many students the windows on the top floor of the Library as well as in the Learning Centre were a key feature of the space. In contrast, another student mentioned that they had classes in a windowless conference room “and it was dreadful and what we did is by about week three we decided to draw a window on the whiteboard, drew some trees”.

In addition to temperature and lighting, including the natural light and closeness of rainforest, students also frequently mentioned the artwork or exhibitions in the Library building. Specific mention was made of the art displays in the Library foyer and how this visual display of colour contributed to the ambience of the building. Certain artworks such as the pictures in the Learning Centre were also said to be key contributors to the atmosphere of the place. That many students enjoy the art displays in the Library was not necessarily a surprising finding, but that this issue was repeatedly raised and discussed by all students in each of the three focus groups revealed an emphasis and consistency not initially predicted by the focus group convenors. Indeed it was a student-initiated topic and focus of discussion; the convenors did not ask specific questions related to artwork, visual displays, colour, natural lighting or the views through the windows.

Finally, a consistent theme in each focus group as to what contributed to the atmosphere, or why they liked the Library building, was “the people”. Students mentioned the professionalism and friendliness of the staff as well as the encouraging presence of fellow students. One student suggested: “it’s the building and the people, the helpfulness of the people, the relaxed, sort of informal relationships of the people who are helping you”. In regards to the feeling of the building, another student said that “it comes from every one of us”. To sum up in another student’s words: “I think there is more of a community here; we know each other.”

The availability of support services

A further positive factor students mentioned in regards to the Library related to the accessibility and quality of support services within certain spaces. The InfoHelp Desk was mentioned in each of the focus groups as a particularly useful source of support. Several mentions were made of the InfoHelp staff being “really helpful”, “incredibly helpful” or “extremely, actually brilliant customer service”. The Learning Centre was another area

of significant support for students with students mentioning the sense of community where “there’s a certain sort of community feel, a vibe”. Peer support was also noted with one student admitting to being “a little bit afraid about showing someone my work and he made it really easy and it’s just that first semester, and after that I sort of got enough confidence to go off and do it myself”.

What could be improved?

Services relating to printing, use of swipe cards, credit card and phone facilities were highlighted for improvement and a student with a disability suggested the provision of book trolleys. Interestingly, there were a number of suggestions to improve the social and collaborative spaces both inside and outside of the building. Items suggested included a hot water urn, outside furniture, drinking water fountains and more art exhibitions.

How is technology used?

Over 170 computer workstations are available throughout the Library building in a variety of flexible configurations: in teaching rooms of various sizes and configurations; (one is available for 24-hour access); computer workstations configured for collaborative work in small study rooms and open plan areas; and workstations are also available for individuals to work in silent study areas. In addition, a wireless network is available throughout the building for laptop use, as are network ports for students to connect directly to the LAN.

The provision of videoconferencing facilities has expanded since the building opened. Videoconferencing is now available in five different rooms: an 80-seat conference centre, and tutorial rooms and meeting rooms of various sizes including an access grid facility. The provision of varied teaching rooms including computer laboratories, tutorial and lecture rooms helps connect academic staff and their classes with the library/learning environment.

Flexibility was a feature of the initial design brief and consequently phone, power and data connections can be provided almost anywhere in the building. In addition, the extensive use of modular furniture ensures that ‘staff only’ and public spaces can easily be reconfigured for different tasks and functions.

The provision of natural light is perhaps the most striking feature of the Library building. The whole facility is very energy efficient including the design of external wall and window shading, the roof insulation and sophisticated air-conditioning and lighting systems. No heating is required in the tropical climate other than for humidity control. Both the air-conditioning and lighting is controlled by programmable occupancy sensing systems, and the lighting system also takes account of the natural light available at different times of the day and adjusts accordingly.

How was the facility evaluated?

This paper brings together the evaluation and recording strategies used by Information Librarians as well as by Teaching and Learning Development staff. This creates new opportunities for collaboration that will provide colleagues as well as administrators with a fresh look at how students choose to access services and learning spaces. This broad approach is supported by Kallikoff (2001) who has investigated evaluation strategies for learning support services and puts the case for a ‘mosaic’ approach which involves the implementation of “...a series of textured and complementary evaluation strategies that aim to

provide reliable and detailed information about what is being accomplished” (p.7).

The recording period for the research was of seven days’ duration over weeks seven and eight of Study Period Two, 2005. During this period the quantitative methods used included traffic movement into various sections of the Cairns Library, computer login data and InfoHelp Desk enquiries. Students were recruited at random to form focus groups with incentives of free printing and morning teas. The twenty participants included representatives from a range of student groups including students with disabilities, international students and students from all Faculties and all year and age levels. In this respect the focus groups assembled for this study avoid the limitation, identified by Gibbs (1997), of being unrepresentative.

The participants were divided into three groups that met for an hour during which a guided discussion was recorded on audiotape and key points summarised on a whiteboard. Topics raised for discussion by the researchers included a listing of all the areas the students chose to use and their reasons for doing so. The researchers were also interested to explore what motivated students to move from one area to another and if their use of the Library changed throughout the study period or indeed the course of their degree. The audiotapes from the three focus groups were transcribed and analysed for common themes and then checked for consistency with photographs of the whiteboard notes.

Focus group interaction highlights the participants’ view of the world, the language they use, and their values and beliefs about a subject. “Interaction also enables participants to ask questions of each other, as well as to re-evaluate and reconsider their own understandings of their specific experiences” (Kitzinger, 1994, cited in Gibbs 1997, p.3). The recording of the key points of each focus group discussion on a whiteboard encouraged interaction and re-evaluation amongst participants and also provided an immediate level of validation from the participants as to the accuracy of the

whiteboard summary. A reflective diary provided a further level of validation of the focus group transcripts. The diary, provided by the authors, required the participants to document their use of different learning spaces within the Library over the seven-day recording period.

What were the main lessons learned?

Wainwright (2004), in an overview of current influences affecting universities' planning and organisation of learning and research support services, suggests that most university libraries across Australia have experienced a reduction in use. Yet all usage data for the JCU Cairns Library points to a reversal of this trend. It could well be that the evidence gathered in this research project reinforces an important message "that the future of the academic library lies in how well it meshes with a whole range of related services. Libraries do not exist separate from their universities" (Wainwright, 2004, p.2). Furthermore, the focus group data collected from Cairns Library users appear to exemplify the concept of a 'learning commons' where, according to Bennett (2003, cited in Wainwright, 2004), there should be mechanisms for collaborative learning as flexible spaces highly adaptive to changing student needs and preferences.

Dews and Clarke (2000) stated that an important design goal of the Cairns Library was to break down functional barriers and bring diverse parts of the organization into closer contact. Wainwright (2004) takes a broader view when he argues, "the key to collaborative facility success is not co-location but the total re-design of service delivery within an integrated university approach" (p.4). In considering such a total re-design of service delivery it is perhaps the model of a shared staff/student space used by the Learning Centre that offers exciting possibilities for future learning space design. Such a model should not only be restricted to university libraries but equally applied to the constructed environment of the entire university campus, too often characterized by lecture theatres

separated from tutorial rooms which are in turn even further separated from staff offices. There are a number of examples where new teaching and learning spaces have been developed (see Jamieson, 2003 for an overview), yet there appear to be few examples where both staff and students share open collaborative spaces.

The functional considerations driving student use of learning spaces in the Cairns Library are related to the need for various levels of service and needs for collaborative, reflective and social spaces, all of which are in turn driven by the academic pursuit at hand. The ability to move easily from space to space to meet these needs appears to be another functional consideration for the students. However, the students participating in this study have also provided unsolicited and perceptive comments about architectural and interior design considerations. There is a clear message here in relation to the impacts that colour, natural light, artwork, open space, natural views and appropriate furniture configurations have on a student's learning behaviour.

This paper has confirmed the positive impact of carefully designed learning spaces on student learning. The study has implications for future learning space design at JCU as well as other university campuses.

- In the future, a re-design of campus-wide learning environments may be required which will emulate the type of successful integration endorsed by students using the Cairns Library building.
- Experimentation and ongoing monitoring of student use of learning spaces should become part of the design and re-design processes.
- Consideration should be given to the use of shared student and staff spaces from the perspectives of collaborative learning as well as space efficiency.

Finally, when designing space to facilitate student learning, stakeholders should never lose sight

of the importance that students place on the ambience of the space and their ability to move through and between areas according to their needs as independent learners.

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