

# The impact of social learning spaces on student engagement

Kelly E. Matthews, Faculty of Science, University of Queensland

Peter Adams, Faculty of Science, University of Queensland

Deanne Gannaway, Teaching and Learning Development Institute, University of Queensland

## Abstract

*In 2006, the University of Queensland began an in-depth review of the Bachelor of Science, which prompted wide-ranging changes to the degree program. Given the profound importance of the first year experience, a new approach to the first year was created and implemented from 2008, and included both curricular and co-curricular activities. In addition, informal learning spaces for science students were designed to provide students with a common area in which to gather, relax, socialise and work together outside classes. In late 2008, a survey to gauge levels of student engagement and use of informal learning spaces was administered to all science students. The results suggest that students who used these spaces demonstrated higher levels of engagement compared to those students who did not use these spaces.*

## Introduction

Frank Little's *Faces on Campus* (1975) could be viewed as the beginning of the documented exploration into the student experience in Australia. From the documentation of a handful of very different student stories in 1975 at one university, to government funded research into the first year experience across the higher education sector, the vital importance of the student experience is now well understood (Krause et al. 2005). In particular, successful transition in the first year of university has been identified as a factor not only in retaining students (Krause et al. 2005), but also in building a strong academic foundation that will aid students through to graduation (Kuh 2007; Upcraft et al. 2005).

Research has shown that opportunities for students to come together outside formal class time to network, discuss and debate encourages student learning (Markwell 2007) and can foster peer to peer interactions that are critical for successful student transition into university (Kuh 1995; Tinto 1993). While there has been increased attention given to physical learning environments, including both formal teaching spaces and informal learning spaces (NGLS 2008), an evaluation framework to determine the impact of physical spaces on the student experience is lacking. Indeed, attempting to determine the impact of spaces is difficult given the multitude of factors that influence student learning and their experiences, from teaching methods to individual student differences (SFC 2006). In fact, the Scottish Funding Council report highlights the lack of studies that have explored the link between learning spaces, student outcomes, and the broader student experience (2006).

The physical facilities on university campuses have been recognised as playing an important role in students' perceptions of the institution to the extent of being a factor in the selection process of prospective students (Price et al. 2003). There is a growing body of literature examining the design and development of formal and informal learning spaces, with most offering a set of guiding design principles (Jamieson et al. 2000; JISC 2006; Oblinger 2005; Siddall 2006). A recent project funded by the Australian Learning and Teaching Council attempted to define a framework for developing, designing and evaluating learning spaces, although the project revealed the complexities in evaluating spaces given the "significant number of variables beyond the spaces" (Radcliffe et al. 2008 p. 15).

Recently, a new model for exploring the student experience has come into prominence in the United States and Australia (Krause and Coates 2008; Kuh 1995). The student engagement model has been positively linked to student outcomes, satisfaction and even retention. It is being actively used in Australia to drive policy on the student experience and even being considered as a quality indicator for distributing federal funding to universities.

This study uses the student engagement model to explore the impact of social learning spaces on the student experience.

### *Context*

The University of Queensland (UQ) is a research-intensive institution with over 37,000 enrolled students across undergraduate and post-graduate degree programs. The Faculty of Science is a large faculty in the University with six schools and five research centres. The Faculty administers seven degree programs, the largest being the Bachelor of Science (BSc).

In 2006, a major review of the BSc identified the first year as the critical year in the program, with high levels of student attrition believed to be due to an unstructured, neglected curriculum and a lack in the sense of belonging amongst students in the program. The review resulted in structural changes to the program which aligned to the refined underlying educational philosophy of the first year BSc program: to provide a broad exposure to the enabling sciences as a foundation for specialisation in second and third years. The curriculum changes supporting the philosophy included restructuring the first year curriculum to reduce overlapping and competing units of study (courses); better provision of advice to first year students on course planning; and the introduction of a compulsory course and new "gateway" course designed to build the quantitative skills of science students, expose students to the interdisciplinary nature of modern science and create a sense of a shared cohort experience in first year. Finally, greater emphasis was placed on the student experience, both the formal, curricular activities and the informal, co-curricular opportunities to engage students.

Student feedback during the review process revealed a lack of informal space supporting interaction between science students. Many students noted the challenges of making friends, given large lecture classes and no designated place for science students. A student space plan was devised that could provide a variety of tailored spaces where science students could gather, study, collaborate and socialise outside scheduled classes as a consequence of this feedback. A brief description of the three key spaces follows.

### *Science learning centre*

The Science Learning Centre (SLC) is an informal, “common” space for all science students at UQ. The guiding principles for the physical design of the SLC were flexibility and to be technology-



enabled, rather than technology-rich. The SLC opened in semester 1 of 2008, and offers a variety of comfortable furniture, wireless access, whiteboards, meeting rooms with presentation capabilities, and a small kitchenette. The SLC is available to students daily from 7am to 8pm. Advanced level students staff the SLC, providing informal mentorship and tutoring each day during peak teaching periods. The overarching goals of the SLC are:

- To enhance the student experience;
- To develop an identifiable “science space” for students;
- To foster vertical and horizontal student interactions (that is, between and across years of study);
- To increase positive, informal staff/student interactions;
- To build on social learning as a key to student success; and
- To enable staff and students to be part of a community resulting in a sense of belonging and identity.

### *Chemistry podium*

The Chemistry Podium was refurbished in 2007, transforming an open, uncovered space with no furnishing to a covered, open area where students can gather. Loose tables, chairs and whiteboards fill the area, which is situated at the entry to the chemistry building.



### *Biological sciences library*

In 2007, the Biological Sciences library was re-opened after a major refurbishment. The traditional, typically quiet library focusing on books and individual study areas was converted into a space that aims to foster student collaboration. The redesign included group work spaces and meeting rooms, which replaced individual study nodes and rows of books.



### **Conceptual framework**

Studies have shown that levels of student satisfaction and academic outcomes are linked to increased student engagement (Astin 1993; Kuh 1995; NSSE 2005). Based on research into the student experience, Hu and Kuh (2002 p. 3) define engagement as ‘the quality of effort students themselves devote to educationally purposeful activities that contribute directly to

desired outcomes'. Engagement revolves around what students do and what institutions do to ensure that students are engaging in the most educationally effective activities (Kuh 2007). These activities encompass academic and non-academic or social aspects of the student experience (Krause & Coates, 2008). A measure for student engagement, the National Survey of Student Engagement or NSSE, is well established in the United States (Kuh, 2003) and has recently been modified into the Australian Survey on Student Engagement or AUSSE (Krause & Coates, 2008; Coates, 2005).

## **Research Design**

### *Research questions*

The first phase of a research study exploring the impact of informal, learning spaces on the student experience is reported here. The study aims to answer the following research questions:

1. Who is using the informal learning spaces and why are they using them?
2. Who is not using the informal learning spaces and why are they not using them?
3. What, if any, is the difference in the level of engagement between students who use these spaces and students who do not use these spaces?

### *Survey design*

An online survey for all undergraduate science students was developed. All students completed a section on demographics (including program, majors, gender, age, employment status) and 16 prompts, which were adopted from the AUSSE and the Course Experience Questionnaire. Students who identified as users of the space were asked to provide further information on why and how they used these spaces, while non-users were asked to indicate the reasons for not using these spaces. The survey design allowed for ready analysis of user and non-user levels of student engagement and any differences in demographic variables across the two groups.

### *Survey administration*

The survey was granted ethical clearance through the University's Behavioural and Social Science Ethical Review Committee. The survey was administered online to capture benefits such as the ease of administration, cost savings benefits, and quick access to electronic data, an online survey was selected (Berk, 2006). An email inviting all students enrolled in an undergraduate science degree to complete a survey was sent out in November 2008 (n=3058). Students who completed the survey were entered to win one of five \$100 gift vouchers. Students were informed that the survey was anonymous and had clearance from the Ethics Committee. The survey was opened to students for two weeks.

## **Results**

The total response rate was 30.31% (n=927), which provided a 2.69% margin of error and a 99% confidence indicator of applicability to the whole population. Students in their first year of study had the highest response rate of 38.36%. The majority of respondents were female (63%). Science degree programs at UQ have a small portion of mature aged students (over 25 years), which is reflected in the number of mature-aged respondents (4%).

Of the respondents, 77% indicated they were ‘regular users’ of one or more of the spaces. Table 1 shows the demographic information of students divided into users and non-users of the informal learning spaces. A comparison of means analysis (Pearson chi-square) showed a statistical difference only in the living arrangements of users versus non-users, with those students living in residential colleges on campus more likely to be non-users than those who lived independently or at home with their parents ( $P=.000$ ).

**Table 1. Demographic information (n=927) of Users and Non-users\***

Demographic Information	User %	Non-user %
Gender		
Female	64%	57%
Male	35%	43%
Age		
<18	4%	2%
18-20	66%	62%
21-25	26%	32%
>25	4%	4%
Year level in degree program		
1 <sup>st</sup> year	40%	49%
2 <sup>nd</sup> year	33%	28%
3 <sup>rd</sup> year	27%	23%
Current living arrangements		
On campus in a college	8%	16%
With parents	60%	45%
Independently	32%	39%
Employment Status		
Employed full-time	2%	3%
Employed part-time	14%	11%
Employed casually	58%	52%
Not currently employed	26%	34%

\*Users and non-users were identified by their response to the question “Would you classify yourself as a regular user of one or more of the spaces for science students?” .

Table 2 summarises the responses to the sixteen engagement prompts, reported as percentage agreement. Percentage agreement refers to the total proportion of students responding in the top two categories for a specific item. Users indicated higher levels of agreement across all sixteen prompts compared to non-users. A comparison of means analysis (one-tailed t-test) revealed a statistical difference ( $p<0.05$ ) between users and non-users for twelve of the sixteen prompts.

Students who identified as users were asked to select all of the appropriate prompts that explained what they do in the spaces. These prompts were categorised into the broader areas of (1) individual-based activity, (2) group-based activity, (3) social-based activity, and (4) either individual- or group-based activities, and these results are displayed in Table 3.

**Table 2. Engagement levels amongst users and non-users**

Engagement Prompts	User		Non-user		Sig.
	% Agree*	Mean** (SD)	% Agree*	Mean** (SD)	
Overall, I am satisfied with my experience in this degree program.	86%	3.95 (.77)	80%	3.80 (.81)	.020
I found my studies intellectually stimulating	92%	4.20 (.70)	90%	4.06 (.67)	.017
I feel part of a group of students and staff committed to learning	77%	3.85 (.89)	58%	3.50 (1.07)	.000
I have learned to explore ideas confidently with other people	75%	3.84 (.84)	60%	3.52 (.93)	.000
I feel I belong to the university community	69%	3.72 (.98)	58%	3.41 (1.06)	.000
I am able to explore academic interests with staff and students	72%	3.79 (.86)	57%	3.45 (.95)	.000
I am NOT considering discontinuing my studies in this degree^^	79%	4.11 (1.17)	74%	3.94 (1.15)	.063
I feel I made the right decision in choosing to study this degree	78%	3.97 (.92)	70%	3.76 (.98)	.005
I am confident of passing all of my units of study this semester	72%	3.88 (1.08)	71%	3.81 (1.15)	.433
<b>How much time do you spend:</b>		<b>Mean<sup>€</sup> (SD)</b>		<b>Mean<sup>€</sup> (SD)</b>	
Working with students outside of class		3.05 (.95)		2.59 (1.07)	.000
Working with students inside of class		3.34 (.95)		3.02 (1.01)	.000
Discussing ideas from your class with other students		3.33 (.99)		2.88 (1.02)	.000
Discussing ideas from your courses with lecturers outside of class		2.05 (.89)		1.81 (.06)	.001
<b>How much do you believe UQ has:</b>		<b>Mean<sup>^</sup> (SD)</b>		<b>Mean<sup>^</sup> (SD)</b>	
Provided you support in socialising		2.26 (.87)		2.04 (.89)	.002
Helped you to cope with non-academic responsibilities		1.77 (.80)		1.65 (.75)	.068
Provided you support to succeed academically		2.63 (.83)		2.51 (.83)	.063

\*Combined responses of “Strongly agree” and “agree.

\*\*On a 5-point Likert scale, “5” is “Strongly agree”.

€On a 5-point Likert scale, “5” is “Very Often”.

^On a 4-point Likert Scale, “4” is “Very much”.

^^Inverted with the “NOT” for comparability across all prompts.

**Table 3. User activities in the following informal learning spaces**

<b>Category</b>	<b>Biological Sciences library</b>	<b>SLC</b>	<b>Chemistry Podium</b>
Individual-based activities	36%	19%	18%
Group-based activities	36%	35%	20%
Social-based activities	9%	30%	17%
Either individual- or group-based activities	16%	10%	7%
Do not use this space	2%	6%	38%

Students who identified as non-users were provided with prompts to indicate reasons for not using the spaces. Table 4 displays these results.

**Table 4. Non-user reasons for their non-use of the spaces**

<b>Category</b>	<b>Biological Sciences library</b>	<b>SLC</b>	<b>Chemistry Podium</b>
Unfamiliar with the space	16%	9%	71%
Does not cater to my preferred mode of study	18%	22%	21%
Space is always too full	53%	32%	2%
Space is too noisy	7%	33%	2%

## **Discussion**

This study indicates very little difference between users and non-users in the demographic information collected in the survey (age, gender, year level, and employment status). This is plausible, given the science student cohort at UQ is quite homogenous, attracting mostly school-leavers, or students who took a gap year, who study full-time. There is also no statistical difference between users and non-users to the formal curricular or academic-based scales including confidence in passing courses, considering discontinuing studies, and support to succeed academically.

### *Engagement*

This study found that students who used the informal learning spaces reported higher levels of engagement compared to non-users, which suggests that informal learning space have a positive correlation with increased levels of student engagement.

The survey items focused on cohort identity and peer interaction are where the statistically difference occurs. Users are statistically more likely to not only work with other students in class but also outside of class. In addition, users report spending more time discussing ideas from class with peers and lecturers outside of class time. This suggests that the difference

between users and non-users is more in the realm of the informal or social aspects, of student engagement. Given the lack of difference to the academic prompts between users and non-users and the fact that all respondents were involved in the same program of study, this suggests a correlation between the use of informal learning spaces and the social aspects of student engagement. Particularly for new students, integration into both the academic and social culture of the university is essential in their transition period (Tinto, 1993). This finding provides further evidence that these informal learning spaces are achieving their intended goal of building a sense of belonging and cohort identity amongst the science students and increasing positive peer-to-peer and student-to-staff interactions.

### *Users*

The data suggests that the SLC and the Biological Sciences library are the most frequented spaces. Unsurprisingly, as the Chemistry Podium was never formally launched or advertised to students, the Chemistry Podium is the least known spaces amongst those students who identify as users.

The activities students undertake while using the spaces differs amongst those using the informal learning spaces. The SLC, with its common spaces design for interaction, seems to foster peer-to-peer interactions and student collaboration, and is not seen by students as suitable for individual study. This finding aligns with the stated goals for the space and provides some evidence that the SLC achieves the intended goals.

On a surface level, it appears predictable that students would utilise the Biological Science library for individual study as much as group-based activities, as suggested by the data. However, the redesign of this library specifically aimed to foster collaborative study rather than individual study. The refurbished space now offers limited individual study areas. Along with the meeting rooms, the library is filled with group tables, booths and lounging furniture. The redesign responded to the notion that more students would be engaging in group-based activities. This study reveals, however, that science students are equally likely to study alone when in the library.

It is not yet understood whether users are moving between spaces depending on their desire to engage in different activities. Further analysis of the open-ended responses from users and additional qualitative research is required

### *Non- Users*

Students living on campus in university colleges and halls of residence are statistically more likely to be non-users of the spaces is to be expected. This finding is unsurprising, given that they have a “space” on campus where they live amongst a peer group and consequently have greater opportunities to socialise. Of particular interest is the finding that students in the non-user category who report lower levels of student engagement includes the subset of students who live in colleges on campus. Before further explanations could be formulated to describe this difference, more analysis is required to better determine the level of student engagement in this subset.

The dominant reason for not using the SLC and the Biological Sciences library revolves around the perception that the spaces are “too noisy”. The noise level would be a problem for those students who prefer individual study. Of greater concern is the high number of non-



users who indicated that they did not use the spaces because “the space is too full”. It may be that non-users have possibly attempted to make use of these spaces but were physically unable to because of overcrowding. Given the finding that students who use these spaces report higher levels of engagement compared to the non-users, a possible issue related to equality of access may exist for non-users. As data was gathered from fixed response questions, which constrained the respondent to select from a list of prompts that might have been too limited in scope, further qualitative research into the non-user group is required. The perception that the space is too full does not apply to the Chemistry Podium, possibly because it is not as well known. As a result, the area usually has available tables and is relatively quiet, although students still report going there for group-based study as much as for individual study.

## **Conclusion**

While this study has found that students who utilise these spaces report higher levels of student engagement, this study is not drawing a causal link between the use of informal learning spaces and increased levels of student engagement. Similar to the struggles others have encountered in attempting to link student satisfaction or outcomes to a physical learning environment, there are too many variables to factor into the analysis.

The study employs a unique design that uses the student engagement model as a means of exploring the impact of informal social learning spaces on the student experience. By identifying that students who do not use informal learning spaces provided indicate lower levels of student engagement, this study provides an opportunity for further research to better understand and identify possible activities to increase their engagement.

Phase two of this research project will employ qualitative methods to further investigate the commonalities and differences between users and non-users through analysis of the open-ended responses to better understand the student voices in the survey.

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