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Embedded library services: beyond chance encounters for students from low SES backgrounds

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Abstract

This paper reports research that examined how the embedding of library services through the learning management system contributed to the experience of students from low socioeconomic status (SES) backgrounds. To evaluate the embedded practice, the researchers used a mixed-method approach involving surveys with students and interviews with library and academic staff. Survey results showed gains in students' awareness of library resources and in their confidence and satisfaction using them. Staff participants reported benefits to students from the improved visibility of the library and involvement of students in conversations about information literacy. The teacher derived personal benefits in learning more about digital information resources while library staff benefitted from the research driven-nature of the practice which strengthened their collaborative partnership with academic staff. Based on the evaluation, an embedded approach has been adopted at the university in additional courses which have similar student profiles. The outcomes are relevant more widely in demonstrating both the potential benefits of embedded practice for supporting diverse student populations and how libraries can target their activities more effectively to national and university agendas for improving student outcomes.

Keywords

student outcomes, socioeconomic status, learning management system, embedded librarianship, teaching partnerships, evaluation

Introduction

When I arrived on campus it wasn't long before my little bit of confidence ebbed away and I struggled with the work, struggled feeling overwhelmed and out of place, struggled to make friends, even to speak up in a tutorial. I was so intimidated by the ...Library I bought books instead of borrowing them! (Mitchell 2011, 90)

Dee Mitchell was a student from a low socioeconomic status (SES) background. While she had earned a place at university on her own merits, Dee dropped out of university in her second year. Years later, she returned to complete her degree.

Dee's 'interrupted pathway' through higher education is commonplace for students from low SES backgrounds. Students from low SES backgrounds are less likely than their higher SES peers to apply for admission to university, to be offered a place or to accept an offer (DEEWR 2010). Once they do enter university, students from low SES backgrounds have somewhat lower rates of retention than those from higher SES backgrounds (DEEWR 2011).

Along with the participation and success rates of students from other under-represented groups (including indigenous, rural and remote, and students with disabilities) improving the participation and success rates of students from low SES backgrounds is a focus of Australian Government policy. In 2009, the former Australian Government adopted the goal that, by 2020, 20 per cent of higher education enrolments at the undergraduate level would come from those of low SES backgrounds. This goal was in support of the Government's overall target whereby 40 per cent of all 25 to 34 year olds in Australia would hold a qualification at Bachelor's level or above by 2025 (Australian Government 2009).

However, Dee Mitchell's story indicates that improving the participation rates of low SES students will not necessarily translate into equivalent rates of progress. That is, higher education institutions need to be proactive in providing support for these students to improve their educational outcomes.

While curriculum and teaching are at the forefront of efforts to improve student outcomes, university libraries also make an important contribution: they provide the resources and services that students need to learn and persist in their studies (Mezick 2007). However, as indicated in the account by Mitchell (2011), for students who feel out of place the provision of library resources and services, alone, will not improve their outcomes.

This paper examines a practice designed to better support students from low SES backgrounds through embedding library services within a unit in the learning management system (LMS). The paper first considers the measurement of SES in Australia before reviewing the literature about the circumstances of students from low SES backgrounds and the contribution that embedded library practice can make to their educational outcomes. The embedded practice and evaluation method are then described and discussed. The paper concludes by summarising the benefits of the embedded practice and identifying future directions for library services models within the institution.

The measurement and impact of low SES

Socioeconomic status (SES) is a complex term which is broadly defined as reflecting the level of access people have to social, cultural and economic resources. In Australian higher education, the SES of students is determined by the postcode of a student's permanent home address. The SES of a postcode is allocated using the ABS Socio-Economic Indexes for Areas (SEIFA) Index of Education and Occupation (DEEWR 2009). Low SES students are those whose permanent home address falls within the postcodes where, based on these indices, the bottom 25% of the population aged between 15 to 64 years at the date of the latest census, are located, (DEEWR 2009).

Postcode is an imperfect definition of SES as it assumes that the population living within the same postcode is relatively homogeneous on key dimensions of SES including education levels, types of occupations and access to economic and other resources (DEEWR 2009; Lim and Gemici 2011). The limitations of the postcode definition of SES are recognised by the Government which is looking at alternative means of defining and measuring SES (DEEWR 2009).

The multidimensional nature of SES (DEEWR 2009) means that there is considerable overlap between students who are classified as being low SES as measured by postcode and those who may face other forms of disadvantage. For example, the most recent data on students' first year experience indicate that 33 per cent of low SES students (as measured by postcode) report that Youth Allowance or Austudy is their only or main source of income, compared to 17 per cent of medium/high SES students (James, Krause and Jennings 2010, 63). Additionally, another study, (Ballantyne, Madden and Todd 2009) reported that two-thirds of students who were in the low SES category as measured by postcode were also the first-in-family to attend university. Further, in a survey of students studying by distance education in Australia, Willems (2010) found that 33 of the 35 respondents were in at least two categories of disadvantage including being from rural or isolated regions, students with disabilities or from a low SES background.

While the postcode definition of SES has some disadvantages it does capture various sources of disadvantage; it is correlated with participation and success in higher education; and, it remains the means by which SES is measured in Australian higher education. Consequently, the postcode definition of SES is used for the evaluation described in this paper.

The impact of SES status on student outcomes

The multidimensionality of SES means that retention and progress of university students from low SES backgrounds are influenced by a complex set of factors (Hagel et al. 2012). These factors may

include financial circumstances (James, Krause and Jennings 2010); family responsibilities (Collier and Morgan 2008); first generation university attendance (Collier and Morgan 2008; Stephens et al. 2012); non-standard pathways into higher education (Mitchell 2011; McInnis 2003); rural or remote location (Richardson and Friedman 2010); and external or online enrolment (Ballantyne, Madden and Todd 2009). These factors may influence a student's successful integration into higher education (Tinto 1993).

Integration is thought to be critical for student persistence in higher education (Tinto 1993). Tinto's social integration model conceives of student retention as a longitudinal process during which persistence in higher education is influenced by positive or negative experiences of academic and social integration (Tinto 1993). The different attributes students bring with them (e.g., demographic characteristics, values or prior educational attainment) influence how well the student integrates with their chosen institution (Tinto 1993).

For students from low SES backgrounds, academic and social integration can be difficult, particularly when there is a cultural mismatch between their values and the knowledge they bring and the values and knowledge that are valued by the university (Stephens et al. 2012). This mismatch occurs because universities tend to reflect middle class values and cultural norms (Stephens et al. 2012). Students from other backgrounds may feel that their tacit knowledge and practices are undervalued by their university (Thomas 2002). Consequently, some students may feel uncomfortable or alienated (Stephens et al 2012). Discomfort brought about by a cultural mismatch can impact actual performance (Stephens et al. 2012). This, in turn, may reinforce the perceptions of students – like Dee Mitchell – that they do not belong in higher education.

Collier and Morgan (2008) argue that students need to master the 'college role' if they are to integrate and thrive at university. Higher SES students are more likely to find this role intuitive and natural: parental example and prior schooling have generally prepared them well. However, students from low SES backgrounds more often face the challenge of learning their college role and course content, simultaneously. They may need to invest more time than peers to understand the expectations of academics (Collier and Morgan 2008). They may struggle because they are unfamiliar with the discourses of their discipline (Smit 2012). Further, students from low SES backgrounds may have fewer external sources of advice (James, Krause and Jennings 2010; Collier and Morgan 2008). At the same time, they may feel less comfortable in approaching academic staff (Ballantyne, Madden and Todd 2009).

The progress of some students can be further impeded by institutional factors such as an over-crowded curriculum or condensed semesters which allow little time to support students who are 'at risk' of failure or non-completion (McInnis 2003). In turn, some 'at risk' students may find it more difficult than others to access support, particularly those who study externally and/or online (Carroll, Ng and Birch 2009). Consequently, it is of concern that investigations of the 'first year experience' confirm that an increase in online enrolment in Australia is occurring particularly among rural students and those from low SES backgrounds (James, Krause and Jennings 2010).

Most universities offer support – academic and non-academic – that can assist students become accustomed to and progress at university. Much of this support is in the form of one-off workshops despite considerable literature arguing it is best provided through the curriculum (Devlin and O'Shea 2011; McInnis 2003). A contention of this paper is that library support, too, is best provided through the curriculum.

Library support for students

Libraries contribute to student success through the resources and services they provide (Mezick 2007). In particular, library services and educational programs are important for the development of students' information literacy (Kuh and Gonyea 2003; Head 2013).

Most undergraduate curricula emphasise the importance of information literacy – at least as a professed objective in a course outline. However, academics often find difficulty in fitting information literacy into the curriculum and show reluctance to forego class time for it (Vander Meer, Perez-Stable and Sachs 2012). Where assignments require students to demonstrate information literacy, academics often fail to provide written advice about search techniques or what constitutes quality academic sources (Head and Eisenberg 2010).

Information literacy education can assist students to overcome difficulties in understanding and meeting the requirements of teachers – particularly those students who are less prepared academically or who lack personal sources of advice. Some students may be unaware of the resources and services available through the library (Wahl, Avery and Henry 2013; Barr 2010). Some may lack confidence in approaching librarians (Fisher and Heaney 2011). Many of the resources or services offered may be too generic (Daly 2010) and/or make assumptions about what the average student should know.

Further, the growing use of LMSs by students and teachers may make libraries and their information less visible to students or difficult to use (Wahl et al., 2013; Liu and Luo 2011). The LMS gatekeepers

may be central university and/or faculty teaching and learning support areas, with individual faculty members usually making decisions about the look and feel of unit sites (Jackson 2007). Often the library has little say about the information provided to students through the LMS on library resources and services (Jackson 2007). Consequently, the library's website or resources may remain invisible if students have not been directed to them. In turn, students may prefer to rely on external search engines rather than library discovery tools and databases for finding information (Jackson 2007).

In summary, alongside the growth in LMS usage, the increase in online enrolment among first-year students is occurring particularly among rural students and those of low SES backgrounds (James, Krause and Jennings 2010). These trends raise issues for improving the progress of students from low SES backgrounds: online students rely on the LMS as a portal to their studies. If library services and resources are difficult to access through the LMS or less visible to students, then those who might benefit most from library support and information literacy education may be unaware of these services.

Support through embedded practice

The embedding of library services and resources through the LMS has evolved from earlier versions of embedded practice (Schulte 2012). In its first iteration, the term 'embedded librarian' was adopted to describe librarians who were physically located within a discipline or faculty rather than in the library building. They were in situ liaison librarians who provided support for researchers and teachers, participated in faculty meetings, and provided discipline specific support for students (Drewes and Hoffman 2010).

The scope of embedded practices broadened with use of the LMS. Library services could now be embedded virtually within faculties or courses. As a result, 'embeddedness' evolved to encompass the embedding of library resources within online courses and the embedding of library services through librarians directly participating in online discussions (Becker 2010).

Embedded practice enables librarians to become 'insiders' within faculties and courses (Fisher and Heaney 2011). Fisher and Heaney (2011, 41) suggest that 'inside' library support is critical for students who are at risk of dropping out. Embedded librarians are in a better position to assist students to appreciate the standards that are expected of them; mentor them into the discourse of research and information literacy; and model effective processes of academic thinking and information evaluation in the context of their discipline (Fisher and Heaney 2011); and, provide point-of-need services to students (Bowen 2012). As insiders, librarians are seen by students as part

of the teaching team. Students are more likely to ask questions of librarians both in person and online, and to seek consultations when needed (Fisher and Heaney 2011). For students who study online, these outcomes can be facilitated by participation of librarians in online discussion forums.

There are few examples of the systematic evaluation of these types of insider or embedded practices for the enhancement of student outcomes (Schulte 2012). Further, few studies have investigated the particular advantages of embedded practice for students 'at risk'. Accordingly, the aim of the current study is to investigate how embedded practice, facilitated through the LMS, can contribute to the experience of students from low SES backgrounds.

Context and method: Embedded practice within health sciences

The context for the embedded practice was a second-year, undergraduate unit in a health sciences degree which had both internal face-to-face and external (distance) enrolments and a comparatively high percentage of domestic students from low SES backgrounds as measured by postcode. Historical data for the degree as a whole indicated it had lower average rates of progression, retention and success when compared with other undergraduate courses at the university.

The majority of students enrolled in the unit were female (86 per cent), enrolled externally (65 per cent) and had not gained entry to the course direct from school (67 per cent). Of the 152 students who were enrolled at the start of trimester 2, 2012 (second of three trimesters a year), 25 per cent of the enrolment was from a low SES background compared to the university average of 13 per cent in 2011 (Deakin University 2013).

The activities that formed the embedded practice for the librarian associated with the students in this unit of study included:

- development of an online resource guide
- face-to-face presentation at the start of trimester – recorded for online users
- provision of library help objects (LHOs) to assist student navigation and resource seeking
- modelling of appropriate search strategies for a sample assignment topic
- regular engagement with students through a dedicated LMS discussion forum
- delivery of an online session about the use of Endnote, a reference management software
- student initiated one-to-one consultations by email and phone

Methods of evaluation – capturing learning

The purpose of the evaluation was to learn more about the potential of embedded library services to contribute to the experience and progress of students from low SES backgrounds. The evaluation draws on three types of data: accounts of the practice, observations (from both the surveys and interviews), and lessons learned and/or intended changes in future practice (Kirkwood and Price 2010). Participants in the embedded practice included students, their teacher and the Liaison Librarian. The evaluation was conducted after approval from the University's Human Ethics Committee.

Student perspectives were investigated through an online survey administered at the start and end of trimester. Students were notified about the surveys through the LMS. Participation was voluntary and anonymous. The surveys asked students questions about their demographic and situational characteristics, awareness of library services, and experiences in using a university library. The same questions were asked on both surveys with one additional question added to Survey 2. By the time of the second survey, the enrolment in the unit had reduced from 152 to 139. Seventeen students responded to Survey 1 and 23 to Survey 2 resulting in response rates of 12 and 16 per cent, respectively.

Table 1 provides a comparison of the profile of enrolled students and survey respondents. As indicated, the respondents to both surveys were largely representative of the enrolled cohort. Females were more likely than males to respond to the surveys. A higher percentage of external students responded to Survey 2.

A further difference between respondent groups was on SES as measured by postcode. Respondents were asked to provide their residential postcode. This data was then categorised into SES levels using the procedure outlined in DEEWR (2009). As Table 1 indicates, those from low SES backgrounds were under-represented among Survey 1 respondents and externally enrolled students were over-represented in Survey 2. As both surveys were administered in the same manner, it is unclear why the SES profiles of the two surveys differed in this way.

[Insert Table 1 here]

Staff perspectives were investigated through semi-structured interviews with both the teacher and the librarian. Each was interviewed twice – at the start and end of trimester. Interviews were conducted by phone and recorded with the consent of interviewees.

Interviewees were asked questions that prompted them to reflect on the progress, nature, benefits and challenges of the embedded practice.

A fourth participant group, the library engagement team (LET), played an indirect role in the practice. The role of LET was to provide support to the embedded librarian and to capture learning about the practice as it evolved. The chair of LET was interviewed at the end of trimester. The interview questions focused on the lessons learned, benefits and challenges of the embedded practice and implications for future practice within the library.

The recordings of interviews with staff were reviewed independently by two members of the research team. Themes were identified from the data using techniques of repetition and transitions (Ryan and Bernard 2003). The language used to describe the themes evolved through a series of discussions between the authors. This language was informed by the literature and the different professional experiences and perspectives of members of the research team.

Outcomes: Accounts, observations and learning of participants

The outcomes of the evaluation are organised into two parts. The first reports and discusses outcomes of the surveys of students. The second reports key themes from the staff interviews.

Student profiles, pathways and benefits

The analysis of the survey data revealed information about the links between SES and pathways into university and the benefits that students experienced from the embedded practice.

SES and pathways to university. As noted previously, the percentage of respondents from low SES backgrounds was 18 and 24 per cent, respectively (Table 1). In addition to providing postcode information, respondents were asked to describe their pathway into university by selecting from a number of alternatives including those that indicated a 'conventional' pathway into university such as 'I came directly from school' to those that indicated an 'alternative pathway' such as 'I transferred from a TAFE course' or 'I had not studied for some time'. The items students selected to describe their pathways were collapsed into two categories to indicate either a 'conventional' or 'alternative' pathway into university. Using these categories, the results indicated that the majority of respondents to both surveys had not entered university straight from school (69 and 85 per cent, respectively). Averaged across the surveys, 85 per cent of respondents were both of low SES background and came to university from alternative pathways. By comparison, only 66 per cent of those in the high SES category reported coming from alternative pathways into university. Chi-square tests of significance for these results are not reported due to small cell sizes in some categories. However, the findings about SES status and student pathways into university suggest an issue for libraries in choosing the timing and nature of support. That is, their practices cannot assume that all

students enter university straight from school, enter at first year and first trimester, or share similar prior knowledge or preparation for university.

Benefits to students of embedded practice. The embedded practice appeared to have a positive influence on students' experiences in using the library. Table 2 provides a summary of the results from a series of questions – common to both surveys – that asked students about their experiences of using the library's online resources and their motivation in doing so. In comparing the results of Surveys 1 and 2, there were increases in the percentage of students reporting that they found using the library's online resources 'somewhat' or 'very' easy (71 to 87 per cent); found what they wanted 'always' or 'most of the time' (71 to 81 per cent); and were motivated to learn how to use the library's online resources (59 to 89 per cent).

[Insert Table 2, here]

In addition to the three items reported in Table 2, external students, only, were asked in both surveys about their awareness of dedicated services available to them. From Survey 1 to Survey 2 there was a decline in the percentage of students reporting that 'I didn't know about these additional services' (from 73 to 44 per cent, respectively).

Various factors may have influenced the improvements from Survey 1 to Survey 2 in students' feelings about how easy it was to use the library's online resources, their ability to find the resources they need or, in the case of external students, awareness of services. One contributing factor may have been the extent to which the unit's curriculum required the use of library resources over the trimester. That is, where students were required to use the library and its online resources, they may have become more skilled and comfortable in doing so. However, having a librarian visible and available through the LMS may also have played a role in contributing to the reported benefits to students. Further, the reduction in the percentage of external students who reported not knowing about special library services suggests that the greater library presence in the LMS had an influence in improving these students' awareness of library resources.

On Survey 2, respondents were explicitly asked to rate five items in a question about changes in their personal experiences of using the library over the trimester (see Table 3). For four of the items respondents indicate that they felt 'quite a bit' to 'much more' curious, familiar, confident or comfortable in using the library. These results provide a positive endorsement of students' experiences during the trimester. However, without baseline data these results are not conclusive about the extent to which the embedded practice drove these improvements in student perceptions.

A further finding shown in Table 3 was that 26 per cent of students indicated that their level of confidence in using eBooks, was 'about the same'. It is difficult to interpret this result. It could be that the respondents who reported no change in confidence did not use eBooks during the trimester or, if they did attempt to use them, did not increase their confidence in doing so. Alternatively, students may have been confident already. In the latter case, the fact that confidence in using eBooks remained the same for 26 per cent of respondents is not necessarily cause for concern.

[Insert Table 3, here]

As noted above, factors other than the embedded practice may have contributed to the positive results revealed in the survey results. However, additional evidence that the embedded practice had a positive impact on student experiences with the library was provided through the routine satisfaction survey conducted independently by the university. One question on this survey asks students about their level of agreement with the statement: 'The library resources met my needs for this unit'. Measured on a five-point scale, the mean score on this item for the health sciences unit increased from 3.91 for the trimester prior to the embedded practice to 4.21 per cent at the end of the practice. This compared to the much smaller increase – 3.93 to 3.94 – on this question for all health faculty units over the same periods (Deakin University 2013a). As other factors that may have influenced the result were unchanged across the time periods – such as the unit chair and assessment activities in the unit – it is reasonable to conclude that the increased satisfaction of students on this question reflected, at least in part, their positive experiences resulting from the embedded practice.

In summary, students reported positive gains in: their awareness of library resources; the ease of use they experienced in using library resources and services and confidence in doing so; and, their comfort in approaching library staff. These results are pleasing and self-reinforcing. That is, improved awareness and ease of use can lead to greater confidence and self-efficacy in students (Waldman 2003). In particular, feelings of comfort can be an important factor affecting the progress and retention of students from low SES (Thomas 2002; Stephens et al. 2012).

Staff accounts, observations and learning

Four themes were identified from the analyses of the interviews: 'not practice as usual', 'conversations about information literacy', 'research-driven practice', 'online visibility and accessibility of "the library" '.

Not practice as usual. The librarian's normal practice was to contact teachers before the start of a trimester. In some cases the teacher would respond and request that she ran a library information session for students. At best, a teacher would send her a unit guide and the two of them would negotiate a time for the information session. But usual practice means that: '...we never have time to sit down and agree on the engagement and work out the aims...it is not a systematic approach' (Librarian Interview 1).

This trimester, an initial meeting between the unit chair and liaison librarian was held prior to the commencement of the trimester during which they reached an agreement on the objectives, form and scope of the collaboration. (The specific activities that formed the practice were outlined previously.)

Not all of the activities were planned at the start of the trimester and some were a normal part of liaison librarian activities. However, these activities comprised a new, systematic approach where the collaboration was established early and was ongoing. Later in the trimester, the librarian reflected on the value of this approach:

I think the whole point is to collaborate, integrate library resources, library support into students learning. How to do that is to understand the unit chair's expectation of the student learning-outcome and also getting to know the students, their own expectations, the challenges they are facing. (Librarian, Interview 2)

The librarian also recognised the importance of negotiating a role for herself that did not encroach on the authority of the teacher but drew on his authority to assist her to reach students:

...I wanted him to be comfortable it is still his unit... before I uploaded anything I asked him to post a message on DSO encouraging [students] to read the message. It is just the reality...students always listen to the teacher. (Librarian, Interview 2)

Playing an active role on the LMS was new practice for the librarian. She found it challenging to get students involved in discussions but came to understand their communication preferences and patterns of activity:

...normally students take a lot of time to get comfortable – often just lurking. Because the nature of our support will also be related to events e.g., the assignment we need to aim at them...don't get upset if they don't reply [through the LMS] because students will find a way to contact me – phone, email, in person. As long as we put ourselves up there they can contact me when they need to. (Librarian, Interview 2)

Her observations echoed Fisher and Heaney's (2011) proposal that 'at risk' students are more likely to seek consultations with librarians whom they know and trust. The librarian's activity through the LMS made her more visible and accessible for these students.

The embedded practice provided the librarian with a new perspective on her role in her realisation that she did not have to wait to be asked a question: 'I can push the information out.' (Librarian, Interview 2). Further, pushing information out ensures that no single student or group is exposed as being 'in need'. As the Unit Chair observed:

The idea of this being a 'normalised' thing that is generally available and not just targeted to the so called 'disadvantaged', that's definitely a good thing. (Teacher, Interview 2)

Clegg, Bradley and Smith (2006, 102) endorses this argument suggesting that students should not be forced to seek help in a manner that 'individualises "problems" in a negative way'.

Conversations about information literacy

While it is a liaison librarian's job to reach out to faculties, teachers are far less inclined to engage and collaborate with librarians in the manner used in this practice (Vander Meer Perez-Stable and Sachs 2012). Initially the teacher expressed concerns about the time demands of the practice but came to appreciate the benefits to both students and staff.

The teacher conceived of the embedded practice as valuable 'conversations' that occurred between the teacher, librarian and students about resources and information searching. These conversations – in concert with the 'visible' collaboration between the teacher and librarian – sent a powerful message to students about the importance of information literacy:

...it is not necessarily the advice you give that makes the difference...it is the conversations you are having so...if a conversation is [about] the use of library materials then that becomes part of the consciousness of the person involved...It is not just about saying that I know about resource X but the category of the resources becomes the issue...it raises awareness so...How do I research what I've got to do? (Teacher, Interview 2).

The conversations enabled students to learn what is expected in researching topics and in evaluating information. Reinforcing the claims made by Fisher and Heaney (2011), the teacher saw these conversations as particularly important for the students in his unit who may not be 'acculturated into the world of ideas and argumentation...' (Teacher, Interview 1).

Some of the benefits the teacher perceived were personal:

...I'm not switched on in the world of information, particularly at the digital end. So, I've picked up quite a number of information access tactics that I'll carry on from here...How to use databases for instance. (Teacher, Interview 2)

The teacher's reflections on his digital competence are important in the light of findings by Vander Meer, Perez-Stable and Sachs (2012) about the reluctance of faculty to let librarians into their classes and curriculum. This reluctance may result partly from the teacher's lack of confidence or knowledge about information resources. However, student learning is too important for teachers to avoid participation in embedded practice on this basis. In this case, the teacher saw the practice as having positive influence on students' learning:

I have a very clear impression... that increasingly students have become more aware of and more energised in their awareness of the relationship between themselves, the library and the unit. (Teacher, Interview 2)

The teacher provided anecdotal evidence that this energising of students translated into improved performance as they became more 'rigorous and expansive in their discussion and use of information' (Teacher, Interview 2).

The embedded practice provided a space in the curriculum for conversations and learning about information literacy. The investigations of Vander Meer, Perez-Stable and Sachs (2012) suggest that these types of conversations are unlikely to happen without deliberate intervention. For students at risk, participating in such conversations which involve both faculty and librarians may be critical for their learning (Fisher and Heaney 2011) and academic integration (Collier and Morgan 2008).

Research-driven practice

Exposure to shared data from the student surveys provided library staff with a connection to the student experience that they may not have had otherwise. This enhanced connection was revealed by the LET chair:

I guess I don't always have at the forefront of my thinking that a student can come in to a course at second or third year level, with RPL [recognition for prior learning] and alternate pathways with study at TAFE ...they bring a series of skills and knowledge and understanding with them. But that also, they may have missed out on a level of exposure to strong support from the library. (LET chair)

For the LET chair, appreciating the significance of variable student pathways into higher education was an important learning. She acknowledged that some traditional practices – such as orientation programs – assumed all students commenced their university course in the first year:

[In] past practice...we would say: 'ok first year and transition is a really important and critical time for students. Within the university broader strategic framework support for first years is important, therefore we should align our support with this faculty or the school more at the first year level. (LET Chair).

Further, the practice was consistent with the objectives of the university to improve outcomes of students from low SES backgrounds. For the LET Chair, the research provided a compelling logic:

... I believe that this will enable us ...to work more effectively with the faculties...So we will be able in our own minds to make clear connections: This is the direction of the university...this is what the faculty requires. The uni[versity] wants to increase enrolment of low SES, the faculties have targets to do so. The research indicates that this type of support will provide the best results for students so that it then makes good sense to work with Faculties and schools to work on priority courses and units...(LET Chair)

The LET chair observed that the focus on improving outcomes for low SES students both nationally and within the university and the research-based nature of the practice influenced the willingness of the teacher to engage with the library. In turn, this allowed the librarian to take on a more central role within the unit:

[The liaison librarian] can be seen more now as a contributor to student learning rather than the library as just a support area. (LET chair)

The literature strongly endorses the need for support for students at risk to be integrated within the curriculum (Devlin and O'Shea 2011). The university's targets for improving student outcomes and the research underpinning the practice enabled the library to gain a level of access and collaboration through the LMS and the curriculum which librarians, in isolation, often find difficult to achieve.

Online visibility and accessibility of 'the library'

Staff involved in the embedded practice raised several concerns about the online visibility and accessibility of the library. For the librarian the concern was that, without facilitation by a librarian, students may maintain a narrow view of a library if their only access to the library is through the LMS:

... we have to let students know that we are not just a web page; we are not just some computerised services; we provide something that Google can't provide... To get this message through we have to have a person there. (Librarian, interview 2)

For the LET chair the practice highlighted the need for consistency in how the library presented itself through the LMS:

...we need to ensure that what we are doing there [on the LMS] ties in with what we are doing on the website...there is still a mindset that students access the library resources through the library website when in fact many access and experience them through [the LMS] as their first pathway. (LET Chair)

The teacher expressed a more fundamental concern – that online access in the first place assumes all students have the financial resources for adequate hardware and connectivity:

[A] lot of the lower SES folk don't have the hardware...about downloading...having good quality equipment...if people in remote areas...sometimes even homelessness is an issue. .as is disability..[...] to go digital...will be a severe challenge to low SES students...We are particularly concerned because we have a high proportion of low SES. (Teacher, Interview 2)

While the visibility of an online library may be similar for students regardless of their SES status, some face greater difficulties in identifying and evaluating these resources appropriately. This is more likely to be true of students who are first-in-family or low SES (Fisher and Heaney 2011). Further, despite the seeming ubiquity of digital technologies, the life circumstances of some students mean they cannot always maintain adequate online access. In summary, alongside library support through the LMS, other means of support delivery may need to be maintained.

Conclusion and future directions

The aim of the embedded practice was to improve the experience of students from low SES backgrounds in using library resources and services. The practice involved the identification of a unit with a high percentage of students from low SES backgrounds and the provision of sustained support, informed by research, throughout the teaching period.

The purpose of the evaluation was to learn more about the potential of embedded online practice to contribute to the experience and progress of students from low SES backgrounds. The results of the evaluation demonstrated that all participants reported positive outcomes from the practice. The librarian's collaboration with the unit chair, and access to the LMS, allowed her to provide more effective support and learn more about the online behaviour of students. The involvement of LET enabled learning from the practice to inform future practice. The teacher derived personal benefits in learning more about digital information resources. He valued the library online presence for its ability to engage students in a conversation about information literacy. Finally, the students reported positive gains in their comfort in using library resources and services, awareness of library resources, and satisfaction with the support and resources provided.

A limitation of the evaluation process was that it did not include cross-trimester comparison data from the LMS or library databases that would indicate how the embedded practice influenced the amount and type of use. Further, while students reported greater awareness of library resources and higher satisfaction, the evaluation did not include outcome data such as performance on assignment tasks and overall results.

Notwithstanding these limitations, the embedded practice has informed and shaped continuing practice at the library. Following a successful trial of the practice in health sciences, it has been extended to a further four units within courses which have similar student profiles. The extension of the practice should provide support for students beyond those who are disadvantaged by being of low SES background. Evaluation procedures will encompass a broader range of measures and focus on the sustainability of embedded practices for the library.

More widely, the study's outcomes demonstrate the potential benefits of embedded practice for supporting diverse student populations and how libraries can target their activities more effectively to national and university agendas for improving student outcomes.

In its physical form, the university library may no longer be the intimidating physical presence perceived by Dee Mitchell (2011). However, in its online form a library can be less visible, difficult to access and confusing to navigate. The development of information literacy is too important to be left to chance encounters with the library – particularly for students at risk. Embedded librarianship, through the LMS, provides an effective means for equitably facilitating these encounters. As student learning environments continue to evolve, so too will the Library's role. Central to this role will be working with academic staff in developing curriculum.

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Table 1: Profile of survey respondents and comparisons with unit profile

		All Enrolled in Unit (n = 152)	Survey 1 respondents (n = 17)	Survey 2 respondents (n = 23) ²
		(percentage)	(percentage)	(percentage)
Enrolment mode	Internal	35	35	24
	External	65	65	76
Attendance type	Full-time	75	76	74
	Part-time	25	24	26
Gender	Female	86	94	90
	Male	14	6	10
Low SES ¹		25	18	24

¹ As measured using the postcode definition (DEEWR, 2009)

² At the time of Survey 2, enrolment in the unit was 139.

Table 2: Experience of ease of use and search success with library’s online resources – percentage agreement

Items:	Survey 1 (n = 17) (percentage)	Survey 2 (n = 23) (percentage)
It was ‘very’ or ‘somewhat easy’ to use the library’s online resources ¹	71	87
In using the library’s online resources I found what I wanted ‘always’ or ‘most of the time’ ¹	71	81
I was ‘very motivated’ or ‘motivated’ to learn how to use the library’s online resources ¹	59	89

¹ A five point scale was used. The five were collapsed into three categories for reporting purposes.

Table 3: Respondents' reflections on their experiences of the library - reported gains

	Rating scale ¹		
	'Quite a bit' to 'much' more	'A little' to 'somewhat' more	'About the same'
Question stem: Reflecting on your experience of using the library this trimester, to what extent are you now more:	(percentage)	(percentage)	(percentage)
Curious about library resources and services	48	34	9
Familiar with the library online resources	48	34	9
Confident in using eBooks	48	26	26
Confident in using academic databases	50	30	17
Comfortable contacting library staff for assistance	52	30	17

¹ A six point rating scale was used. The six were collapsed into three categories for reporting purposes.