



# *Embedding librarians in online tertiary classrooms: A new model for learner support*

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## **Abstract**

Embedded librarians working in online classrooms present a new avenue of learner support direct to students in the space where they learn. The development of embedded librarian practice has evolved since 2004 and is becoming commonplace in online tertiary classrooms, but what is not yet so common is theory underlying this new practice. A multiple case study of embedded librarians in online tertiary classrooms in New Zealand was conducted to identify what makes this practice effective in providing support. Six factors were identified as contributing to effectiveness: relationality, immediacy, relevancy, interactivity, parity and faculty–librarian collaboration. The Embedded Librarian Support model was derived from, and is presented as the culmination of, the findings of this research.

## **Introduction**

As provision of learner support moves into the online space, new forms of support are evolving to take advantage of the new opportunities made available in online learning. The evolution of learner support in the online classroom has moved beyond mere translation of existing services into the new context, to embrace new opportunities and develop new forms of support. The inclusion of librarians inside the online classrooms is one of these innovations, and embedded librarians have been practicing in this space since they first appeared as a distinct form of learner support in 2004. This research sought to examine multiple case studies of embedded librarians in online tertiary classrooms in New Zealand and identify common practices and features before considering how this practice effectively delivers learner support. The research question this sought to address was: What contributes to the effectiveness of the practice of embedding librarians in online tertiary classrooms in providing support to online classroom participants? After setting the scene with a short review of the literature and explaining the methodology used in this study, the results are outlined and then used to develop a new model of learner support following the case study method of Yin (2014) and building theory from case study research (Eisenhardt, 1989). This study is critical because it identifies the component factors required to

**Practitioner Notes**

What is already known about this topic

- Embedding librarians as active participants in online classrooms provide an avenue for learner support.
- Many single case studies exist of embedded librarian practice.
- Practice is evolving ahead of theory in this relatively new form of learner support.

What this paper adds

- This research looks across multiple cases to identify common practices and features.
- This multiple case study method brings evidence that is strong and reliable.
- Factors contributing to the effectiveness of the embedded librarian service are identified.
- A new model of embedded librarian support is derived from this multiple case study.

Implications for practice and/or policy

- The model and identified factors contributing to the effectiveness of this form of learner support provide guidance for planning the delivery of this service.
- The model and identified factors contributing to the effectiveness may also support the successful provision of other forms of learner support in the online classroom setting.

deliver effective embedded librarian support to faculty and students with the overarching goal of maximizing student learning.

**Literature review**

A synthesis of relevant literature was conducted using search terms relating to learner support, online learning and embedded librarianship. A well-developed body of work was found on learner support and online learning including definitions, reports on practice, identification of best practice and related theory. In comparison, the literature relating to embedded library support in online classrooms dates from 2004 and is less developed. This smaller field includes some definitions, a growing number of reports of practice, a small number of items identifying best practice and only a few items on related theory. The main gaps in the literature identified are in the identification of embedded librarian best practice, and the development of models and theory to support and guide the development and understanding of this practice. As several authors in the wider fields of learner support and online learning have concluded that for high-quality online learning to occur, additional learner supports are needed (Moore, 2013; Perna *et al.*, 2014; Perna *et al.*, 2013; Thorpe, 2002), the identified gaps of best practice and related theory for embedded library support are deemed significant.

Definitions and illustrative examples of learner support in general and embedded library support in particular are readily available in the literature and show how these forms of learner support relate to each other and places embedded library service within the broader context of learner support. Simpson's (2012) definition of learner support as "all activities beyond the production and delivery of course materials that assist in the progress of students to success in their studies" (p. 13) provides the broad context, and within this further defines academic support as assisting students in the understanding of course content and the literacies and skills for "defining, explaining, assessing, chasing progress, developing skills, exploring and enriching" (p. 16). In online learning, academic support has a slightly different focus because of the transactional

distance (Moore, 2013) between teachers and learners, and adaptation and enhancement of traditional support services can be made in the new online environment to better support online learners (Davis, Little & Stewart, 2008). Library support in the form of a librarian embedded within the online classroom is one such enhancement that can be made. The term “embedding” means working primarily within a group or space as an integral part of the whole, such as a librarian working inside a university faculty team or online classroom (Dewey, 2004). Dewey (2004) was the first to use the term “embedded librarian” and this date signals the start of the literature on this topic. Years later, Schulte (2012) found there was no single accepted definition of an embedded librarian and variations on the term developed such as Fredericksen and Phelps’ (2014) term “online embedded librarian” have made the navigation of the literature more complex. Fredericksen and Phelps (2014) define an embedded librarian in an online classroom as “someone who establishes a library presence in a virtual learning space” (p. 3), and this definition is used in this research as it makes no presumption over the nature of the presence or how it is delivered, and permits an open investigation to be conducted without predetermined ideas. The focus of embedded librarian support is in developing students’ information and other literacies needed for effective learning, which distinguishes embedded librarians from other roles such as the emerging role of embedded tutors whose focus in the online classroom is supporting students management with routine course content questions, activities and participation (Raica-Klotz et al, 2014).

The literature contains a small number of examples of best practice in the provision of embedded library service in the literature, such as York and Vance’s (2009) list of ten useful practices for embedded librarians. The majority of best practice items are not analytical but more descriptive, particular a large number of case studies which explain various forms of this emerging practice (eg, Chisholm & Lamond, 2012; Hawes, 2011; Matthew & Schroeder, 2006). In addition, a few studies have attempted to measure the effects of benefits of embedding librarians in online classrooms (eg, Hoffman, 2011; Kumar, Edwards, & Ochoa, 2010).

Only three theoretical embedded librarian models were identified in the literature, the first two outline practical steps for implementing embedded librarian service for the first time (Hoffman, Beatty, Feng, & Lee, 2017; Shumaker, Talley, & Miervaldis, 2009) and the third applies a SAMR model to the integration of library services into the online classroom (Fields, 2016). In addition, there are also more complex models which outline learner support, rather than embedded library support, for relationships, interaction and communication in the classroom show how academic support and relational support work in this setting (Lowe, 2005; Thorpe, 2002). This leaves scope for the further development of theory supporting embedded librarians in online classroom as a form of learner support, particularly in identifying and exploring the widely applicable underlying concepts, rather than individual practical implementations, of embedded librarian service. The current research seeks to address the paucity of this literature by identifying the factors in the roles and relationships which contribute to the provision of this support and contributing a theoretical model applicable to all manifestations of embedded librarian services.

## **Methodology**

A multiple case study (Yin, 2014) method was chosen for this research to enable multiple views of learner support using embedded librarians, and to produce individual case reports with one set of cross-case conclusions. Yin’s (2014) multiple case study procedure also allows for the development of theory at the end as a result of the cross-case conclusions. Multiple case studies produce evidence that is strong and reliable (Baxter & Jack, 2008). Criteria for case study selection were classrooms that were delivered online, at the tertiary level, in New Zealand, and included an

embedded librarian. Two academic institutions (Institution A and Institution B) were identified as delivering classrooms fitting these criteria. Six case study classrooms were chosen, two from each institution, covering a range of teaching levels (undergraduate and postgraduate) and subject areas (social sciences, business, education and health). Data collection for this multiple case study included observation of each online class for the duration of a semester, a questionnaire for all students near the end of the semester, and interviews with teaching faculty, embedded librarians and willing students after the conclusion of the semester.

The questionnaire for students was designed to explore the practice of embedding librarians in online tertiary classrooms in the New Zealand context and what makes it effective in delivering learner support. It generated both quantitative and qualitative data, with demographic questions, Likert scale questions and open-ended questions. The Likert scale section comprised 23 questions designed to quantify the type and degree of support received by students from the embedded librarian service in their classrooms. Questions were broadly grouped into areas of instructional support, technical support, library forum as support and overall support. The questionnaire was administered using SurveyGizmo. Invitations to participate were delivered to students via their online classrooms. Participant was voluntary. The response rate, after discounting invalid and incomplete responses, was 20.36%, ( $n = 67$  of a total pool of 329 students). Data analysis of the Likert scale questions was conducted using SPSS and thematic analysis was conducted on the open-ended questions.

Semi-structured interviews were conducted after the close of the teaching semester with faculty ( $n = 6$ ), embedded librarians ( $n = 6$ ) and students across all classrooms ( $n = 17$ ). These allowed more in-depth questioning than the questionnaire, and the semi-structured questions permitted further investigation of points raised in the questionnaire or during the interview itself. It also generated a full view of the embedded librarian's activities from the perspective of all classroom participants. Interview questions were emailed to participants prior to the interviews, and telephone interviews each lasting approximately half an hour were conducted individually and recorded digitally. One email interview was conducted with a student who was overseas with limited internet access. Questions related to preparation prior to the semester, identification of skills at the start of the semester, the work of the embedded librarian during the semester, interaction with the embedded librarian and other classroom participants, and anything else the participants wanted to discuss. Transcripts of all interviews were prepared, and these were subject to thematic analysis using both deductive and inductive approaches. Thematic coding was used to identify commonly appearing aspects of embedded librarian practice and learner support and new concepts and experiences which not been previously considered. The resulting codes were grouped together into themes which related to both research questions and new concepts.

Within-case and cross-case analyses were then conducted following Yin's (2014) multiple case study procedure. The cross-case conclusions identified aspects and themes of embedded librarian practice in online tertiary classrooms across all case study classrooms. This foundation was followed with Eisenhardt's (1989) method of building theory from case studies. In this method the likelihood of the emerging theory being empirically valid and having consistency with empirical observation is high because the theory-building process is inexorably tied to the evidence.

## **Results and discussion**

The main sources of data which address the research question are the semi-structured interviews and the open-ended questions in the questionnaire. These sources are supported by data from the questionnaire analysis. This section outlines the case study classes to provide context, the types of support and supporting roles of the embedded librarians from the cross-case analysis and the factors contributing to effectiveness of students support also from the cross-case analysis.

### Case study classes

When case studies were being sought in 2014, only two tertiary education institutions were delivering online classes that included embedded librarians in those classes in some way. Institution A was a fully distance education provider, offering over 100 different qualifications to around 30 000 students up to the bachelors' degree level, with an increasing focus on online delivery. Institution B was a mixed-delivery education provider, offering over 200 different qualifications to around 35 000 students up to the doctoral degree level, with face to face classes on campus and a large extramural facility for students studying by distance. These classes are referred to as classes A1, A2 and A3 from institution A and B1, B2 and B3 from institution B. Key characteristics of the classes including their size, year of tertiary study, delivery mode and academic discipline are outlined in Table 1.

All case study classes were delivered online over a single semester using a Moodle platform. Classes A2 and B1 also had a face-to-face component which supplemented the online learning; a workshop towards the end of the semester for class A2 and a residential week at the start of the semester or class B1. Embedded librarians were involved in supporting faculty with the preparation of each course in some way.

In classes A1, A2 and A3 the embedded librarians provided their main assistance to students by actively and directly communicating with them and addressing their questions in their online classrooms via library discussion forums. The embedded librarians in classes at institution A were also available to students for individual assistance via email or phone, and students were also able to contact the institution's library directly.

In classes B1, B2 and B3 the embedded librarians provided their main assistance to students by placing reusable learning objects (RLOs), packaged tutorial on various topics such as journal database searching or constructing a literature review, into the online course structure prior to the start of the semester. In addition, class B1 the embedded librarian met students at the residential week and was available during that week for hour-long individual appointments and was available during the remainder of the semester for individual assistance via email, phone and via an online video and screen sharing facility. Students in classes B1, B2 and B3 were also encouraged to contact the embedded librarian for individual assistance via email or phone or to approach the institution's library directly.

### Types of support and supporting roles

Results outlining the embedded librarians' types of support and supporting roles came from the analysis of the Likert scale questions in the questionnaire and from the deductive codes from the qualitative semi-structured interviews and open-ended questions at the end of the questionnaire.

Table 1: Key descriptions of the six case study classes

Class	No. of students	Year of tertiary study <sup>1</sup>	Delivery mode	Academic Discipline
A1	66	1	Fully online	Social Sciences
A2	111	1	Online with a face-to-face workshop	Business
A3	49	2	Fully online	Social Sciences
B1	29	4	Online with a residential week	Social Sciences
B2	12	4	Fully online	Education
B3	62	2	Fully online	Health

<sup>1</sup>1 and 2 are undergraduate, 4 is postgraduate.

These findings of types of support and supporting roles of embedded librarians addresses the research question of identifying the practice of embedding librarians in online tertiary classrooms in the New Zealand context and what makes that practice effective.

The results indicated types of support fell into three categories: instructional, technical and general. Instructional support included traditional library skills such as forming search strategies, navigating catalogues and databases and other information literacy skills. Technical support included instruction in how to manage technology such as locating full-text documents, downloading eBooks and other questions of a technical or IT nature. General support included feelings of being supported, answers to general questions and referral to where further information could be found.

Three roles were noted for embedded librarians in supporting students' learning: as a personal tutor to students working at an individual level (all classes), as a class tutor to students working with the class (classes at institution A only), and modelling to students (noted in classes A2 and A3 only) which was unintended but useful to students who were observing how interactions were conducted online and how information was packaged and delivered to clients (the students). Three roles were also noted for embedded librarians in supporting faculty's teaching: teaching support as an additional person in the online classroom (classes A1, A2, A3 and B3 only), in assisting with course development prior to the teaching semester (classes A1, A3, B1 and B2 only) and as research support for the faculty member personally (classes A3 and B3 only). Roles were not confined to one method of embedding librarians or providing support and crossed these case studies and institutional boundaries with ease.

Embedded librarians' roles support both students and faculty, and as the core purpose of the classroom is to facilitate student learning, the main supporting role for embedded librarians is to support this learning process. The method of assisting students can be direct, such as answering questions in a library discussion forum, or indirect, such as developing RLOs and more directly supporting faculty. Embedded librarian support for both students and faculty centres on the delivery or application of information and other literacies, and this forms the main role of embedded library support.

#### *Factors contributing to effectiveness of student support*

The research question specifically sought to identify what makes this embedded librarian practice effective in providing support to online classroom participants. Results addressing this research question came from the analysis of the semi-structured interviews and open-ended questions from the questionnaire. Thematic analysis identified themes a posteriori from the data. The broad themes covered roles and relationships, presence, interaction and benefits. Following this, an iterative process using data-driven codes (Fereday & Muir-Cochrane, 2006) identified sub-themes within each theme. These themes are: relationality, immediacy, relevancy, interactivity, and to a lesser extent, parity and faculty–librarian collaboration.

#### *Relationality*

In all case studies the embedded librarian had built a relationship with students; to a high degree in classes at institution A where the library discussion forum allowed continued interaction directly between embedded librarian and students within the online classroom, and to a lesser degree in classes at institution B where students were encouraged to approach their embedded librarian or the library individually and directly. The sense of relationship may have encouraged students to seek assistance more freely and consider this as a regular avenue of support for their learning. A student identified the benefit of repeated contact and relationship building, saying "knowing that [the embedded librarian] had sort of been the first one you'd talked to and he'd

explained something and then you clarify something you're talking to the same person again ... made it that little bit more personal" (student in class A1). Relationship-building was further enhanced at institution A as the embedded librarians work across subject areas so an embedded librarian encountered in one course is likely to be encountered in other course a student takes in that subject. Embedded librarians at institution B also worked across subject areas, increasing their familiarity with the form and use of RLOs and other learner support placed directly in the classroom. The previously identified multiple roles of embedded librarians as a personal tutor, a class tutor and modelling to students both contribute to the growth of relationality and benefit from the presence of relationality by having the service more readily accessed and used.

This compares well with and supports other findings in the literature that embedding librarians in classes builds relationships (Helms & Whitesell, 2013) and the support provided by embedded librarians is relational (Ibrahim & Omar, 2015). Sharma, Kumar, and Babbar (2014) explain, "As compared to traditional librarianship which is based on transaction, embedded librarianship is based on relationship with the faculty, or user community" (p. 455) and Helms and Whitesell (2013) elaborate that embedded librarians become partners in the classroom setting, with their relationship with students being one of partnership rather than remote consultant.

#### Immediacy

Immediacy emerged as a factor contributing to the effectiveness of the embedded librarian support. Immediacy was most noted in classes at institution A where the embedded librarian was present in the online classroom for the duration of the semester. This presence allows students to ask questions and seek information without needing to leave their online classroom space and navigate their way to a library or elsewhere for support. The shared nature of the discussion forums in classes at institution A also provides immediacy as students can see the questions of other students and embedded librarians' responses at the time they are posted. There was little immediacy noted in case study classes at institution B as embedded librarians were not present in the classroom space during the semester, the exception being the residential week for class B1. However, the placing of RLOs in the online courses at institution B provided immediacy of support, as the tutorials were placed in the courses at the point where instruction was needed to support students' learning of the subject. This is a more static form of immediacy of support than the more interactive immediacy present at Institution A.

Immediacy is an important factor as it can help break down the transactional distance between teacher and learners in online learning environments. Transactional distance includes degrees of separation which may include physical, pedagogical and psychological (Moore, 2013) and immediacy is already well reported as one of the factors which can aid in reducing this distance (Baker, 2010; Fahara & Castro, 2015; Woods & Baker, 2004). In these case studies, the act of placing embedded librarian support, which includes instructional, technical and general support, into each classroom as either a person available for interactive questions or tailored packages of material in the form of RLOs, creates the sense of immediacy which breaks down the perceived distance between students and their learning in the online environment.

#### Relevancy

Relevancy of support was another identified factor, with many students commenting that embedded librarian support was tailored to the subject material and requirements of the individual course. Students also indicated this level of relevancy made interactions with the embedded librarian more useful than interactions with librarians in the library as there was a better understanding of the students' needs for the course they were studying. Students in classes at institution A were able to see other students' questions and embedded librarian responses in the library forum in their online classes, students in classes at institution B encountered relevant RLOs for their

courses preselected by the embedded librarian and faculty member and in class B1 the embedded librarian was available to assist students individually with strategies for their literature reviews.. The relevancy of support provided was confirmed in the questionnaire with 91.3% of student respondents from institution A and 77.7% of student respondents from institution B agreeing that the embedded librarian provided resources, links or resources or search strategies relevant to their course and its assessments. A closer result of 89.7% from institution A and 85.7% from institution B agreed that the overall support from the embedded librarian was helpful.

Students in all case study classes were able to access general support via their institutional libraries but had access to highly relevant support in their online classrooms from their embedded librarians. Micro-level embedding provided “students with a greater opportunity for personal interaction and assistance” (Cassidy & Hendrickson, p. 460) such as the individual meetings with students in class B1 at the residential week and responses to individual student questions in the discussion forums in classes at institution A. Macro-level embedding was also noted, where “librarians create general tutorials, guides, and activities which can be easily added as modules across many online courses” (Cassidy & Hendrickson, p. 460) such as the RLOs placed in course in institution B. A combination of micro-level and macro-level support has been noted as a way of creating maximum relevancy in online classes to support the varying needs of students in a class group (Allen, 2017; Hoffman *et al.*, 2017).

#### Interactivity

Both interactivity and a range of interaction options were present in all case study classes. Multiple methods and access points to assistance included discussion forums, RLOs, individually contacting the embedded librarian remotely (email, phone, internet connection) or in person and individually contacting the library remotely (email, phone, internet connection) or in person. Interactivity benefitted students by allowing a choice of contact method and in some cases also permitted other students to benefit from the original interaction by having that in a shared space such as a discussion forum. In addition, a student explained their embedded librarian would also create “[new] threads on the forum if he had noticed people asking a lot of similar questions. He also was aware of what was happening on the other forums and would sometimes jump in on those too and answer questions” (interview with student in class A3). Some of these forms of interaction benefitted not only the student who initiated the question but also others in the class, creating a more extensive network of support provided without additional cost or effort.

Interaction is one of the hallmarks of the definition of embedded librarianship, present in Dewey’s original definition “Embedding requires more direct and purposeful interaction than acting in parallel with another person, group, or activity” (Dewey, 2004, p. 6). Olivares (2010) agrees that interaction and relationships are the fundamental features making embedded librarians different from regular librarians. Interactivity permits students to engage in different ways and at different levels, to suit their own learning needs and requirements. Courtney and Wilhoite-Mathews’ (2015) study of the use of RLOs placed within online courses acknowledged that part of the RLOs’ value was the flexibility for students to individually interact with them to meet different learning styles, and this was confirmed with the present case studies from institution B.

#### Parity

The issue of parity is interesting as this benefitted some but not all students. In the case studies, there was not always a direct relationship between the level of study and students’ familiarity with study and information-seeking skills. This meant that in classes there may be a variety of levels of skills among the students, even at the postgraduate level. One of the roles of the embedded librarians was to provide support in such a way that these students could either scaffold or quickly build their skills to manage the subject material of the courses well. Bringing these students up

to the level required for the course while not burdening the other students creates parity so that they are able to learn and be assessed on their understanding and application of course content, not on their base level of study skills. The RLOs placed within courses at institution B are a good example of this, providing the opportunity for students to scaffold their learning to meet course requirements. The discussion forums within course at Institution A provide similar opportunity for parity. This helps bring the focus of each course back onto the subject matter itself and quietly deals with the issue of parity of students' skills without interrupting the class learning.

The issue of parity of skills between students in the same class is documented in the literature: for example, Ismail (2011) describes the lack of a level laying field for students entering online classes and how this can be overcome by a "personal librarian service through a Course Management System" (p. 244) and Hartsell-Gundy and Tumbleson (2012) who describe assisting students to gain the skills needed for learning success regardless of the levels of skills present when they first entered the online classroom. These two examples describe similar findings to this study, indicating the issue of parity of skills is a wide and recognized concern.

#### Faculty–Librarian collaboration

Faculty–librarian collaboration was noted in two distinct forms across the six case studies: embedded librarians contributed to faculty's teaching and to faculty's research. Embedded librarians' role in supporting teaching included input into course design such as choosing appropriate RLOs, finding and updating readings and locating illustrative examples, and input into course delivery including running discussion forums using examples related to the course subject, providing an alternate avenue for students seeking support inside the classroom but on general study support topics. The role in supporting faculty's research included performing such tasks as conducting literature reviews, locating research material and assisting with the completion of research grant applications. Relationality was the main factor in making these collaborations successful, as the nature and strength of the relationship determined the effectiveness of the collaboration and in some cases, additional collaboration occurred because of a strong existing relationship. Immediacy was noted in institution A as the embedded librarians were present during course delivery and so were available to support faculty when needed, and interactivity was noted in the multiple methods of contact available with embedded librarians and their services. One faculty member described all this, saying the embedded librarian was:

just very helpful and approachable and helped me with things ... beyond the call of a college librarian. She's done literature searches to help me with the grant applications, she's helped me target a journal for publishing an article, she's just very helpful and just talking with each other over this ... has been really good, she's become one of my favourite people on campus. (interview with faculty member from class B3)

Faculty–librarian collaboration is a further example of the "overt purposefulness ... [which] makes embedding an appropriate definition of the most comprehensive collaborations for librarians in the higher education community" (Dewey, 2004, p. 6). The close collaboration between faculty and embedded librarians seen in this multiple case study has, at its core, "overt purposefulness" in supporting both students and faculty in their work. According to the literature (Cassidy & Hendrickson, 2013; Massis, 2012) collaboration is an inherent part of the successful and effective delivery of this form of learner support.

#### **The Embedded Librarian Support model**

The findings of this study have identified the component parts of a new model of embedded librarian support. The multiple case study revealed three online classroom participant groups and six factors contributing to the effectiveness of the embedded librarian service which were present

in all case study classes. There was no single method of delivering an effective embedded librarian service, and the variation between these classes demonstrated multiple ways to provide such a service. However, common to all classes were the factors contributing to the effectiveness of this service: relationality, immediacy, relevancy, interactivity, parity and faculty–librarian collaboration. A model was developed using the method outlined by Eisenhardt (1989) for building theory from case study research (Fields, 2019). The Embedded Librarian Support model is presented in Figure 1.

In this model, online classroom participants are identified in the rectangular boxes and the provision of learner support is indicated with solid arrows showing the originator and recipient of the support. The embedded librarian provides support directly to students and also to the faculty member while at the same time receiving some support from the faculty member in return. The types of support are also identified: Learner support provided by the embedded librarian to students uses the five identified factors for effectiveness, and faculty–librarian collaboration is provided by both faculty and embedded librarians to each other. Support provided by the faculty member for these students is beyond the scope of this study so is indicated here using only a dotted outline arrow to complete the picture.

This model shows students at the top of the support process, receiving support from the other online classroom participants. What is not shown in this model is the extent or proportion of each of the six factors of learner support delivered by the embedded librarian, and these may vary from classroom to classroom. The amount and particular mix of factors may also vary within online classes, with students' needs changing over their years of study as they acquire skills and experience on their student journey. The method of delivering the support may also change as students progress through their studies, with more overt support provided in the early years of study, and as educational technology and library practices evolve.

The purpose of this model is to provide both an identification of the component parts of an effective embedded librarian service and a visual representation of how an effective embedded librarian service can be enacted. This model may also be instrumental in providing some direction and understanding for the effective delivery of wider student support within the online classroom setting.

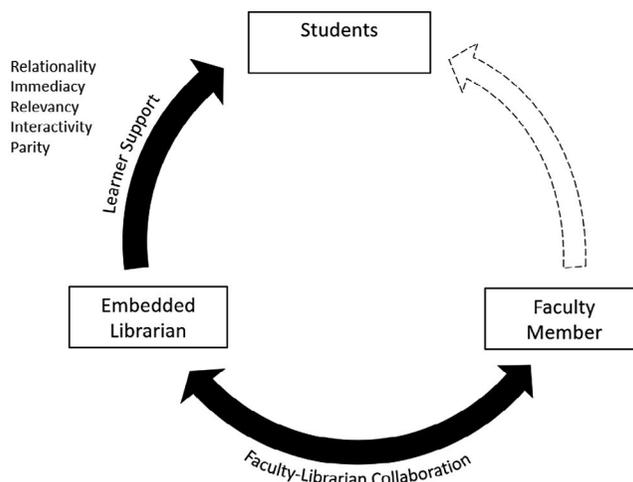


Figure 1: *The Embedded Librarian Support model*

The Embedded Librarian Support model contributes a new and complementary perspective on learner support to the existing literature. Thorpe's (2002) Second-Generation DE and Online, Collaborative Learning Compared models show a comparison of two model classrooms with tutor and learner as participants, interacting with various course materials, web resources and learning groups. It is the relationships and interactions between the participants and the resources which has a resemblance to the Embedded Librarian Support model, making the Embedded Librarian Support model a development and refinement of Thorpe's earlier model. Lowe's (2005) PARS model (Providing Academic and Relational Support) considers the changing learner support needs of students as they progress through their studies. The Embedded Librarian Support model considers simply the effectiveness of support provided in the online classroom without indicating how the support changes over time. These two models are complementary, both showing different aspects of what could potentially be the same practice in providing learner support. Another complementary model is Fields' (2016) SAMR/ILS showing the stages of integration of Information and Library Support into the online classroom. The Embedded Librarian Support model sits alongside this highlighting the factors of effectiveness in providing the support regardless of the degree of integration. These models can be used together to highlight different aspects and create a rounded view of successful learner support practice in online learning.

### **Conclusion**

This investigation of a multiple case study of embedded librarian practice has shown that a variety of practices are common in delivering this form of learner support inside the online classroom. With regard to embedded librarian practice, the actual method of delivering support inside the online classroom does not appear to greatly affect the underlying factors of roles and relationships with students and faculty. Students with direct access to embedded librarians made use of this facility and those with only indirect access vis RLOs would make use of external access to library support from the wider institution is required. Despite the variation in practices, however, a consistent set of factors were identified across all six case study classes in this research which contributed to the effectiveness of this form of learner support. These factors were relationality, immediacy, relevancy, interactivity, parity and faculty-librarian collaboration. The Embedded Librarian Support model was developed from these case studies and the resulting factors for effectiveness of support.

Some implications from this research have been identified in the areas of both practice and further research. Implications for practice centre around the nature and strength of the roles and relationships formed between embedded librarians and students, and embedded librarians and faculty, rather than in the specifics of how that support is delivered. Further research may include the application of the Embedded Librarian Support model and further possible refinement. Models, theory and application can also be investigated and developed further by considering other forms of learner support in online classrooms including embedded tutors and other forms of learner support. The Embedded Librarian Support model provides both a concept and an illustration of how embedded librarian practice can be applied effectively and may be more widely applicable to other forms of support emerging and yet to emerge in online learning environments.

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### Statement on open data, ethics and conflict of interest

Copies of the questions asked in both the questionnaire and the interviews may be requested directly from the author and are also available in the appendices of “Putting support where the learners are” at <http://hdl.handle.net/10523/9711> However, data from the questionnaire and transcripts from the interviews remain confidential as required by the Ethics Approval for this research.

This research was conducted under approval from the University of Otago Human Ethics Committee, dated December 17, 2013.

There are no known conflicts or potential conflicts of interest.

### References

- Allen, S. (2017). Mapping uncharted territory: Launching an online embedded librarian program. *Journal of Library & Information Services in Distance Learning*, 11(1–2), 251–261.
- Baker, C. (2010). The impact of instructor immediacy and presence for online student affective learning, cognition, and motivation. *Journal of Educators Online*, 7(1), 30.
- Baxter, P., & Jack, S. (2008). Qualitative case study method: Study design and implementation for novice researchers. *The Qualitative Report*, 13(4), 544–556.
- Cassidy, E. D., & Hendrickson, K. E. (2013). Faculty–librarian micro-level collaboration in an online graduate history course. *The Journal of Academic Librarianship*, 39(6), 458–463.
- Chisholm, E., & Lamond, H. (2012). Information literacy development at a distance: Embedded or reality? *Journal of Library & Information Services in Distance Learning*, 6(3/4), 224–234. <https://doi.org/10.1080/1533290X.2012.705170>.
- Courtney, M., & Wilhoite-Mathews, S. (2015). From distance education to online learning: Practical approaches to information literacy instruction and collaborative learning in online environments. *Journal of Library Administration*, 55(4), 261–277.
- Davis, A., Little, P., & Stewart, B. (2008). Developing an infrastructure for online learning. In T. Anderson (Ed.), *Theory and practice of online learning* (2nd ed., pp. 121–142). Edmonton, Canada: AU Press.
- Dewey, B. (2004). The embedded librarian: Strategic campus collaborations. *Resource Sharing & Information Networks*, 17(1/2), 5–17.
- Eisenhardt, K. M. (1989). Building theories from case study research. *The Academy of Management Review*, 14(4), 532–550.
- Fahara, M. F., & Castro, A. L. (2015). Teaching strategies to promote immediacy in online graduate courses. *Open Praxis*, 7(4), 363–376.
- Fereday, J., & Muir-Cochrane, E. (2006). Demonstrating rigor using thematic analysis: A hybrid approach of inductive and deductive coding and theme development. *International Journal of Qualitative Methods*, 5(1), 80–92.
- Fields, A. (2016). Developing a model of library support in elearning. In K.-W. Lai, S. Stein, P. Field, & K. Pratt (Eds.), *Our world in your place* (pp. 111–120). Dunedin, New Zealand: University of Otago.
- Fields, A. (2019). *Putting support where the learners are: A multiple case study of the practice of embedding librarians in New Zealand online tertiary classes* (Doctoral thesis). University of Otago, Dunedin, New Zealand. Retrieved from <http://hdl.handle.net/10523/9711>.
- Fredericksen, L., & Phelps, S. F. (2014). Online embedded librarians: A review and overview. In E. Leonard, & E. McCaffrey (Eds.), *Virtually embedded: The librarian in an online environment* (pp. 3–15). Chicago, IL: Association of College and Research Libraries.
- Hartsell-Gundy, A., & Tumbleson, B. (2012). Overview, best practices and literature review. In S. W. Alman, C. Tomer, & M. L. Lincoln (Eds.), *Designing online learning: A primer for librarians* (pp. 53–66). Santa Barbara, CA: Libraries Unlimited.
- Hawes, S. (2011). Playing to win: Embedded librarians in online classrooms. *Journal of Library & Information Services in Distance Learning*, 5(1/2), 56–66. <https://doi.org/10.1080/1533290X.2011.570560>.
- Helms, M. M., & Whitesell, M. (2013). Transitioning to the embedded librarian model and improving the senior capstone business strategy course. *The Journal of Academic Librarianship*, 39(5), 401–413.

- Hoffman, N., Beatty, S., Feng, P., & Lee, J. (2017). Teaching research skills through embedded librarianship. *Reference Services Review*, 45(2), 211–226.
- Hoffman, S. (2011). Embedded academic librarian experiences in online courses: Roles, faculty collaboration, and opinion. *Library Management*, 32(6/7), 444–456.
- Ibrahim, S. E., & Omar, F. (2015). *Embedded librarian in higher education institutions*. Paper presented at International conference on libraries: Openness Paradigm: Emerging Knowledge Ecologies Conference, 25th–26th August 2015, Vistana Hotel, Penang, Malaysia. Retrieved from <http://library.oum.edu.my/repository/1036/>.
- Ismail, L. (2011). Getting personal: Reaching out to adult learners through a course management system. *The Reference Librarian*, 52(3), 244–262.
- Kumar, S., Edwards, M., & Ochoa, M. (2010). Analysis of online students' use of embedded library instruction in a graduate educational technology course. In *Proceedings of World Conference on E-Learning in Corporate, Government, Healthcare, and Higher Education 2010* (pp. 664–671). Chesapeake, VA: AACE.
- Lowe, S. D. (2005). Responding to learner needs in distance education: Providing academic and relational support (PARS). In S. J. Levine (Ed.), *Making distance education work: Understanding learning and learners at a distance* (pp. 73–87). Retrieved from <http://learnerassociates.net/learners/chap08.pdf>
- Massis, B. E. (2012). Librarians and faculty collaboration—Partners in student success. *New Library World*, 113(1/2), 90–93.
- Matthew, V., & Schroeder, A. (2006). The embedded librarian program: Librarians and faculty partnering to serve online students. *EDUCAUSE Quarterly*, 4, 61–65. Retrieved from <https://er.educause.edu/articles/2006/1/the-embedded-librarian-program>
- Moore, M. G. (2013). The theory of transactional distance. In M. G. Moore (Ed.), *Handbook of distance education* (3rd ed., pp. 84–103). Abingdon, UK: Routledge.
- Olivares, O. (2010). The sufficiently embedded librarian: Defining and establishing productive librarian-faculty partnerships in academic libraries. *Public Services Quarterly*, 6(2–3), 140–149.
- Perna, L. W., Ruby, A., Boruch, R. F., Wang, N., Scull, J., Ahmad, S., & Evan, C. (2014). Moving through MOOCs: Understanding the progression of users in massive open online courses. *Educational Researcher*, 43(9), 421–432.
- Perna, L. W., Ruby, A., Boruch, R. F., Wang, N., Scull, J., Evans, C., & Ahmad, S. (2013). *The life cycle of a million MOOC users*. University of Pennsylvania MOOC Research Initiative Conference, December 5–6, Arlington, TX. Retrieved from [https://www.gse.upenn.edu/pdf/ahead/perna\\_ruby\\_boruch\\_moocs\\_dec2013.pdf](https://www.gse.upenn.edu/pdf/ahead/perna_ruby_boruch_moocs_dec2013.pdf)
- Raica-Klotz, H., Giroux, C., Gibson, Z., Stoneman, K., Montgomery, C., Brinson, C., Singleton, T., & Vang, K. (2014). “Developing Writers”: The multiple identities of an embedded tutor in the developmental writing classroom. *Praxis: A Writing Center Journal*, 12(1), 21–26.
- Schulte, S. J. (2012). Embedded academic librarianship: A review of the literature. *Evidence Based Library and Information Practice*, 7(4), 122–138.
- Sharma, P., Kumar, K., & Babbar, P. (2014). Embedded librarianship: Librarian faculty collaboration. *DESIDOC Journal of Library & Information Technology*, 34(6), 455–460.
- Shumaker, D., Talley, M., & Miervaldis, W. (2009). *Models of embedded librarianship final report: Prepared under the Special Libraries Association research grant 2007*. Retrieved from [http://www.talleypartners.com/wp-content/uploads/2013/10/Models-of-Embedded-Librarianship\\_FinalReportRev-copy.pdf](http://www.talleypartners.com/wp-content/uploads/2013/10/Models-of-Embedded-Librarianship_FinalReportRev-copy.pdf)
- Simpson, O. (2012). *Supporting students for success in online and distance education* (3rd ed.). New York, NY: Routledge.
- Thorpe, M. (2002). Rethinking learner support: The challenge of collaborative online learning. *Open Learning: The Journal of Open, Distance and e-Learning*, 17(2), 105–119. <https://doi.org/10.1080/02680510220146887a>.
- Woods, R. H., & Baker, J. D. (2004). Interaction and immediacy in online learning. *The International Review of Research in Open and Distributed Learning*, 5(2), 13.
- Yin, R. K. (2014). *Case study research: design and methods* (5th ed.). Los Angeles, CA: Sage.
- York, A. C., & Vance, J. M. (2009). Taking library instruction into the online classroom: Best practices for embedded librarians. *Journal of Library Administration*, 49(1–2), 197–209.