

EMBEDDED LIBRARIANS: TRANSFORMING THE LIBRARIAN'S ROLE FOR SCIENTIFIC RESEARCH ADVOCACY IN THE DIGITAL ERA

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ABSTRACT

This paper explores how embedded librarianship can use the available technologies to support and enhance participatory teaching, learning and research experiences in academic libraries. This is a conceptual paper of the embedded librarians in their quest to amplify the support for research in this digital era in Malaysia. The study ratifies a view from Khasiah (2015) that a significant way of supporting research as a librarian is to engage in the research practice and to participate in knowledge creation rather than merely managing and providing information for the research and researchers. The study will report on findings about the perception of academic librarian's roles in building on the vast increase in library user power brought on by the digital age and further assist the university's knowledge production in accordance to the national policies towards proliferation of scientific research. The emergence of embedded librarians in research will be able to optimize their librarianship skill and beyond, especially via lifelong learning process and profound attitude towards engaging in the scientific research. The transformation of roles as embedded librarians in research will enhance and further make librarians more relevant in this digital era. The theoretical basis employed is that of Boyer's model of scholarship as it is the affirmation that every learning process which involves support for research should start by the librarians appreciating the activities in scholarly communication. The involvement of embedded librarians in research will improve the current academic librarians' competency and practice for a better future.

Keywords: Embedded Librarians; Research Support; Digital Era; Scientific Research; Malaysia.



1. INTRODUCTION

As librarians look for methods to handle increasing volumes of multi formats of information and various researchers' need, several of them are turning to the model of embedded librarianship (Schulte, 2012; Berdish&Seeman, 2010) to establish and foster collaborative partnerships for learning. For an embedded librarianship to flourish and become an institution of growth with positive collaborations which could encourage confidence, empowering the librarian to become the right partner in teaching, learning and research is important. This paper explores how embedded librarianship can use available technologies to support and enhance participatory teaching, learning and research experiences in academic libraries.

The topic of embedded librarians in their quest to intensify the sustenance for research in this digital era is new to Malaysian librarians. Therefore, embedded librarians refer to the practise of collaboration and involvement in the scholarly communication process. In a nutshell, embedded are roles which librarians regularly do to support the researchers, scholars and post graduates.

Libraries are in the business of offering information services and information resourcesto its users. The implementation of new communication technology especially new media has bonded the users and library staff as there is an application of the two way communication process.

As librarians look for ways to permeate information, digital and new media literacies into authentic research tasks in the context of content area study and passion-based information-seeking needs, many librarians are turning to the model of embedded librarianship to establish and foster collaborative partnerships for learning. At the root of embedded librarianship is the establishment and growth of relationships that cultivate trust, enabling the librarian to become a true partner in teaching and learning.

2. LITERATURE REVIEW

A review of the theoretical literature on the ATR construct shows that very little agreement exists among the scholars and researchers on how the construct can be defined conceptually. As the construct develops and evolves over the years, scholars from the various disciplines give their own conceptual definitions as to how the construct should be conceptually defined.



2.1 Embedded Librarianship

Embedded librarianship is not a new notion. Some definitions are as follow:

- An embedded journalist is supposed to have better access to a story; an embedded librarian provides better access to the librarian and to the library's resources. (Hedreen, 2005)
- Brings the learning process in closer proximity to the scholarship on which the disciplines are based and to those that service it-librarians." (Dewey, 2004)
- Emphasised the importance of forming a strong *working relationship* between the librarian and a group or team of people who needs the librarian's *information expertise*." (Shumaker, 2012)
- "It is about the work of an academic librarian who participates in an *academic course* on an *ongoing basis*, teaching *information literacy skills*." (Models of Embedded Librarianship Final Report, SLA, 2007)

This was discussed and studied by many outside Malaysia such as Schulte (2012) who revealed that an "entire double issue of Public Services Quarterly was devoted to the topic in 2010" (p.1). ACRL even published a book on the topic (Kvenild & Calkins, 2011). In 2009, there was a published chronicle review of various ways in which librarians have been embedded, including course integrated instruction, participation in research teams, collaborations in scholarly communication initiatives, and physical location of librarians in academic departments (Kesselman & Watstein, 2009). Additionally, in 2009, the results of an indepth study of embedded librarianship were published as a result of funding from the Special Libraries Association (Shumaker & Talley, 2009). However, these ideas are not followed and considered by librarians in Malaysia (Khasiah, 2015).

Embedded librarianship is a model that embodies many possibilities for disrupting the stereotypes of a library as a warehouse of books rather than a dynamic commonplace site where learning and people shape the narrative of the library experience for a learning community whether it be a school or academic library (Hamilton, 2012). The idea of being an embedded librarianship is low in cost and may be use free as well as low-cost in teaching technologies to support and enhance participatory for creating delightful learning experiences in academic libraries. Many ways can be shown on how partnerships for learning were forged and the impact of these collaborative relationships on the understandings and experiences of learners of all ages.

A good conceptual paper may also build theory by offering propositions regarding previously untested relationships. Unlike, a purely theoretical paper, the propositions in a conceptual paper should be more closely linked to testable hypotheses and in doing so offer a bridge between validation and usefulness (Weick, 1989). The Mael and Jex paper does this with



workplace boredom, whereas the Sharma and Kirkman paper does this with empowering leadership.

By connecting with diverse groups of library users and assisting their needs, embedded librarians compel themselves to service in a very different way than they did in traditional one-shot user education classes. In this era, librarians are using the embedded model to become valuable collaborators, trusted instructors, and partners in shaping the curriculum and broad institutional goals beyond the boundaries of the library.

2.2 Scientific Research Advocacy

Research supporters (such as in e-commerce, mobile computing, cloud computing, big data and hyper-converged platforms and news/social media) convey a distinctive perspective to the research process, making scientific and advances more timely and effective for people. As an advocator, librarians participate in various activities; they incorporate the collective standpoint into the research enterprise and serve as a notification of the need for research focused on benefits and outcomes. Advocates likewise support the dissemination of technical advances that lead to new and better methods to improve any research. Meanwhile, bestowing to Fishbein (1967), attitude was conceptualised as “learned predispositions to respond to an object or class of objects in a favourable or unfavourable way” (Fishbein, 1967, p. 257).

Some of the activities involving research supporters are;

- a) Advise: Supporters develop recommendations and provide input on strategic directions or broad policy issues. Activities may include: Participating on formal advisory boards, speaking on panel discussions at meetings or conferences.
- b) Design: Supporters assist in developing or enhancing programs and activities. Their contributions often help in identifying barriers to implementation. Activities may include partnering with librarians on trial development.
- c) Review: Supporters evaluate and analyse research proposals and ongoing research projects. Activities may include: Participating in peer review panels
- d) Editing or translating scientific language in documents to improve readability for non-scientific audiences
- e) Disseminate: Supporters interpret and communicate research findings and scientific information for non-scientific audiences. Activities may include: Using scientific content to develop materials explaining research findings to different cancer communities, Sharing all types of knowledge sharing resources and publications through social media.



2.3 Supporting Scholarly Publishing

Research is important for the nation's development and also for librarians (Canadian Association of Research Libraries, 2007). Without the product of publishing, there will not be any books to buy. Thus, involvement from the initiation of a book to the finishing is something that a librarian should think about. As part of the entity in the university community, academic librarians should and could contribute to the university's missions and vision (Wiener, 2009). Academic librarians should not distance themselves from endeavour of knowledge production. They should be part of it. Ernest Boyer, an early supporter of "engaged scholarship," called for a set of transformations to lower the gaps between academic departments. Boyer proposed to open up new space for redefining the full scope of academic work. Thus, Boyer explored connections among the four dimensions of scholarship: teaching, discovery, application, and integration. The same dimensions were applied here in the study to emphasise how academic librarians can support the best environment by practicing four scholarship roles so that the scholars might relate differently to their teaching, discovery, application, and integration activities by collaborating with people and organisations beyond campus and ultimately directing their work towards larger, more complex, and more compassionate ends (Boyer, 1990).

2.4 Attitude towards Scholarly Publishing

Attitude studies received substantial responses from researchers globally. There are several reasons why research on attitudes is essential. First, attitudes are believed to influence behaviours, "We are talking here about accountability for example evidence of student achievement, transparency, a willingness to engage comparability and ranking issues (Eaton, 2007).

Second, a relationship between information literacy, attitudes and achievement has been shown to exist (Saunders, 2009). Furthermore, as stated by Zainab (2001), there is "an assumed inter-dependence between information collections in libraries and the services of the university and the faculty, which are both the producers and consumers of that information". However, in Malaysia, there is a lack of positive attitudes about scientific research among Malaysian academic librarians (Hamzah&Hisham, 2011) which results in only 5% of academic librarians writing and publishing.

Muniz, Batista and Loureiro (2010) further stated that there is evidence that attitudes influence knowledge sharing. Education researchers and policymakers have issued reports that



emphasise the importance of assessment and accountability for ensuring quality in higher education.

2.5 Scholarly Publishing Basics

Libraries are important features in a knowledge driven society. It made its point by accumulating and displaying collection knowledge which everyone should know (Oakleaf, 2010, p. 79). Furthermore, libraries promote democracy (Aabo&Audunson, 2002, p. 7) and suggested that the growing interest in knowledge comes from the idea of the things that knowledge can give to an organisation. Therefore, libraries as any other organisation, can use knowledge to improve profitability, drive innovation or refine products and services. Nonaka and Takeuchi's (1995) research into Japanese companies has led them to conclude that the source of Japanese success is continuous knowledge creation and production, which leads to successful organisations.

Academic librarians have the role as collaborators of learning and are evident that it may lead to better education (Kezar, 2005). They are also being part of the scholarly environment (Devlin, Burich, Stockham, Summey& Turtle, 2006). Therefore, libraries should not turn away from their responsibility to advocate their primary user; the researchers. Despite the evolution of library roles, Lougee (2002) significantly notes that the library keeps a distinct identity that holds special meaning for members of the academic community. To survive in a continuously changing information environment, academic librarians must find ways to become agile, flexible organisations (Giesecke& McNeil, 2004). Furthermore, Malaysia currently lacks some of the critical elements to support the knowledge economy. Amongst them are the lack of adequate awareness and skilled human resources, inadequacy of a knowledge economy, supportive education and training infrastructure, a lack of R&D capability, a relatively weak science and technology base, a deficiency in institutional support and info structure, a slowly evolving financing system, and a lack of technopreneurs (Govindan, 2000).

In recognition of these factors, the government throughout Malaysia have launched numerous initiatives since the 1970s to link universities to industrial innovation more closely. The Government wish to see Malaysians equipped with contemporary skills and the right mind set to face the challenging future of the rapidly changing world. Against the background of the regional hub of education as an economic strategy, international university rankings, the globalisation of education, proliferation of academic articles and journal impact factors academic librarians have to use fresh approaches of alliance-creation and partnerships. Now, there are diverse demands for packaging and desktop delivery of information. Most vital



scholarships in this area are related to customer focus and information literacy for researchers. Malaysia's policies that are related to education and training also emphasises the need to address the shortage of research and researchers and to enhance the quality of knowledge production.

The view of knowledge and related activities happening in the universities as a valuable organisational resource has been recognised and accepted by all. As such, "university's competence depends on its ability to create new knowledge, build on its capabilities platform, and make the capabilities more inimitable to achieve competitive advantage" (Liu, 2012, p. 114). Hence, the consideration of knowledge production thrives in universities is considered to be an imperative source of Malaysia's survival in this knowledge hungry society. The issues are vital to be addressed as the result will not only affect the university's standing and ranking but also the future of the academic librarian. The study put in context the contribution of the new production of knowledge as proposed by Gibbons, Limoges, Nowotny, Schwartzman, Scott and Trow (1994). For example, the evolution of distributed and collaborative forces have prompted libraries to be far more engaged in the processes of research, integrating content, tools, and services more intimately within scholarly communication workflows. Malaysian academic libraries have the most exciting environment to work with presently. This is a result of the world's universities ranking which saw all universities in Malaysia fighting very hard to stay on the top 100 world standings. The main indicators of these rankings constitute mainly knowledge production. Malaysian knowledge production in this study is defined as "explicit knowledge in all fields available in the form of publications such as journals and books".

3. METHODS

The target population for this study was the academic librarians (professionally trained library employees) from five research university libraries in Malaysia. The study employed a survey method using questionnaire to collect data. A response rate of 59 per cent was attained resulting in one hundred and thirty nine (130) usable questionnaires. All items are measured on Boyer's (1990) scholarship scale using a 7-point scale ranging from (1) strongly disagree to (7) strongly agree.



Table 1: Embedded Roles Scale Based on Boyer, 1990 (Source: Khasiah, 2016)

Variables	Dimensions	Number of statements	Cronbach's alpha
Embedded Roles	1. Teaching information literacy	9	0.953
	2. Research support activities	11	0.938
	3. Information consulting activities	10	0.938
	4. Publishing support activities	9	0.972
	Overall	39	0.957

4. RESULTS

The estimated regression equation is significant at the 0.01 level but a low R-square value (0.152) indicates a poor fit. Perception on research usefulness is not a significant predictor on the level of embedded roles of librarians. Between the two significant predictors, positive attitude towards research has a relatively higher impact than research anxiety on embedded roles. The coefficients indicate that positive attitude towards research ($p < 0.01$) and research anxiety ($p < 0.01$) exert a positive impact on embedded roles. In the regression analysis, the emphasis is on the impact of the four sub-dimensions of scholarship roles on attitude towards research.

Thus, a regression equation was estimated with attitude towards research as the dependent variable on the one hand, and the four dimensions of embedded roles (teaching information literacy, research support activities, information consulting activities and publishing support activities) as the independent variables. Only one of the four variables, involvement in publishing support activities is significant, implying that involvement in these activities has a positive impact on attitude towards research ($p < 0.01$). The estimated regression equation is significant at the 0.01 level but the low R-square value (0.019) designates a very poor fit.

5. CONCLUSION

This paper explored the embedded librarianship activities among Malaysian academic librarians. Embedded librarians are a group of persons who have become further involved in their support for research. The significance of this study is the progression of the useful movement in a librarian's role which is embedded librarianship. "Embedded librarianship" is a



situation where librarians use their existing skills and experience to enable users to capture all levels of knowledge. It is also a skill of "creating" one of the level in Bloom's Taxonomy.

By joining a rising movement in embedded librarianship to enhance the library user's motivation in research and scholarship, librarians can directly contribute to knowledge creation and production (Williams & Winston, 2003). This study provided some positive signs of a proactive strategy from academic librarians to support various Malaysian governments' initiatives such as MyRA. The strategy is pertinent to chart the provision which librarians have shown in support of their university in the Malaysian education scenario as the place for a better knowledge production habitat. This is also intended to clearly communicate the academic library's direction and priorities for supporting scientific research, which is the top strategic priority for Malaysian research universities.

Engaging in Research Support Activities

Malaysian universities strived to present the right attitude to satisfy the information needs of academic library users. Information literacy is one key component of collaboration done by librarians to support the learning activities in order to optimise the learning experience of graduates. These are done daily by offering the right activities so library users can have the most effective and meaningful consultations when working with academic librarians. Thus, user education could be offered as an integrated module instead of each module done separately. This is referred to as the integrated user education module and this module has been successfully tested at the library of Universiti Teknologi MARA Puncak Alam.

Not only the module has embedded elements but it was innovated with integrated components. At the end of every session, the participants with many levels of information literacy skills, were able to achieve the objective of the module which is multiple awareness and skills to support their needs throughout their university's years which could help them to graduate on time (GOT). The module is called the Integrated Embedded Library Skills (IntELS).



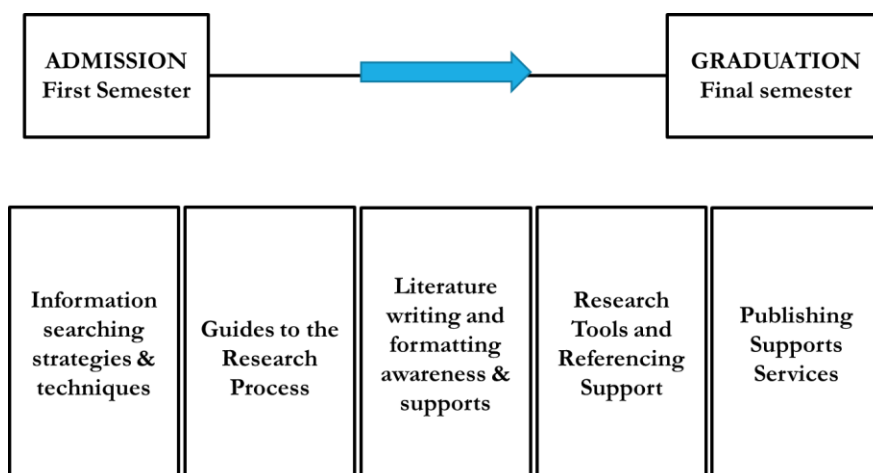


Figure 1. Integrated Embedded Library Skills for GOT (Source: Khasiah, 2015)

The IES module (Figure 1) is slightly different from the module done by Jones, Evans and Magierowski (2007). Their study strongly suggests that embedding information literacy into the curriculum is the most effective means of supporting student learning. In IES, librarians are embedding their current skills, knowledge and attitude to be in line with the need to increase the quality of knowledge produced by the institution. This framework supports students who are keen to be information literate graduates ready to be lifelong learners (Shapiro & Hughes, 1996).

Throughout the literature related to embedded librarianship, embedded librarians are often requested to be capable of a wide range of activities, including peer review panels, advisory boards, educational materials review, and scientific steering committees (Jones, Evans & Magierowski, 2007; Muir, & Heller-Ross, 2010; Schulte, 2012; Shumaker, 2012). They proposed that all librarians to have skills such as:

- a. Systematic literature review; Critically evaluate published research
- b. Citation analysis; Statistical tools/quantitative analysis;
- c. Expertise on choice of data sources and analysis
- d. Bibliometrics and scientometrics - evidence appraisal or critical appraisal of institution's own research output,
- e. Institutional mandate or strategic pelan - knowledge on choosing a publication avenue
- f. Advance the theory and practice of librarianship and keep faculty acquainted of new knowledge
- g. Knowledge on electronic and digital technologies, at least about Open Access,
- h. Almetrics - value of social impact of scholarly communication,



- i. Familiarity of tools to disseminate research output,
- j. Knowledge on predatory journals/ publishers and hijacked journals.

However, fostering an organizational atmosphere that values the perspectives remains the main contributions of research advocates.

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