Integrating Library Research Guides into the LMS for Maximum Effect

Joseph Taylor

Calvin T. Ryan Library, University of Nebraska at Kearney

Author Note

Correspondence concerning this article should be addressed to Joseph Taylor, Calvin T. Ryan Library, University of Nebraska at Kearney, 2508 11th Avenue, Kearney, NE 68847, United States. Email: taylorj7@unk.edu ORCID https://orcid.org/0000-0002-5762-6480

Abstract

This paper provides a model for instructional designers, faculty, and librarians to contribute to the integration of research guides into the learning management system (LMS) through the use of modules to maximize student access to relevant library resources. This approach allows Librarians to create modules in Moodle, Canvas, or Blackboard to easily share the entire research guide or relevant portions of the guide and/or modules with Faculty and Instructional designers.

Once created, modules can be easily embedded into the LMS allowing students to access individual guides or portions of guides that are relevant to their course work. It is possible to design modules that present information from the Research Guides that is relevant to a given topic or unit on a week-by-week basis. This method allows students to easily access resources relevant to their current studies without having to navigate away from the LMS. This approach also assists students in identifying learning resources, databases and journals that may be relevant to their future studies.

Introduction

Librarians have long sought to provide quality resources to faculty and students using research guides. Over the last 20 years, significant efforts have been made have been made to integrate research guides into learning management systems (LMS). The majority of research in the area has been focused on the value of Learning Tools Interoperability (LTI) for automated integration of research guides into the LMS, specifically focusing on student engagement with integrated library content.

While the current body of research reports varying degrees of success based on usage statistics and user feedback, there have been very few studies on embedding library research

guide and materials directly into the course shell of the LMS. This approach allows the librarian to deliver relevant resources and content directly to the student at their point of need in the course. This paper seeks to explore how librarians can create and distribute research guides and resources through the creation of modules that can then be shared with faculty or directly embedded into the LMS.

Literature Review

Efforts to integrate library resources into learning management systems (LMS) seek to streamline access and enhance student learning experiences. Librarians have often utilized HTML coding processes and LTI tools to seamlessly integrate research guides into the LMS in an effort to improve visibility and accessibility of resources (Fagerheim et al., 2017). The integration of research guides into the LMS seeks to addresses the challenge of library visibility within the system in an effort to promote greater resource utilization and thus improve student information literacy skills (Murray & Feinberg, 2020).

Various approaches exist for integrating library resources into the LMS, all aimed at enhancing resource accessibility and promoting information literacy (Bowen, 2012). Librarians can adopt Macro-Level, interactions between systems, and Micro-Level, partnerships between the librarian and individual faculty, approaches to integrate library resources into courseware (Shank & Dewald, 2003). It is specifically the Micro-Level approach that is the focus of the research for this paper. Guidelines for implementing research guides in LMS environments at the Micro level include strategic placement of resources, promotion of services, and regular updates to content ensuring easy access for students to quality materials (Bergstrom-Lynch, 2019).

Using LTI tools to integrate research guides into the LMS homepage, an example of Macro-Level attempts, via buttons or links attempts to streamline access to library resources during student projects in an effort to centralize course information and resources (Gilman et al., 2017). Most efforts to integrate library resources into the LMS seem to conform to this model, and thus a great deal of the research seeks to analyze this approach.

During the rapid transition to online learning brought about by the COVID 19 Pandemic, efforts were made to provide library content and instruction directly through LMS modules, facilitating faculty and student access to library resources (Smith et al., 2023). This new and experimental approach was briefly utilized as a stop-gap measure to ensure that students and faculty were supported during campus closure; however it was deemed unsuccessful and abandoned by the researchers shortly after return to normal campus operations (Smith et al., 2023). The approaches explored in this paper build upon this model and seek to improve direct integration of library resources into the LMS.

Manual matching and suggesting of research guides for inclusion in specific courses can enhance the effectiveness of library resources within the LMS and improve library-faculty relations while seeking to improve student resource utilization within the course (Clever, 2020). The creation of research guide modules embedded directly within the LMS offers a particularly beneficial approach in that it places library resources into a system that students use and interact with on a daily basis (Karplus, 2006). This approach for the direct integration of library content into courses provides students with seamless access to resources tailored to their curriculum needs. This method not only enhances the visibility of library resources but also ensures their relevance and accessibility throughout the learning process (Smith et al., 2023). In order for integrations of this nature to achieve success, it is crucial for academic librarians to engage

faculty and student in feedback to enhance user experience and overcome challenges in organizing materials.(Gibeault, 2018).

Creating, Embedding, and Sharing Research Guide Modules in the LMS

Canvas

As previously mentioned, Librarians can integrate a research guide into a Canvas course using LTIs to link to the library website or specific guides (Fagerheim et al., 2017). In addition to LTIs, librarians may also add entire guides/pages as external URLs or embedded guide sections as widgets (Instructure, 2020) . This can be accomplished using a content resource manager like SpringShare, or pages and widgets may be created independently in the LMS using HTML (Instructure, 2015). Widgets allow direct integration of relevant portions of the guide into course modules. Librarians can then upload modules to Canvas Commons or share them directly with instructors via Canvas's "Share" feature (Smith et al., 2023).

Blackboard

In Blackboard, there are several ways to share research guides and library resources. The easiest option is to use the Library Content folder, which lets faculty incorporate library materials directly into their courses (Blackboard, 2024a). As an alternative, faculty can elect to embed a librarian into the course. This is highly recommended as it will allow the librarian to directly place resources into the course according to point of need (CUNY, 2016). Additionally, librarians and faculty can share resources through "Passes" which allows for sharing of links to specific Blackboard Content Collection Folders (Blackboard, 2024b B). This method of sharing materials might be especially useful for faculty that only need access to resources for a brief period, e.g., a seminar course or special topic lecture series.

Moodle

Moodle as an open source LMS offers flexible design options, allowing institutions to choose from pre-packaged interfaces or customize the LMS extensively (Moodle, 2024a). Sharing research guides in Moodle is similar to sharing in Canvas. Faculty, using the external tool function can embed LTIs, link to the library website or add specific guides (LSU, 2024). If granted access by the institution, librarians can create and share modules directly with faculty using the Sharing Cart (Moodle, 2024b B). The Sharing Cart allows course modules to be shared across the platform without duplicating user data (Moodle, 2024b B). Librarians can also be embedded into Moodle in various roles to share resources with students as needed (Hamilton, 2024).

Creating widgets without the use of a content management system

In some scenarios, the librarian may not have access to a content management system (CMS) such as SpringShare. The method described in this section is directed toward librarians that may not have the budget to purchase such products.

In this method, a small amount of HTML coding may be necessary to create widgets that can then be embedded into the LMS. This is accomplished using frames along with the "inspect element" function of a web browser (E 4 E-Learning, 2021). The inspect element function is particularly useful in this case as it can reveal important such information such as the source URL, container HTML, and the relative size of the portion of the website that can be copied for use as a widget. Once this information is collected, it can then be coded into an iframe HTML command (E 4 E-Learning, 2021). The iframe command can then inserted directly into the html editor of an LMS page.

Figures 1 and 2 provide an example of this command in Canvas. It is important to note that this method relies on the capabilities of the LMS. In the case of Canvas, HTML commands are limited. Still, the method demonstrates that it is possible to embed a research guide or a portion of a research guide as a module using HTML in the LMS. It is also important to note that design changes to any webpages on which the module is based will necessitate changes to the individual module.

Figure 1

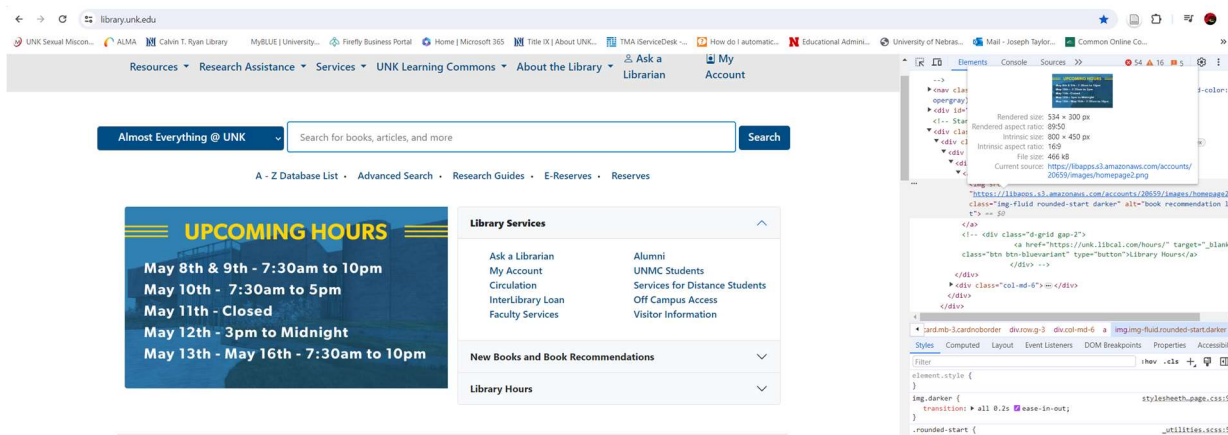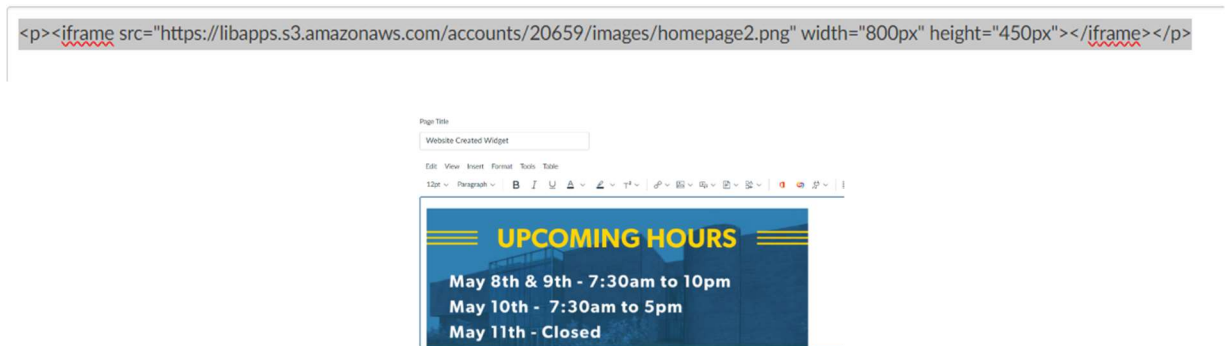*Example of using the inspect element tool to capture site information.*

Figure 2

*Example of html iframe code and resulting widget.*

Distribution of Modules within the LMS

Now that modes of LMS access, module creation and method of delivery have been established, it is essential to cover the distribution of created modules within the course shell. While previous research has posited that this is a highly labor intensive and time-consuming effort (Smith et. a, the author asserts the contrary. Creation of the research guide itself is often time consuming; however, modulization, as evidenced in the previous sections, is not a particularly complex process and distribution of the modules can occur rapidly through direct sharing with faculty or distribution through the LMS folders.

Figure 3 illustrates how LMS modules containing pages of research guides or widgets containing portions of the guide can be integrated directly into the course shell. When using this method effectively, students can access relevant information at point of need with reduced risk of information overload and without having to leave the course shell. In this example, library resources have been indented and labelled to make them easily identifiable. Without this identification, it is likely that students would not differentiate between library supplied materials and course materials based on appearance in the course shell.

Figure 3

A specific page of library research guide and widget embedded at point of need within a course module.
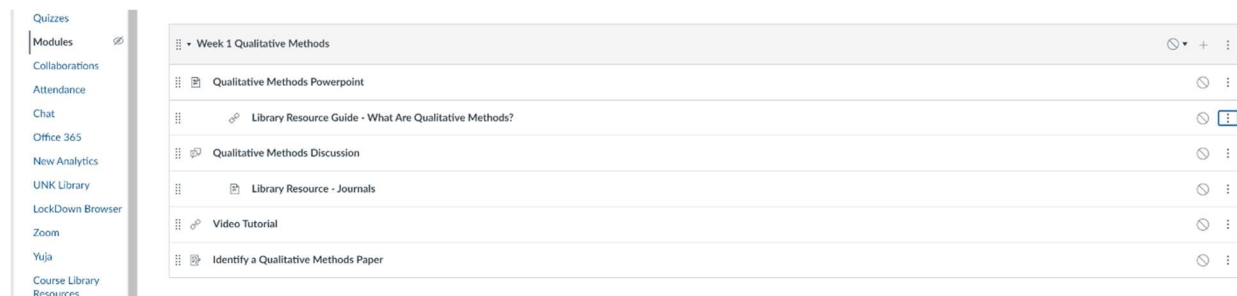
Figures 4 and 5 provide examples of the research guide page and widget in further detail. While Canvas has been used in this example, it is possible to repeat this process in Blackboard and Moodle. It took the author less than 10 minutes to create modules from the two portions of the research guide and embed them into the course shell.

Figure 4

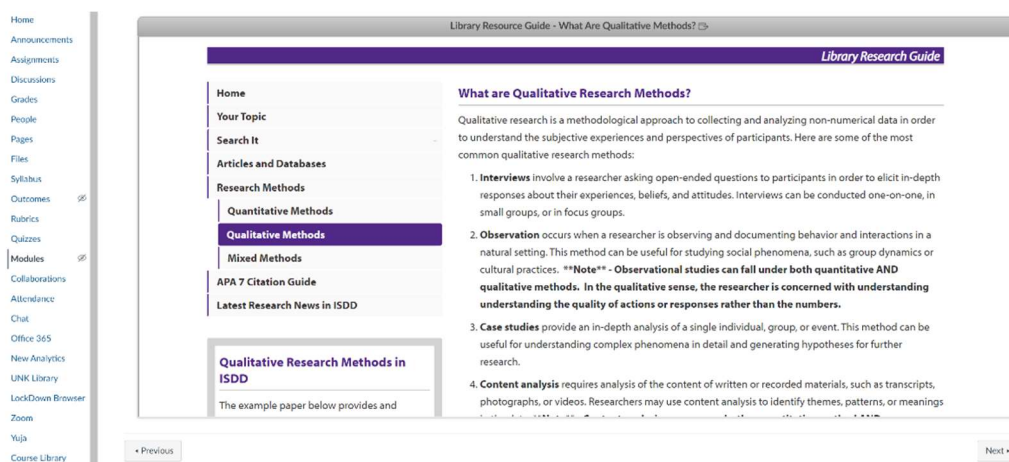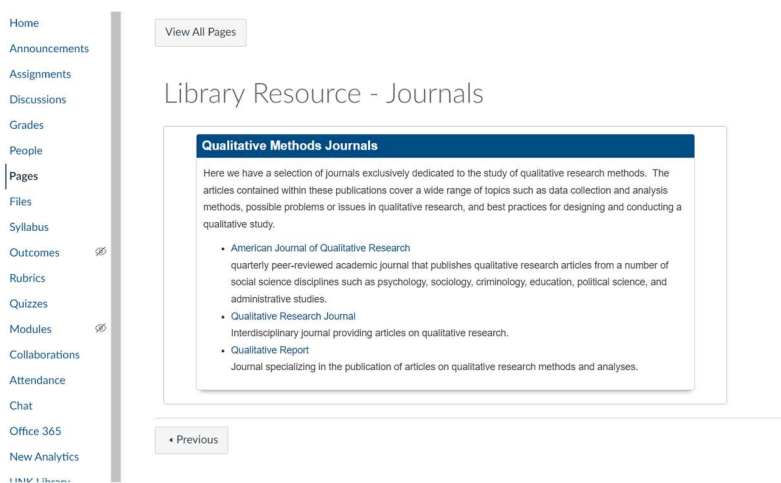*A specific page of the research guide embedded in Canvas LMS course shell.*

Figure 5

An embedded portion of the research guide as a widget within Canvas LMS course shell.

Implications for Future Research

The methods described in this paper provide a simple model to effectively customize and distribute library research guides directly into the LMS. Further studies are needed to evaluate the feasibility of this approach and its effectiveness as a model for distribution of library resources on a much larger scale.

Conclusion

The current body of research has shown that libraries have focused on LTI tools as models for distribution of research guides and resources within the LMS. While libraries have focused on integration of research guides and resources in the LMS using LTIs, there have been few studies regarding direct embedment of library resources as learning modules within the course shell of the LMS. In the past, this method of delivery has been particularly difficult given the limits of technology and limits of the LMS as a mode of distribution.

The method proposed by the author seeks to demonstrate that the limits of both technology and LMS capabilities have indeed shifted. Direct integration of library research guides as course modules is no longer as time-consuming a process as once perceived and merits further study. This practice places specific library resources and guides relevant to the course material at the students point of need presenting an opportunity to improve utilization of library resources and learning outcomes.

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