

Embedded Tutors in Online IT courses: Perceptions of students' comfort, confidence, and utilization of a pilot program

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Abstract

The pilot study reflects perceptions from higher education students in an experimental new online teaching program at a mid-sized Southeastern United States University. The research focused on the effectiveness of an embedded tutoring pilot program in online and hybrid learning management systems (LMS). The research was focused on information technology students' (n=46) perceptions of comfort, confidence, and utilization of the pilot program to understand its value in student retention. The research notes student comfort, confidence, and utilization of the program. Additionally, it supports the notion that the program can construct student retention aspects by reducing anxieties and stress from distance learning spatial inconsistencies. The findings suggest similar results or parallel considerations of students' perceptions in the literature on embedded librarian programs. However, the results fail to mirror students receiving more significant levels of self-efficacy.

Keywords: Embedded tutor, course-integrated supplementation, online IT instruction.

1. INTRODUCTION

Today, the world is still at war with the Corona Virus. The force of the virus's nature has forever changed all aspects of everyday life, including our education systems. Faced with unknown limitations and anxieties, Universities and k-12 programs across the globe were forced to change their pedagogical methodologies to influence business continuity.

The classroom mechanics are simply sustained through innovative information systems channel

changes. Silva (2015) explains the speed at which society's forces create technology acceptance and institutes immediate and direct modification in an information system is conditional by human organizations unless under duress of high priority in all spheres of society.

Early adopters and the conditions under which humans or organizations adopt information systems are still a high priority of scientific research and vastly undetermined (Venkatesh & Davis, 2000). Initially, Rogers' (2010) stated that innovations "require a lengthy period, often of

many years, from the time they become available to the time they are widely adopted" (p. 1).

Nevertheless, past research claims universities sustained at an extraordinarily high rate of acceptance and speed. And to enhance their information systems through changes and adoptions, faculty were forced to recognize the immediacy of students' needs and have empathy. To increase comfort and confidence and reduce anxiety, faculty continuously attempt to introduce new online innovations in the classroom to students that are currently recognized as retention success factors, like the embedded librarian programs. The embedded librarian programs entrench library staff members into online courses as contributors to curriculum instruction and support, offering immediate student assistance (Spangler et al., 2020). Shadowing the success levels of the embedded librarian program, new information systems models have sprung into the learning management systems (LMS) modeling to further navigate difficulties in students' transitions to online education. This paper will seek to understand students' perceptions of one new information system channel in the LMS design-embedded tutors.

2. LITERATURE

Evolving Offerings in LMS

The belief that there is a more efficient process to learning motivates many to seek new innovative ways and tools. Scholars continue to study early adopters on how, why, and under what conditions innovation and new technology can and will be used (Venkatesh & Davis, 2000). Innovative technologies provide many amenities that traditional courses may not offer.

Scholars have argued about technology use in the classroom as far back as the invention of the teaching machine by Sidney Pressey (Petrina, 2004). The "Automatic Teacher" was designed to automate testing by letting students assess themselves and was considered the first Learning Management System (LMS) developed. Although the machine was a success, the concept was never socially accepted because of the lack of commitment by other scholars and was never officially used as a proper tool (Petrina, 2004).

Early adoption of an innovation or new technology was often decided by demographics and luxury investment rather than essential needs. Reardon et al. (2019) stated that many variables could contribute to a successful education. Technology can be difficult to acquire if school budgets are

low and if they reside in low socioeconomics, they are not always treated equally (Allen, 2019). Economics, demographic, segregation, and school opportunities are crucial in attaining innovative technology. White (2019) stated that students with special needs, color, and low income suffer inequities and are less likely to acquire technology without pressure or additional support.

Many researchers argue that technology is not always the answer and can be deconstructive rather than constructive. Turkle (2011) stated that technology addiction and misuse are often asserted when implementing technology. Turkle (2011) asserted that the phenomenon of smartphone obsession is argued as a nuisance in society and creates a social disconnect and promotes a breakdown in personal communication. Sukenick (2012) agrees that technology minimizes interaction and suppresses interactions. Spangler (2015) argued that society has become desensitized to technology's tribulations and has become riddled with anxiety, nervousness, and fear of disconnect to the point of disillusionment.

Teachers are learning to embrace and benefit from innovative technology to support and enhance pedagogy (Martin et al., 2019). Innovative technology has decreased the literacy gap, increased student retention, and opened doors for underprivileged or disenfranchised (poor or geographically challenged) students. It has additionally allowed virtual courses to exist that would not be possible that allow students to gain access to the best education. Access and limitations of schools caused by the presence of Covid-19 have demonstrated that innovative technology is an asset that all schools need. Nowicki (2020) stated that the Covid-19 pandemic demonstrated that many schools were not fully prepared for a disaster recovery plan for long-term instruction. Other concerns are the disconnect between students from both online instruction and administrators. There are various challenges when implementing, utilizing, and innovative technology in a classroom, especially in rural low socioeconomic areas (Carr-Chellman et al., 2020). The acceptance of LMS provides a valid option.

Technology advancements in learning environments differ and provide multiple arguments for the best results. Finding the appropriate balance for the student can be challenging. An example is embedded library instruction. Some schools are responding to the detachment and physical separation often felt by

students and faculty from asynchronous classes caused by the attributes of online and distance education innovations (Spangler, 2020). Spangler (2020) stated that innovative technology using real-time or near real-time metric instruments facilitated by faculty members via LMS provides support for asynchronous online learning. Spangler argues that these innovative embedded apps reduce distance learning anxieties. According to Garcia-Castelan et al. (2021) and Spencer and Temple (2021), traditional teaching, also referred to as brick and mortar or face-to-face (F2F), provides many benefits over online. Garcia-Castelan et al. (2021) stated that many students prefer the F2F learning process because it promotes teacher and group activities. Spencer and Temple (2021) found that students' performance and attention to detail are more focused when learning F2F.

Educational learning platforms are continuing to evolve. LMSs are a critical platform for online approaches such as blended, web-based, and distance learning and provide an extension to the traditional F2F class experience. Many students do not have the opportunity to attend traditional F2F classes because of lifestyle obstacles. Innovative technology provides many amenities that traditional courses may not offer. To evade life obstacles, students seek a more favorable learning method that can offer the flexibility of time restrictions, easy access, and user-friendly environments. According to Spangler (2019) and Spencer & Temple (2021), LMS technology advancements provide a user-friendly medium that centralizes the academic workspace via the internet, allowing students to utilize personal technological devices while supporting academic learning.

Learning management systems were designed to support distance learning by connecting multiple students in different geographical areas forming a virtual classroom (Tumbleson, 2016; Spangler, 2019; & Spangler et al., 2020). According to Tumbleson (2016) and Spangler (2019), the programs increase awareness and exposure to embedded librarian resources and leads to improved library resource utilization and support for students in LMS-based courses. Embedding librarians directly into LMS provides essential support for educators and creates a virtual library and support liaisons for the student. Tumbleson (2016) stated that implementing the embedded librarian and support may vary and is primarily controlled by faculty. Tumbleson (2016) explained that some university libraries adopt a macro process using relevant links and subject templates to focus on the relevant subject using

a LibGuide, research template or post a link to the university library website URL with contact information. However, with the collaboration of faculty members, Tumbleson clarifies that students can be provided a collaborative approach through shared resources where the Librarian seamlessly interacts with the student on course-related research assignments. According to Tumbleson, most LMSs provide customizable features to create embedded librarian pages and widgets that offer easy quick-link contact resource information.

Educators could make use of this easy-to-build LMS addition to a course. Educators understand the findings could increase student retention in their courses and add a level of comfort. Spangler's (2019) research noted students embraced the program. The researcher found the online connection to provide a level of self-efficacy-building attributes and overall academic confidence in abilities to succeed in a course. Additionally, educators should note the embedded programs in the online learning management systems' courses offered a perception of confidence building, reduction in anxieties, and self-efficacy constructions for students. The program and past literature support the positive effects online students receive from having fingertip connectivity to distance learning support additives in learning management systems.

The Role of Embedded Librarians During a Global Pandemic

The limited research in the area focuses on the empowerment of embedded programs and how they offer student support, anxiety reduction, confidence building, and self-efficacy perceptions. The immediacy for student support in distance learning was realized because of the disenfranchised students during the Global Pandemic. All students were immersed in online learning modalities and left stranded for traditional services. The literature focus originates in the scholars Edwards et al. (2010), that discovered the power of embedding a librarian in a hybrid style course. The research presented a new level of confidence, comfort, and anxiety reduction. This research spurred many notes to educators about the importance of utilizing services in LMS-supported courses when online services originally became conceptualized. Although the pilot program had attributes of face-to-face connectivity, the LMS supported the information transfer to the students only as a mechanism to foster disenfranchised distance students' access to resources. This finding was similarly concluded in later research directed

entirely on the online students' perceptions of embedded resources such as the librarians (Spangler, 2019; Spangler et al., 2020; and Spangler, 2020).

Edward et al. (2010) described the term embedded as being borrowed from the "practice of embedding journalists in combat zones during military conflicts and refers to complete integration" (p. 273). The online embedded support "supplement" creates ease for students to navigate finding resources in a distance learning situation. The goal of Spangler's (2019) research sought first to understand the students' perceptions of the embedded pilot program. And secondly, the research seeks to understand if the students' perceptions are congruent with literature on embedded librarians' effects in an online course: confidence, comfort, anxiety reduction, and self-efficacy building in students. The findings concluded that the embedded programs offered to students in face-to-face and hybrid courses were congruent to Edward's et al. findings and levels of confidence building.

Interestingly noted, the students' perceptions from both pilot programs ran congruent. Students in Spangler's (2019) research remarked the fingertip assistance of the embedded aspects created self-efficacy and a willingness for students to stay in a course rather than withdraw. The embedded programs build confidence in research abilities, assignments, and anxiety reduction from feeling detached from a traditional university setting with face-to-face services. Research from Spangler et al. (2020) highlighted the positive perceptions of having an embedded librarian in an online course created considerable amounts of student confidence. Additionally, Spangler's (2020) research on graduate students found that embedded online programs and assistance increase student comfort and confidence in their abilities to research and complete complex assignments.

Embedded librarians are a modern innovation to facilitate a greater experiential learning environment for students taking online university courses—either partially (hybrid) or completely (Alsuqaih, 2020). Spangler et al. (2020) concluded that the "students' perceptions of embedded librarians in online and hybrid courses" are positive. The pilot study on embedded programs establishes that students' perceptions of online experiences offer a higher learning experience with "comfort, interpersonal, academic confidence, confidence in abilities, and confidence in researching and citing sources for assignments" (p. 173). Similarly, Matteson's

(2020) research on students in virtual classes concluded a strong need for embedded online university services. The scholar concluded that the university's need for embedded services would grow significantly post-pandemic, and higher education pandemic models will continue to change education globally (Matteson, 2020).

Furthermore, the scholar suggested that "librarians are quickly moving their instruction online to manage the restrictions of social distancing because some or all of their students are learning remotely" and to diminish the bottleneck effect that instructors or tutors might experience (Matteson, 2020, p. 24). Congruent in findings, Steele's (2021) research further forecasts the necessity of the new online services provided by embedded librarians—because of the COVID-19 pandemic changes in educational pedagogy. The University of Southern Mississippi researchers concluded that the expanding growth of virtual students—post-pandemic—is why universities need to further programs and increase dynamic support methods for students.

Embedded Librarianship Assisting Skilled Concentrations

Guillot & et al. (2010) study analyzes the relationship between nursing faculty and embedded librarians. The researchers stated that students must maintain a relationship with the subject, faculty member, and their embedded instructor for the most direct assistance or relevance. Spangler et al. (2020) offered this finding and suggested that embedded librarians can offer students confidence, comfort, and self-efficacy from the solid relationships and trust built from the programs. Similarly, Franzen and Sharkey (2021) examined the impact of the services of embedded librarians on undergraduate nursing students and their ability to configure information skills. Franzen and Sharkey (2021) study stated that embedded programs typically or "rarely have a long-term impact on students' research behavior or skill sets" with the standard in-person library sessions (Franzen & Sharkey, 2021, p. 311). Additionally, recent research concludes that embedded librarians are unnecessary for students (Wu et al., 2021), especially those studying nursing. Wu et al. hypothesized in the research that specialized fields of concentration whereby embedded librarianship do not have a focus on the studies nor applications (like the nursing or general health care practitioner fields) yield difficulties for librarians to foster student success and measure of value.

Other research contrasts Wu et al. (2021) considerations suggesting a greater need for

embedded librarians with specific concentration knowledge in developing student relationships too (Menard & Misquith, 2021). Additionally, Chan's (2021) study findings counter the argument that embedded librarianships can offer nursing students numerous benefits. Specifically, the researchers observed that students interacting with field-focused nursing-specific embedded librarians could assist nursing students in improving (Franzen & Sharkey, 2021, p. 311).

Students' Perceptions of Embedded Tutor Services in Online Higher Education Courses

Shumaker (2014) stated, that traditional in-person university professionals "need to be fully "read into" the nature of the work being performed" and "need a full understanding of the nature of the task and the goals of the effort" to accomplish the objectives of the services to gain student satisfaction and confidences (p. 5). The scholar suggests that virtually embedded "relationships" require trust and partnership between the faculty and liaison to incorporate support into the curriculum properly. Embedded tutors are a modern innovation to facilitate a more experiential learning environment for those who have university online courses (Alsuaqih, 2020). Spangler et al. (2020) research "demonstrated courses with embedded programs offer students a "higher rate of comfort, interpersonal, academic confidence, confidence in abilities, and confidence in researching and citing sources for assignments" (p. 173).

Similarly, Mendoza and Kerl (2021) research uncovered students perceive online embedded tutoring as being "meaningful" to users and further the "academic and social benefits" of online learning (p. 69). Other scholars suggested that the pandemic forced immediate changes in online services to students, creating new avenues for experimental collaborative adventures in pedagogy with new grounds for software supplementation and training (O'Brien, 2020; Sonn et al., 2021). Mendoza and Kerl's case study determined which tactics for integrating tutors and other resources throughout online courses have been employed. The authors even affirm that embedded tutors can be multi-functional and express that "governments should allocate funding to employ more qualified teaching tutors to assist lecturers with the teaching and grading workload" (Sonn et al., 2021, p. 12). Matterson (2020) furthered this regard by noting embedding tutors in online courses allows academic service managers to "manage" social distancing or "learning remotely" to diminish the bottleneck effect instructors, librarians, or specialists might experience (p. 24).

To build retention in classrooms and successful strategies, faculty must incorporate embedded tutors' viewpoints into their curriculum (Shumaker, 2014). The research suggests that when faculty build curriculum and assessment material with embedded tutors, the process creates trust, establishes tutors' roles in learning, and strong collaboration for student success. Mendoza and Kerl (2021) suggested that embedded tutors need to have an essence of self-efficacy or buy-in when developing and working with faculty in an embedded tutor program on the macro level. The researchers' study questioned how embedded tutors could foster student self-efficacy through online course services. The researchers concluded that "the use of embedded tutors can be a beneficial approach for learning" to support students (p. 69). But the researchers noted that "studies are needed to explore further the academic and social benefits of embedded online tutors and training" (p. 69). Their findings determined that the services are ultimately meaningful to the users. Still, future studies are needed to determine the perceptions of students and the enhancement embedded tutors in an online course can yield for determining learning outcome value.

3. METHODOLOGY

An IRB-approved survey instrument was administered to a small pilot population (n=46) of undergraduate and graduate students attending information technology courses at Middle Georgia State University. With permission from past research by Spangler (2020), the pilot instrument was designed to understand students' perceptions of the new embedded tutoring program in information technology courses. The study was conducted to understand the students' perceptions of a new pilot program. The program's focus and intentions were to recognize the support an online embedded tutoring program could have on student success and course retention. Additionally, the study focus pondered if the new pilot program addition to an online course would have similar findings of comfort, confidence building, and anxiety reduction as its parallel program uncovered by having an embedded librarian.

The survey instrument was administered through a Google Form after the conclusion of face-to-face and online courses to reduce population bias and increase validation. The survey was not tracked and required consent before starting the research. Any participant under 18 years old was not permitted to participate. All participants completed the instrument entirely. The after-

course assessment allowed participants to have reduced measures of worry about grade conflicts from open comments and the overall value assessment of the embedded tutoring program. Additionally, open comments were allowed to capture additional notes of participants' thoughts. To further create validity, the researcher allowed an external reviewer to verify the data's findings and the researchers' conclusions. Overall, the research focused on aspects of synchronized tutoring learning supplements to an online information technology course.

The pilot program was an addition to two online information technology project management courses. Both courses had multiple supplemented online attributes, including an embedded librarian and an embedded tutor. The instrument was administered to online distance learning management system sections and one hybrid model. Students were alerted to the pilot program during the instructor's introductory course video overview. The embedded tutor's contact information and scheduling link were also inserted into the LMS' home page as a sidebar widget application. The easy-to-find widget's construction allowed students to click on the embedded tutor's image and resource link to immediately contact the tutor and Student Success Center's helpline for scheduling. Additionally, the embedded tutor constructed a "how to schedule" appointment and prepared for the tutoring session video. The video link was located inside the LMS course homepage widget, allowing students to watch and understand the program's services easily. Students were directly linked upon completing the instructions to an online scheduling tool and instructional video for learning about online interfacing for tutoring.

RQ1: Do students perceive embedded tutoring programs as offering educational benefits?

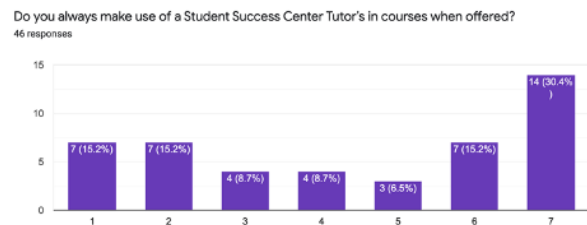
4. FINDINGS

The 23-question instrument received 46 complete responses out of the 53 requested responders. The instrument received no incomplete responses. Hence, no responses were eliminated from the analysis to forecast a complete representation in the pilot study. All participants were asked to sign a voluntary consent form before completing the instrument. The population received a nearly equal value in gender (male n=59% and female n=41%). Most participants were information technology students (n=61%); however, some responders were from other majors as the courses were available to any significant (business n=13%, School of Arts and

Letters n=5%, School of Aviation n=2%, School of Health and Natural Sciences n=13%, School of Graduate Studies 5%, and School of Education and Behavioral Studies 1%).

The instrument first assessed participant utilization of university success services to understand the responders' acceptance level, knowledge, and comfortability with university services. Participants noted a relatively neutral level of acceptance for utilizing the university's Student Success Center (24% extremely unlikely, 17% unlikely, 18% neutral, 19% Extremely likely, 22%). Responders feel "neutral" by stating they had abilities to use the Success Center's tools (13% extremely unlikely, 24% unlikely, 31% neutral, likely, 17% Extremely likely, 15%). And interestingly noted, the participants noted similar neutral considerations about asking for research help at a Student Success Center (24% extremely unlikely, 11% unlikely, 19% neutral, likely, 22% Extremely likely, 24%). Although, the population considered it a greater comfort (n=50%) to use the Student Success Center for virtual tutoring and mentoring (24% extremely unlikely, 13% unlikely, 13% neutral, likely 25% Extremely likely, 25%). But interestingly noted, the traditional tutoring methods (not online) from the center remained neutral (22% extremely unlikely, 16% unlikely, 18% neutral, likely, 20% Extremely likely, 24%). Overall, this noted a polarized perception of using the Success Center.

Figure 1
Participants' acceptance level of embedded tutors



Open Educational Resources and Tutors Tools

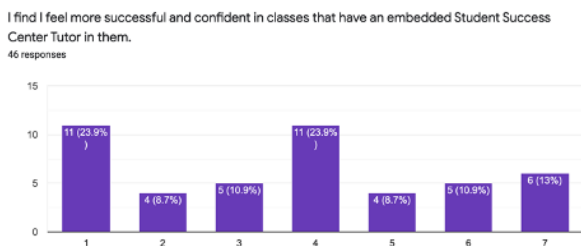
Interestingly, participants were again neutral about accepting and using free Student Success Center's instruments (37% unlikely, 13 % neutral, 50% likely) designed around open educational resources and asking for help in finding these instruments (44% unlikely, 13 % neutral, 43% likely). Additionally, the participants had a neutral desire to understand how to use the tutor's open educational resource (OER) designed tools for learning APA Style correctly (19%

extremely unlikely, 24% unlikely, 13% neutral, likely, 13% Extremely likely, and 31%). Although the majority did find value in using the tutor's OER tools to avoid plagiarism (24% unlikely, 18% neutral, 58% likely).

When directly questioned about perception levels of the new embedded tutoring program in online and hybrid courses (Figure 1), participants shadowed a (45%) level of acceptance. And a similar level of acceptance (45%) to use the embedded tutor for research help and again for virtual assistance on any subject matter (45%). Interestingly, participants found a negative level of motivation (60%) or self-efficacy gains from having an embedded tutor in the courses. Because of these main findings, the scholars cannot state a clear and robust benefit and recognize the limited success of RQ1: Do students perceive embedded tutoring programs as offering educational benefits? However, the scholars' findings note that half of the population did feel that without the embedded tutor in the course, more participants would be likely to withdraw from a course (50%) although they may not use the services.

Figure 2

Participants' confidence with embedded tutors in classes



Nevertheless, the self-efficacy levels of the participants reflected a slight confidence level boost (53%) from observing the tutoring of the course learning management (LMS) shells. And they again observed a little confidence (37% unlikely, 13 neutral, 50% likely) for receiving a higher level of achievement on assignments from the services engaged. Interestingly noted, participants regarded their confidence levels (Figure 2) as not increasing dramatically from the presence of an embedded tutor in the hybrid or online course (LMS) shells (24% extremely unlikely, 9% mostly unlikely, 11% unlikely, 23% neutral, likely 9%, most likely 11%, extremely likely 13%). Straightaway, when asked if an embedded tutor's photograph listed in the (LMS) online would offer comfort or confidence,

participants found no value (75% of the population states the image is unlikely to have an impact).

5. DISCUSSION

The researchers first acknowledge the low population in the pilot study program cannot be generalized to a larger population. Hence, the findings here in the discussion are limited in scope and overall determination. Secondly, the researchers note the population perceives the program as having limited merits of educational benefits suggesting RQ1 is not fully supported. Nevertheless, the research does suggest a universal academic need to create avenues and methods for student success in online and hybrid courses in the future, which was noted in prior research (Alsuqaih, 2020; Spangler et al., 2020; O'Brien, 2020; Sonn et al., 2021). The pilot program started at the height of the pandemic and introduced a new line of technology integration and innovations in online higher education courses.

Slightly over half the population found value in the pilot embedded tutoring program. Nearly half of the participants found value in the program, which suggests a need for embedded tutoring options. Interestingly, the respondents showed similar findings to past research on embedded librarian programs (O'Brien, 2020; Spangler et al., 2020; Sonn et al., 2021). In this pilot study, participants seemed polarized. Half of the respondents did agree with the past embedded librarian research that the virtual aspect increases confidence (50% likely) and comfort levels (50% likely). But, most importantly noted, respondents stated the tutoring program could create motivation in online students (60% likely). This regard was mirrored in Mendoza and Kerl's (2021) research, suggesting students found the programs "meaningful" (p. 69). Mendoza and Kerl's research suggested that embedded tutors need an essence of buy-in when developing and working with faculty in an embedded tutor program on the macro level. This buy-in effect creates a greater essence in the classes and allows students to regard the program as valuable to their academic journeys.

However, in other research, online images of embedded librarians offered greater comfort, self-efficacy, and regard for having success in an online course (Spangler et al., 2020). Interestingly noted in this study, participants' perceptions demonstrated no real value with the virtual photographs of an embedded tutor in the courses (75% of the

population find the program has no value). This note may be directly related to the fact most of the embedded tools being used in the LMS were driven by the embedded librarian's program and not the embedded tutor, who focused on teaching students how to utilize the instruments to the height of effectiveness. Additionally, self-efficacy levels were demonstrated higher in other studies (Spangler et al., 2020; Mendoza and Kerl, 2021; Sonnet et al., 2021), suggesting a need for deeper understanding and further understanding research into student's self-efficacy levels in online courses offering embedded programs.

The researchers suggest creating a more extensive and diverse population to further this study. Furthermore, the researchers suggest cross-examining the instrument against populations outside of the information technology field of study, whereby the students are vested in technology resources, instruments, and tools widely and prolifically in their natural course study habits.

6. CONCLUSION

The research was focused on information technology students' (n=46) perceptions of comfort, confidence, and utilization of the pilot embedded tutoring program. Secondly, the paper sought to understand if the pilot program could create student retention. The researchers' observations can't be fully supported or generalized to state that the embedded tutoring program is perceived to have a propensity for online student retention. However, the self-efficacy levels of the participants did reflect a slight confidence level boost (53%) from observing the tutoring option inside the course learning management (LMS) shells. Additionally, the research noted positive student course comfort, assignment confidence, and a slight emphasis on self-efficacy from program utilization. Unfortunately, the findings on embedded tutors are not as merit worthy as other embedded programs like the use of embedded librarians (Spangler, 2020; Spangler et al., 2020).

Lastly, the researchers note the population perceives the program as having merits of educational benefits suggesting RQ1 is supported, but from only slightly over half of the population. And only half of the respondents found the embedded tutoring program merit worthy and successful in aiding their academic journey. Nevertheless, despite the polarized findings, the research can conclude that embedded programs are needed in LMS course

shells for online students' benefits. According to the findings, the researchers can conclude that students perceive embedded tutors as having some value in their overall education experience. The research supports the notion that the embedded tutoring program can construct student retention aspects by reducing anxieties and stress from distance learning spatial inconsistencies for at least half of its population. Nevertheless, the research does suggest a universal academic need to create avenues and methods for student success in online and hybrid courses in the future, which was noted in prior literature (Alsuqaih, 2020; Spangler et al., 2020; O'Brien, 2020; Sonn et al., 2021).

7. REFERENCES

- Carr-Chellman, A., Raney, T., & Campbell, D. (2020). Gem state inequalities: Examining the recent history of Idaho public school funding. *Journal of Education Finance*, 45(4), 407-426.
<https://www.journalofeducationfinance.com/>
- Chan, J. (2021). Exploring digital health care: eHealth, mHealth, and librarian opportunities. *Journal of the Medical Library Association*, 109(3), 376-381.
<https://doi.org/10.5195/jmla.2021.1180>
- Charles, L. H., & DeFabiis, W. (2021). Closing the transactional distance in an online graduate course through the practice of embedded librarianship. *College & Research Libraries*, 82(3), 370-388.
<https://doi.org/10.5860/crl.82.3.370>
- Edwards, M., Kumar, S., & Ochoa, M. (2010). Assessing the value of embedded librarians in an online graduate educational technology course. *Public Services Quarterly*, 6(2-3), 271-291.
<https://doi.org/10.1080/15228959.2010.497447>
- Fields, A. (2020). Embedding librarians in online tertiary classrooms: A new model for learner support. *British Journal of Educational Technology*, 51(4), 1373-1385.
<https://doi.org/10.1111/bjet.12892>
- Franzen, S. R., & Sharkey, J. (2021). Impact of embedded librarianship on undergraduate nursing students' information skills. *Journal of the Medical Library Association: JMLA*, 109(2), 311-316.
<https://doi.org/10.5195/jmla.2021.913>
- Garcia-Castelan, R. M. G., Gonzalez-Nucamendi, A., Robledo-Rella, V., Neri, L., & Noguez, J.

- (2021). Face-to-face vs. online learning in engineering courses. *Proceedings - Frontiers in Education Conference, FIE, 2021-October*. <https://doi.org/10.1109/FIE49875.2021.9637177>
- Guillot L, Stahr B, & Meeker BJ. (2010). Nursing faculty collaborate with embedded librarians to serve online graduate students in a consortium setting. *Journal of Library & Information Services in Distance Learning*, 4(1/2), 53–62. <https://doi.org/10.1080/15332901003666951>
- Martin, F., Gezer, T., & Wang, C. (2019). Educators' perceptions of student digital citizenship practices. *Computers in the Schools*, 36(4), 238–254. <https://doi.org/10.1080/07380569.2019.1674621>
- Matteson, A. (2020). Building instructional and resource options during COVID. *Teacher Librarian*, 48(2), 4–27. <https://search.ebscohost.com/login.aspx?direct=true&AuthType=ip,shib&db=tfh&AN=148603696&site=eds-live&scope=site>
- Menard, L., & Misquith, C. (2021). Providing real-time resources in support of LGBTQ+ and HIV+ populations as information experts on the ECHO hub team: A case report. *Journal of the Medical Library Association*, 109(4), 631–636. <https://doi.org/10.5195/jmla.2021.1262>
- Mendoza, D. F., & Kerl, E. (2021). Student perceived benefits of embedded online peer tutors. *Learning Assistance Review (TLAR)*, 26(1), 53–73. <http://www.nclca.org/tlar>
- Nowicki, J. M. (2020). Disaster recovery: COVID-19 pandemic intensifies disaster recovery challenges for k-12 schools. *GAO Reports*, 1–14. <https://www.gao.gov/products/gao-21-62r>
- O'Brien, C. (2020). The COVID-19 Rollercoaster. *The Learning Assistance Review*, 25(2), 49–59. <https://link.gale.com/apps/doc/A637465134/AONE?u=anon~24116e42&sid=googleScholar&xid=078a7f7a>
- Petrina, S. (2004). Sidney Pressey and the automation of education, 1924-1934. *Technology and Culture*, 45(2), 305–330. <https://doi.org/10.1353/tech.2004.0085>
- Rogers, E. M. (2010). *Diffusion of innovations* (5th ed.). Simon and Schuster.
- Shumaker, D. (2014). The Embedded librarian innovative strategies for taking knowledge where it's needed. Information Today. <https://books.infotoday.com/books/Embedded-Librarian/Chapter-1.pdf>
- Silva, P. (2015). Davis' Technology Acceptance Model (TAM) (1989). In M. Al-Suqri, & A. Al-Aufi (Eds.), *Information Seeking Behavior and Technology Adoption: Theories and Trends* (pp. 205-219). IGI Global. <https://doi.org/10.4018/978-1-4666-8156-9.ch013>
- Sonn, I. K., Du Plessis, M., Jansen Van Vuuren, C. D., Marais, J., Wagener, E., & Roman, N. V. (2021). Achievements and challenges for higher education during the COVID-19 pandemic: A rapid review of media in Africa. *International Journal of Environmental Research and Public Health*, 18(24). <https://doi.org/10.3390/ijerph182412888>
- Spangler, S. (2019). Integrating information literacy in IT courses: Information technology students' perceptions of embedded librarians. *Online Journal of Applied Knowledge Management*, 7(2), 29–40. [https://doi.org/10.36965/ojakm.2019.7\(2\)29-40](https://doi.org/10.36965/ojakm.2019.7(2)29-40)
- Spangler, S. C. (2020). IT graduate students' perceptions of embedded librarians. *Issues in Information Systems*, 21(4). https://doi.org/10.48009/4_iis_2020_73-80
- Spangler, S.C., Casper, D. & Stanfield, D. (2020). Online students' perceptions of embedded librarians. *Issues in Information Systems*. 21(1), 167-176. https://doi.org/10.48009/1_iis_2020_167-176
- Spencer, D., & Temple, T. (2021). Examining students' online course perceptions and comparing student performance outcomes in online and face-to-face classrooms. *Online Learning Journal*, 25(2), 233–261. <https://doi.org/10.24059/olj.v25i2.2227>
- Steele, J. E. (2021). The role of the academic librarian in online courses: A case study. *The Journal of Academic Librarianship*, 47(5). <https://doi.org/10.1016/j.acalib.2021.102384>
- Tumbleson, B. E. (2016). Collaborating in research: Embedded librarianship in the learning management system. *Reference Librarian*, 57(3), 224–234. <https://doi.org/10.1080/02763877.2015.1134376>

Venkatesh, V., & Davis, F. D. (2000). A theoretical extension of the technology acceptance model: Four longitudinal field studies. *Management science*, *46*(2), 186-204. <http://www.jstor.org/stable/2634758>

Wu, L., Betts, V. T., Jacob, S., Nollan, R., & Norris, T. (2013). Making meaningful connections: evaluating an embedded librarian pilot project to improve nursing

scholarly writing. *Journal of the Medical Library Association: JMLA*, *101*(4), 323-326. <https://doi.org/10.3163/1536-5050.101.4.016>

Allen, D. B. (2019). The forgotten Brown case: Briggs v. Elliott and its legacy in South Carolina. *Peabody Journal of Education*, *94*(4), 442-467. <https://doi.org/10.1080/0161956X.2019.1648954>