Powerful Partnerships: The Worth of Embedding Masters Level Library Science Students in Undergraduate Classes

Kim Becnel
Department of Leadership and Educational Studies, Appalachian State University.
Email: becnelke@appstate.edu

Robin A. Moeller
Department of Leadership and Educational Studies, Appalachian State University.
Email: moellerra@appstate.edu

Jon C. Pope
Department of English, Appalachian State University. Email: popejc@appstate.edu

While experiential learning is recognized as an important pedagogical approach in Library and Information Science education, logistical hurdles can make implementing meaningful experiential projects challenging, especially in online courses. This paper will describe a project in which Library Science instructors were able to overcome common obstacles in experiential projects by partnering with instructors of undergraduate courses and leveraging the university's online course management system. In the Embedded Librarianship Project, graduate-level, online Library Science students at Appalachian State University functioned as virtual embedded librarians for several undergraduate Composition classes. This article provides an analysis of quantitative and qualitative data that describes the Library Science students' perception of this project and their learning experience. In the process, the paper will illustrate the pedagogical value of providing Library Science students with intensive and extended experiential learning opportunities such as this one. It will also highlight the benefits received by the undergraduates by virtue of having access to embedded librarians. From this project, Library Science educators might find inspiration to create meaningful collaborative ventures in their own universities and programs.

Keywords: Experiential learning, online learning, embedded librarianship, reference librarianship, bibliographic instruction, information literacy, writing (composition), research papers, collaborative teaching

Introduction

Library Science educators understand that students need opportunities to merge practice and theory and to gain meaningful workplace experience in order to cultivate a professional identity. Thus, many LIS programs incorporate experiential learning, either in the form of internships or service-learning assignments, into their curriculum (Brzozowski, Homenda, & Roy, 2012). Unfortunately, internships are often isolating experiences that students are asked to navigate on their own as their studies are nearing completion. As an increasing number of LIS courses are offered online, service-learning projects can be difficult to arrange and manage. Notwithstanding these difficulties, it is possible to provide distance education students

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with intensive and powerful experiential learning opportunities. If Library Science instructors are willing to collaborate with on-campus partners and to make use of their university's online course management interface, or other means of online communication, significant opportunities are available to provide meaningful service learning experiences for online students.

One such project was conducted by Appalachian State University's Master of Library Science program. This program offers a fully online curriculum to prepare school and public librarians to serve in North Carolina and surrounding areas. In the fall of 2013, the Library Science program implemented a significant curricular change to one of its core courses, Information Sources and Services. The major course project was transformed from an extended role-play assignment in which students alternated between playing the roles of librarian and patron in real-time scenarios into an intensive service-learning project. To enhance the contextual richness of the project, Library Science faculty collaborated with an instructor of Rhetoric and Composition in the English department at Appalachian State University. This instructor teaches first- and second-year Composition courses. These are required courses for all University undergraduate students and aim to improve students' writing, critical thinking, and research skills. Their collaboration yielded the Embedded Librarianship Project (ELP). In this project Library Science students enrolled in Information Sources and Services worked for five to six weeks as embedded librarians in Composition courses during the 2013–2014 academic year. Each Library Science student was randomly assigned four to five Composition students for whom they would serve as librarian.

Due to the fact that most of the Library Science students resided too far away to meet and work on campus, they were given access to the Composition class' online course management interface (Moodle). They were encouraged to communicate with students through this platform, as well as to take advantage of other online tools such as Google Hangouts, Facebook, etc. For the ELP, the Composition students were asked to produce an essay of approximately 2500 words on a topic of their own choice. They were required to incorporate a minimum of six (for first-year) or eight (for second-year) research sources. Of these resources a minimum of three (for first-year) or six (for second-year) had to be peer-reviewed scholarly sources. For their part, Library Science students were asked to create at least two bibliographic instruction tools for their assigned groups of students. They had to determine the subject and format of these tools based on perceived student needs, to conduct reference interviews with each student in their group, and finally, to make themselves available throughout the duration of the project to field simple reference queries. The assignment was designed to benefit aspiring school media specialists and public librarians. It provided students with ample practice at bibliographic instruction of the kind performed in schools. The assignment also developed experience conducting reference interviews and undertaking ready reference queries of the sort they might encounter when working at a public library reference desk.

Related Literature

Experiential Learning

According to Kolb's (1984) theory of experiential learning, informed by Dewey, Lewin, and Piaget, the experiential learning process is about adapting to one's environment. It is a continuous process informed by experience, reflection on that experience, and repeated integration of new information and ideas gained through that experience and reflection. The experiential learning process encourages students to see themselves as constantly

learning, embracing new experiences and growing as a result of both successes and failures (Kolb, 1984). Currently, one of the most prevalent experiential learning approaches employed in higher education is service-learning, a subcategory of experiential learning which combines academic course content with community service (Bringle & Hatcher, 1995). Service-learning has found a place in the curriculum of many disciplines, including history (Straus & Eckenrode, 2014), education (Hildenbrand & Schultz, 2015), philosophy (Mallick, 2014), science (Simon *et al.*, 2013) and more.

Library Science instructors also have a strong tradition of implementing service-learning, The literature provides many examples of LIS service-learning endeavors, including, for example, developing websites for public libraries (Elmborg, Leighton & Huffman, 2001), providing technology literacy training (Albertson and Whitaker, 2011), and selecting and preparing items to stock the library of a local jail (Pierce, 2006). Increasingly, instructors who teach primarily in online environments have been finding ways to incorporate service-learning as well, working in Second Life and with the Internet Public Library (Agosto, Abels, Mon & Harris, 2009; Sanchez, 2009). Research shows that students participating in these types of projects "have reported greater professional readiness and confidence; increased appreciation for LIS education; appreciation for the opportunity to step into the role of practitioner; and a more thorough understanding of both the practitioner role and community" (Brzozowski, Homenda, & Roy, 2012).

Even more common than service-learning courses are practicum or internship experiences that provide students a short period of practice in the field before they are permitted to graduate (Ball, 2008). Additionally, Library Science instructors have also developed learning opportunities that depend heavily on experiential learning theory yet fall outside of both the traditional service-learning model and the traditional internship/practicum model. Garrett (1997) describes a successful project in which cataloging students became temporary copy catalogers for their university library. Wolske, Rhinesmith, and Kumar (2014) analyze a Community Informatics Studio in which student design projects are based on current, real-world cases informed by field visits and discussions with outside experts. In a similar way, O'Brien, Freund, Jantzi, and Sinanan (2014) describe a project in which LIS students volunteer to participate in on-campus peer-tutoring programs, assisting other students with their research needs while keeping detailed notes about their processes and interactions.

Embedded Librarianship

Embedded librarianship is an approach used for teaching information literacy skills which abandons the model of librarian waiting patiently at the reference desk for students to appear at random with isolated questions. Instead it places the librarian right in the classroom to build relationships with students and to provide support by teaching information literacy skills at opportune moments throughout the course (Shumaker, 2012). Hines (2013) notes that the concept of embedded librarianship actually originated in the very formation of academic libraries, which were within academic departments and run by faculty members. While these local libraries provided the "ultimate in embedding into the faculty and curriculum," (p. 4.) the model was ultimately unsustainable as departments and collections continued to grow. Once academic libraries became centralized, the role of liaison librarians was developed as a means to make much-needed connections between academic departments and library services. Eventually, beginning in the late 1980s and early 1990s, the importance of including librarians in curricular instruction was recognized and librarians' roles came full circle, with staff

moving, in Hines' words, "out of the centralized libraries they [had] landed in" and "back into the academic spaces in which they originated" (p. 4). Rowland and Knapp (2015) note that the term "embedded librarianship" emerged in the early 2000s. In this decade it became increasingly common to see librarians becoming true members of classroom communities, embedding themselves in courses in order to better understand and meet the long term information needs of the students. More recently, librarians have also embedded in distance and virtual communities by using course management software to offer reference services outside of the library (Rowland & Knapp, 2015).

Research has begun to demonstrate the value of the embedded librarian approach. It shows students tend to make more frequent and better use of library resources when there is a librarian embedded in their course (Jacobs, 2010; Makins & Shumaker 2012; Kumar & Edwards, 2013). Donaldson and Valenti (2014) clarify the distinctions between reference librarians and embedded librarians, stressing that embedded librarians will offer more subject-specific research guidance and are more likely to function as collaborative partners with instructors when it comes to course and assignment design. Others agree that embedded librarians are most successful when they function as true instructional partners and collaborators (Figa & Bone, 2009; Owens & Bozeman, 2009).

Embedded librarianship has been touted as an ideal solution for supporting students in an online environment (Tumbleson & Burke, 2010). The online embedded librarian is technically responsible for creating a library space within an online course. Naturally, "within this definition, the levels, scope, and degree of involvement or engagement by the librarian vary considerably" (Frederiksen & Phelps, 2014, p. 3). Librarians can simply provide links to resources, they can create tutorials, or they can engage with students in synchronous or asynchronous environments. According to Lorenzetti (2012), embedded librarians are most useful in courses that incorporate a great deal of writing as well as "introductory courses in which a good first experience with a librarian can change the way the student views the resource person" (p. 2). Supporting that finding, Heathcock's (2013) study of student perceptions of embedded librarianship in an online community college English course revealed that the librarian's service were well-used and helped to produce high quality writing assignments.

Though the effectiveness of embedded librarianship is generally accepted, scholars and critics point out the demanding nature of the work of embedded librarians, warning that staffing and employee time need to be carefully considered before implementing this service model (Bonnand & Hansen, 2012). One possible solution to the workload issue is to have Library Science students engage in experiential learning projects in which they are given the task of providing certain classes with research assistance. Lillard, Norwood, Wise, Brooks, and Kitts (2009) describe such a project in which MLS students at Emporia State University were embedded into online graduate-level nursing courses at the University of Central Missouri. Although this particular situation did not produce the desired results because the nursing students decided not to avail themselves of the librarians' services, the concept is still a promising one.

Information Literacy in the Composition Classroom

Composition students are expected to possess strong information literacy skills, yet many instructors do not address the issue directly, and the lack of discussion concerning best pedagogical practices in the professional literature is often noted (Artman, Frisicaro-Pawlowski, & Monge, 2010; McClure, 2009; Brady, Singh-Corcoran, Dadisman, & Diamond, 2009). Unfortunately, this lack of attention can

support the misperception that conducting research is an easily learned skill, less complicated, nuanced, and even useful than writing (Artman *et al.*, 2010, p. 96). As a result, much research instruction is relegated to librarians leading single instructional sessions. This often results in students learning the limited logistics of searching a particular set of databases, so the opportunity for modeling and teaching true research skills—which involve creative thinking, analysis, evaluation and synthesis—is forfeited (Sult & Mills, 2006, p. 369).

Some scholars and teachers are calling for a change in this approach. For example, McClure (2009) notes that Composition courses are increasingly held responsible for teaching students critical thinking and information literacy skills and that "administrators and composition teachers must make this 21st century literacy work even more a part of their curricula, most logically through a close partnership with their academic and research librarians" (p. 71). Sult and Mills (2006) advocate for this as well. Noting the striking similarity between the Council of Writing Program Administrators (WPA) Outcomes for First-Year Composition and the Association of College and Research Libraries' Information Literacy Competency Standards for Higher Education, they began a project at the University of Arizona in which embedded librarians in first-year English courses worked with students on regular information literacy assignments connected to their writing projects. In a similar vein, at the University of Windsor in Ontario and at Utah State University, groups of administrators, librarians, and Composition instructors successfully design, coordinate, and deliver instruction (Jacobs & Jacobs, 2009; Bowles-Terry, Davis & Holliday, 2009).

The Problem and Related Research Questions

Because recent research has pointed to the effectiveness of embedded librarianship, particularly for students in courses that emphasize writing and research, it is not surprising that more and more Composition and writing instructors are collaborating with librarians to ensure that students develop solid critical thinking and information literacy skills. However, most university libraries lack sufficient staff to assign librarians to work closely and extensively with all students in these types of courses. Thus, placing Library Science students in these courses as embedded librarians can, in theory, provide the Composition students with in-depth library assistance they may not otherwise have had. It can also provide the Library Science students with a valuable experiential learning opportunity, enabling them to experience and learn from both successes and failures and to develop confidence in their professional skills.

Instructor observations and extremely positive end-of-course evaluations for the 2013–2014 academic year, the timeframe in which the ELP was implemented, suggest that the ELP was a positive and worthwhile experience for most participating Library Science students. These surface-level indicators prompted the instructors to take a careful, objective look at the student perception of both the ELP process and the students' confidence in their skills to determine whether the ELP should be continued and, if so, how it might be improved.

In particular, the researchers wanted to know:

- How confident did the ELP students feel about their reference skills compared to previous students whose major course project involved a series of role-plays?
- What components of the ELP experience resonated most deeply with students? What topics came to the forefront for them during the experience, and what did they learn about these issues?

Methods

To discern whether students who experienced the Embedded Librarianship Project felt less prepared, as prepared, or more prepared to conduct reference work than students who did not, the researchers deployed a survey in spring 2014 to all current MLS students, including those who took the reference course before the Embedded Librarianship Project was implemented (those students who had engaged in extended online role-plays) and those who took the class after the ELP was introduced. Additionally, the researchers gathered and coded all of the reflection essays written by students who completed the ELP. The researchers individually coded these essays, allowing themes to emerge from the data. Once the researchers performed their individual work, they then compared codes, resolved differences, and analyzed the results to better understand the students' reactions to the project and what they felt they learned through the experience.

Although the focus of this particular paper is the Library Science student perspective, it is important to note that the researchers assessed the information literacy gains of the 45 Composition students to determine whether the embedded librarians were making a difference in their learning. Before beginning the research essay project, the Composition students completed a self-reported Information Competency Assessment Instrument which was adapted from a tool developed and tested by Marshall (2010). The students took the assessment again once they completed their research projects, at which point the researchers computed the difference between the pre and post average score for each item. These values were then compared to the test results of a control group of 23 students who had taken the same course without the embedded librarian component.

Findings

Student Survey Results

Twenty-six LIS students responded to

Table 1. Student Self-Assessment after Completing LIB 5020: Information Sources and Services (Reference Class).

(1 = not at all prepared; 2 = not well prepared; 3 = somewhat prepared; 4 = well prepared; 5 = very well prepared)	Embedded Librarian Students' Average Responses	Role-Play Students' Average Responses
Felt prepared to perform reference work in the real world.	3.92	4.30
Felt prepared to create and conduct bibliographic instruction sessions or tools for use with various groups of patrons.	4.38	4.23
Felt prepared to conduct a thorough reference interview to discern a patron's information needs.	3.77	4.77
Felt prepared to provide patrons with answers to reference questions on a variety of topics.	3.77	4.38
Felt prepared to help patrons find and access materials.	4.31	4.46
Felt prepared to create and employ tools such as surveys or feedback forms to patrons to solicit feedback on my work as a reference librarian.	4.15	3.92
Felt prepared to adapt my work style to the timetable, personality, and needs of my individual patrons.	4.15	4.30

the email call for participation with the survey link: 13 who had taken the class when the major assignment was an extended role-play and 13 who had participated in the Embedded Librarianship Project. Students were asked to indicate on a scale of 1–5 (with 1 being not all prepared and 5 being very well prepared) how prepared they were to handle various elements of reference work. The results of the survey as a whole indicate that most students who took LIB 5020 felt somewhat to very well prepared to handle all of the elements of reference work they were asked about. However, the students who had experienced the role-play assignment reported feeling better prepared in most elements of reference than the students who took part in the Embedded Librarianship Project.

Student Reflections

The researchers coded and analyzed the final reflections of all students (22) participating in the ELP in fall 2013 and spring 2014. Eighteen of the responses characterized the ELP experience in a mostly positive manner, while four of the reflective essays cast the experience as decidedly negatively, focusing mainly on their frustrations and disappointments. The most striking observation arising from the essays was that, regardless of whether they interpreted the overall project as negative or positive, students wrote equally about successes and failures and about the strengths and weaknesses they discovered in themselves as they discussed their experiences, with 11 students writing about successes/strengths, 11 discussing failures/weaknesses and 10 students including both in their reflections. Strengths and success included successfully helping students narrow and refine topics to find appropriate resources and teaching them to more effectively search the library databases and the Internet themselves. Things that students perceived as failures and weaknesses included: providing too much or too little research help, not communicating effectively with students, difficulty with APA or MLA citation style, and attempting to exert too much control over the students' research process.

Discussions of mistakes made or weaknesses uncovered were often coupled with either specific or general ideas for improvement or expressions of appreciation for the real-world context of the project that made room for mistakes and the learning that can come from them. For example, one student found fault with a "lack of thoroughness" in one of her bibliographic instruction tools, citing as the reason her "unfamiliarity with APA citation." She concluded: "This remains an area for me to work on and improve my skill."

In the words of another student:

> As educators and life-long learners, we get used to a sense of comfort, a sense that every moment of learning is something for us to conquer by showing our mighty skills—but learning happens best when you make mistakes, and most importantly, when you reflect on those mistakes and make changes.

What is clear from the student reflections is that they experienced both significant successes and significant failures in the course of the Embedded Librarianship Project. Although they recorded both in their reflections, they tended to elaborate more on what they learned through mistakes or disappointments. This suggests that these negative aspects of the experience are more likely as important, or perhaps even more important, than the successes, in the development of their understanding of the research process.

In addition to discussing their successes and failures, a significant number of students (9 explicitly and many others implicitly) concluded that the embedded librarianship experience was not what they expected real-world reference work to be like. In essence, they thought that they would have a clear mission, fulfill that mission, and then receive laudatory feedback on the good job they were sure that

they would do. What many of them discovered instead was that the precise role and duties of the reference librarian were more nebulous than they had imagined and that patrons did not always behave the way one might expect or want them to. For example, several students worried that they had provided too much help to their students by presenting them with annotated lists of sources rather than delivering instruction on how to find these sources. Others wrote about being uncertain about whether providing help with narrowing a topic or reframing a thesis sentence was within the scope of their duties.

Nine of the students and aspiring librarians indicated that they were currently teachers in the K-12 environment and therefore used to some degree of control in their relationships with students. They wrote about the difficulty they had relinquishing this control in their role as reference librarian. Many of them mentioned the difficulty of remaining approachable and helpful without imposing deadlines or unsolicited instructions or advice when the

Table 2. Selected Results of the Information Competency Assessment Instrument.

	Pre-Project Average	Post-Project Average	Change
	(1 = Strongly Disagree, 7 = Strongly Agree)		
I am certain that I can use the information I find.			
ELP Sections	4.77	6.00	+1.23
Control	4.91	5.17	+0.25
I know how to broaden or narrow a search using Boolean operators.			
ELP Sections	2.45	4.71	+2.26
Control	2.48	4.08	+1.60
It is easy to interpret the results of a search.			
ELP Sections	4.05	5.24	+1.19
Control	4.39	5.24	+0.85
I am not sure how to use an index (e.g., catalog, database, etc.).			
ELP Sections	2.77	2.38	–0.39
Control	3.35	2.72	–0.63
I understand the organization of materials in libraries.			
ELP Sections	4.18	5.10	+0.92
Control	4.04	4.56	+0.52
Sometimes my research question or topic changes depending on the information I find.			
ELP Sections	4.91	5.24	+0.33
Control	5.09	5.48	+0.39
I know what processes would be most helpful in finding information.			
ELP Sections	4.86	5.86	+1.00
Control	4.91	5.60	+0.69

Composition students, it turned out, did not ask for help, waited until the last minute, or were uncommunicative or unclear in their communication. While some students' writing demonstrated that they had made, or at least understood, the necessary shift in function from controlling to supporting when transitioning from the role of teacher to that of the reference librarian, others did not get past detailing the ways in which the Composition students had not met their expectations and thus, in their minds, this sabotaged their ELP experience.

Composition Students

As shown in Table 2, the ELP group realized greater improvements than the students in the control group in their confidence in finding information they could use, using Boolean operators to control a search, interpreting search results, understanding the organization of libraries, and knowing which processes to use to find information. Both groups showed a similar increase in willingness to change a research question based on information found during the research process. The only category that the control students showed statistically significant greater improvement in than the ELP students was the ability to use an index for searching.

The researchers also tallied the number of total sources as well as the number of peer-reviewed sources used by each student in their final papers. The essays from the ELP sections averaged 9.04 sources, while the essays from the control section averaged 8.0 sources. Furthermore, essays in the ELP sections averaged 2.88 peer-reviewed sources, compared to 1.65 peer-reviewed sources in the essays from the control section.

Discussion

While the small sample size prevents us from drawing any substantial or detailed conclusions from the survey data, the results do allow us to perceive a general pattern. While all students reported feeling confident in their reference skills, the role-play students' responses, on the whole, indicated a greater degree of confidence than the ELP students' responses. Reflecting on the different experiences these students encountered, the researchers theorize that the role-play students may have professed a greater sense of confidence in their reference abilities than the ELP students because the controlled environment of the role-play assignment. In this assignment students took turns playing librarians and patrons, and it was designed to ensure they were always successful. Strategic safety nets abounded. Each scenario was centered on a particular pathfinder that the student playing librarian had time to study in advance, all questions were piloted to be sure they could, in fact, be answered with this particular pathfinder, and librarian mentors waited in the background in case a student faltered. Though the role-play students were anxious about being put on the spot, the restricted nature of the interactions meant that these students completed the exercise with a feeling of success and a great deal of confidence in their reference skills (see Matzen, Becnel, & Purpur, 2013).

The students participating in the Embedded Librarianship Project, on the other hand, were working with real undergraduate students who were often uncertain of their own information needs and whose queries were therefore unpredictable and often required complicated, extended responses. They also had their own unique personalities and motivations, meaning that some utilized their librarians a great deal while others saved their questions for the last minute or did not ask any. Therefore, it is possible that the ELP students, having experienced the combination of failures and successes that always accompanies experiential learning endeavors, came out of the experience with a more realistic self-assessment than their peers. Finally, it is worth noting here that the composition students' varied behaviors

produced differing workloads for the student librarians, some light and some very heavy. This is a phenomenon that reflects the variation in workload requirements described in previous research about embedded librarianship (Bonnard & Hansen, 2012; Lillard, Norwood, Wise, Brooks, & Kitts, 2009).

Although the ELP students rated themselves as less confident in their reference skills than their counterparts who participated in a role-play assignment, the qualitative data suggest that the ELP students perceived the experience to be a valuable one and that they came away with substantial confidence in their skills tempered by an appropriate awareness of how much they still had to learn. In what amounts to a powerful affirmation of Kolb's (1984) theory of experiential learning, students encountered and described both successes and failures, elaborating more on the discoveries inspired by their mistakes than their victories. In addition, it seems clear that the students' preconceived notions of what reference work would be like were disrupted by the ELP experience. What emerged from their reflections was a set of questions—about the duties, priorities, and boundaries of the reference librarian—that demonstrates a deep engagement with and desire to understand the reference process and their own role in it. This engagement, reflection, and desire to keep learning is consistent with successful experiential learning (Kolb, 1984) and suggests that this is an assignment worth continuing.

Acknowledging the fact the ELP will inevitably bring complex issues involving the nature of reference work to the forefront, we can provide appropriate readings on the ambiguities and difficulties of the reference process to help students understand that a reference librarians' duties, priorities, and relationships with patrons are influenced by many factors, including, for example, a given library's mission statement, the librarian's job description and skill set, and patrons' needs and desires. These preliminary conversations can then inform discussions of how reference work might look in the context of the Embedded Librarianship Project, giving the instructor the chance to guide the class through some potentially difficult or confusing situations that they might encounter ahead of time. Finally, the student experience would likely be improved by increasing the amount of time we devote to discussing the students' ELP experiences in class, allowing students more opportunities to engage in dialog about their successes and failures, their expectations and uncertainties, with other students and the instructor.

Conclusions

The data analyzed here suggests that experiential learning projects can help advanced Library Science students come to a deeper understanding of the nature of reference work while they discover what their own strengths and weaknesses might be and identify future areas of growth. The high-stakes, real-world experience provided by such projects can provide insights that comparable assignments, such as role-plays, simply cannot offer. While there can be numerous logistical hurdles to coordinating long-term experiential learning projects, many of these obstacles are easily overcome when on-campus partnerships are fostered. The fact that most classes at a given university will run on the same calendar and employ the same technology interfaces mitigates potential problems in scheduling and communication. First- or second-year university classes requiring a substantial research component are ideal partners for projects such as these because new university students typically require a great deal of assistance as they are developing information literacy skills, and university libraries often lack the resources to embed professional librarians in all of these classes. Instructors of both classes involved in the partnership can incorporate requirements that students participate in the Embedded Librarianship Project

and provide a framework and structure to help students navigate the project successfully. With thoughtful assignment design and open channels of communication among instructors and students, projects like the ELP can be valuable for everyone involved: instructors and students alike.

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