FOSTERING INTERDISCIPLINARY COLLABORATION VIA LESSON STUDY

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This contributed paper will explore the collaboration between an undergraduate library instruction program and an English as a Second Language (ESL) program using the methodology Lesson Study. Well-suited to observing the accessibility and effectiveness of library instruction for international students from a variety of different language backgrounds and English proficiency levels, this paper will examine the history of Lesson Study and its use in the Western educational context through a review of the literature, provide a Lesson Study framework rooted in the literature and adopted to an academic library instructional context, and report data from the first of two rounds of implementing the methodology.

INTRODUCTION

Academic library and campus instructors have long collaborated to provide information literacy instruction to students. The format in which library instruction is traditionally provided ranges from last-minute library instruction requests and planned, one-shot sessions to course-integrated curriculum and embedded librarianship. While many such approaches to collaborative library instruction are written about in the literature, this paper reports on the use of Lesson Study, an underutilized collaborative methodology, as employed by librarians and English as a Second Language (ESL) instructors at the University of Illinois Urbana-Champaign.

Originating over 140 years ago in Japan and widely adopted across the Japanese education system since the 1950s, Lesson Study is a collaborative methodology or model where instructors learn from each other by working on, analyzing, observing, and reflecting upon a single lesson plan as a team.[1] The use of Lesson Study has increasingly spread beyond Japan to Western educational contexts since the 1990s, particularly in K-12 education, due to the method's ability to both improve professional teaching awareness while simultaneously refocusing instruction from a teacher-centered to a student-centered approach.[2]

The dual-natured benefits of Lesson Study drew the authors to choose this methodology to revitalize a library instruction lesson plan for a first-year composition class developed for international students. This paper will report on the first half of the collaboration by providing

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a brief history of the Lesson Study model and information on how the authors adapted and implemented the model for use in their instructional context. Results for the first of two rounds of employing the Lesson Study model, as well how these results will inform future directions of the project, will also be provided.

LITERATURE REVIEW

Lesson Study was first introduced to the United States in the late 1990s by researchers examining Japanese educational practices. Catherine Lewis and Ineko Tsuchida outlined the use of "'research lessons' or Kenkyuu Jugyou" in Japanese elementary schools by describing the research lessons as a focused lesson plan developed by a team of teachers, observed and recorded by members of the team, and discussed afterwards.[3] James Stigler and James Hiebert introduced the term, "Lesson Study," based on their translation of *Kenkyuu Jugyou* in their comparison of Japanese and German mathematic teaching practices to those in the United States.[4] By 2002, Lesson Study was utilized by teachers in New York and New Jersey, though with limited success.[5] The use of Lesson Study outside of Japan has continued to grow over the past twenty years. Building on Stigler and Hiebert's work, multiple studies and reports in the field of mathematics and K-12 education have outlined the implementation and benefits of Lesson Study.[6]

The basic outline of the Lesson Study model has remained relatively constant since the 1990s, as show in Table 1. Stigler and Hiebert described eight steps that typify Japanese Lesson Studies from the 1990s as (1) defining the problem, (2) planning the lesson, (3) teaching the lesson, (4) evaluating the lesson and reflecting on its effect, (5) revising the lesson, (6) teaching the revised lesson, (7) evaluating and reflecting again, and (8) sharing the results.[7] Jennifer Stepanek et al. later outlined a simplified five step process consisting of (1) setting goals, (2) planning the lesson, (3) teaching, observing, and debriefing, (4) revising and reteaching, and (5) reflecting and sharing results.[8] In 2021, Rosa Archer, Siân Morgan, and David Swanson's six phase approach included the addition of the names used in Japanese models: (1) select a research focus, (2) *Kyozai Kenkyu,* or researching and planning the lesson, (3) *Kenkyu Jugyou,* or live research lesson, (4) *Kenkyu Kyougikai,* or post-lesson discussion, (5) summarize learning and identify next steps in the presence of a *Koshi* or knowledgeable other, (6) dissemination.[9]

	TABLE 1		
	Lesson Study Models		
Steps	**Stigler & Hiebert 1999**	**Stepanek et al. 2007**	**Archer, Morgan, & Swanson 2021**
1	Defining the Problem	Setting Goals	Select a Research Focus
2	Planning the Lesson	Planning the Lesson	*Kyozai Kenkyu*, Researching and Planning the Lesson
3	Teaching the Lesson	Teaching, Observing, and Debriefing	*Kenkyu Jugyou*, Live Research Lesson
4	Evaluating the Lesson and Reflecting on its Effect	Revising and Reteaching	*Kenkyu Kyougikai,* Post-Lesson Discussion
5	Revising the Lesson	Reflecting and Sharing Results	Summarize Learning and Identify Next Steps with *Koshi*
6	Teaching the Revised Lesson		Dissemination
7	Evaluating and Reflecting Again		
8	Sharing the Results		

The utilization of Lesson Study in libraries is relatively rare in the literature. One of the first reports of Lesson Study in libraries was from librarians at the University of Michigan Library as outlined by Shevon Desai, Marija Freeland, and Eric Frierson. Michigan librarians utilized Lesson Study to develop a shared lesson plan for teaching a new, online research tool, finding that the collaborative method benefited both novice and experienced

library instructors, led to a greater understanding of the research tool, and resulted in lesson plan revisions that better reflected student needs.[10]

Lesson Study's collaborative approach would later be recognized by librarians as a useful methodology for partnering with faculty, particularly on library sessions for lower-level undergraduate courses. Librarians and writing faculty at the University of Wisconsin-Eau Claire collaborated in 2010 to develop and observe a one-shot library instruction session for an English 110 class finding that "the process of going through the Lesson Study was ultimately more valuable than the resulting lesson plan."[11] Librarians and faculty at the University of Cincinnati Blue Ash College used Lesson Study to develop a lesson plan around source integration by, interestingly, first developing a lesson for a second-year business communication class and then revising it to be taught for a first-year composition course.[12] Lauren Wahmen, et al. later expounded on the benefits of the Lesson Study methodology finding that "Lesson Study provides faculty an effective framework for SoTL (Scholarship of Teaching and Learning) projects, cross-disciplinary SoTL projects, and assessment projects."[13] Norm Althouse et al. utilized Lesson Study to improve business information literacy workshops for first year students at the University of Calgary finding that "researchers were able to make evidence-informed adjustments to the workshop" by using Lesson Study.[14]

In addition to academic librarians, school librarians have found Lesson Study a useful collaboration tool. Linda Bilyeu found that collaborating with classroom teachers "raised the visibility of [...] school librarians as instructional leaders in the district, increased their time in curricular work, and promoted their participation in departmental PLCs (professional learning communities)" at Bend-La Pine Schools in Oregon.[15] Claire Stephens encouraged the participation in Lesson Studies finding that school librarians have the background and experience to make them ideal candidates as group members or facilitators of Lesson Studies.[16] Lastly, fifteen school librarians at the Parkway School District in Chesterfield, Missouri found the process of Lesson Study valuable for their students and their instruction practice.[17]

LESSON STUDY FRAMEWORK & IMPLEMENTATION

For the purposes of this project, the authors organized the Lesson Study into five initial phases based on the literature to help plan, observe, and revise the lesson plan: (1) Research Focus, (2) Researching & Planning the Lesson, (3) Live Research Lesson, (4) Post Lesson Discussion, Data Analysis, & Lesson Plan Revision, (5) Live Research Lesson Part 2.[18] In addition to developing this variation of the Lesson Study model, time was also dedicated to developing structures that would promote equity, openness, and trust among team members. This process, the impact of each phase, and relevant findings are described in detail below.

Lesson Team & Instructional Context

The Lesson Study took place at the University of Illinois Urbana-Champaign which is an R1 University with a student population of over 50,000.[19] The team undertaking this project was composed of two representatives from the University Library's Teaching, Learning, and Academic Support (TLAS) unit, the Undergraduate Teaching and Learning Librarian and the Undergraduate Instruction and Engagement Strategist, and two representatives from the ESL Writing Program, the Curriculum Coordinator and the Undergraduate Academic Writing Course Specialist. The members selected for the team are all experienced instructors in their respective fields and departments. Additionally, the TLAS and ESL programs have a shared history of collaborating on one-shot library instruction. This provided a strong foundation to embark on a Lesson Study as the entire team was already familiar with student needs, existing goals, and logistical procedures.[20]

The course chosen for the Lesson Study was ESL 115, a one-semester undergraduate writing course for students who score high on the mandatory English Placement Test (EPT). An additional two-semester course, ESL 112, was also taught using the same lesson plan as ESL 115, but without the Lesson Study observation. ESL 115 is designed to help students produce research papers based on trustworthy secondary sources that explore solutions to a significant societal problem of their choosing (e.g. public health crises, gender inequality, etc.). The library session was integrated into the curriculum at a time when students were starting to look for, and think

critically about, the sources they planned to use found via library databases and organization websites that work to address these societal problems. Following the one-shot library instruction model, ESL instructors brought their students to the library and let a library instructor lead their classes as the primary instructor.

The library session also incorporated a flipped-model where students were asked to complete a "Brainstorming Keywords Worksheet" for homework beforehand.[21] To complete this worksheet, students provided a concise summary of their topic, underlined keywords and major ideas in this summary, and used these terms to develop a collection of narrower, broader, or synonymous keywords. During the session itself, students were asked to employ different combinations of keywords to see which yield the most productive results and to note any new keywords that emerge as part of this experimental search strategy.

Laying a Foundation: Developing a Lesson Study Community

Lesson Study teams require trust, a commitment to adult learning, egalitarian discussions, shared responsibility, and a focus on improving student learning.[22] To develop a Lesson Study in the context of library instruction as well as meet the needs of the instructors, the Lesson Study team developed a framework for collaboration to provide structure to the project. Over the course of several meetings an editable document was set up with the following categories: "Lesson Study Community" and "Lesson Study Phases."

The authors decided that it was important to spend time laying a foundation that would support their Lesson Study community. The team started by forming and focusing team discussions using guiding questions developed by Sonal Chokshi and Clea Fernandez as outlined in John Murray's book, *Beginning and Implementing Effective Professional Learning*:

- "What are our expectations for how we will work together?
- What conditions will contribute to our learning?
- What conditions will interfere with our learning?
- What conditions will create and sustain a sense of belonging and support?
- How will we resolve our differences and disagreements?"[23]

In addition to these questions, each member had the opportunity to propose guidelines and express priorities they hoped to see manifested in the collaboration, leading to a "Community Agreement" with five guiding principles that engendered a cohesive, equitable working environment. This "Community Agreement" empowered each member to actively contribute goals for revising the lesson plan which resulted in a "Lesson Plan Guiding Principles" document. Both documents can be found in Appendix A.

Finally, project goals were created by having each team member propose ideas for project focal points and then informally voting on which objectives seemed most important. The discussion around goals continued into the first Lesson Study phase.

Phase 1: Research Focus

Negotiating the research focus was a crucial first step as the research focus provides both clarity and direction to the Lesson Study. The research focus was negotiated by reviewing the learning outcomes of the existing lesson plan and discussing potential modifications. As when developing the "Community Agreement" principles, this process involved each team member proposing the outcomes they hoped the session would achieve and then gathering as a group to narrow down and formalize the learning outcome. The team ended up reducing the number of learning outcomes from five to one, which can be seen in Appendix B. Moving to one outcome clearly articulated the expectations and scope for the lesson plan and provided a single research focus for the study.

Phase 2: Researching & Planning the Lesson

The second step of the Lesson Study was to plan the lesson as well as research the topic and participants. Although each member of the research team was familiar with the library session and teaching international students, it was important to share fundamental texts from each discipline to help provide a greater understanding of each member's perspective. The librarians' texts focused on information literacy frameworks, critical infor-

mation literacy instruction, and library assessment practices while the ESL instructors focused on sharing texts around working with multilingual writers, writing pedagogy, and information literacy to English learners.[24] Each reading helped the team grow in their understanding of the fundamentals of the library session and in their understanding of each other's perspective of teaching.

The authors were then able to apply their research knowledge to developing the lesson plan itself. The team first reviewed the existing lesson plan for areas to cut, combine, or expand as well as the research paper prompt. This helped ensure that the lesson plan focused on skills that students would need to complete the assignment, such as finding peer-reviewed sources, finding recent sources, and modifying keywords. The team also decided to observe an ESL class session centered around evaluating the reliability and trustworthiness of different types of sources to help ensure that the library session referred to concepts in similar ways and scaffolded on content taught earlier in the semester.

The combination of additional research, revising the lesson plan, and observing an earlier ESL 115 class session on evaluating sources led to several changes to the library instruction lesson plan, including:

- Increased focus on how to search for reliable, trustworthy information on Google
- Guidance about how to turn keywords that work for Google into effective keywords for searching databases
- Increased time in the session for students to apply the strategies introduced in the first part of the session
- A short reflection at the end of the session to give students a chance to discuss what worked well, what was challenging, and how they might apply what was covered in the session to their future research

Phase 3: Live Research Lesson

Once the lesson plan was finalized, the third phase of the Lesson Study was to teach the lesson plan and observe student learning. The team identified and scheduled a section of ESL 115 with 15 students for library instruction, normally taught by "ESL Teammate #1," so that the team could implement and observe the new lesson plan in a relatively controlled environment where all involved parties were aware of the goals of the study. For the scheduled library instruction session, each team member was assigned a specific role. Of the group of four, the first librarian, "Library Teammate #1," was assigned to teach the library instruction session. The first ESL instructor, "ESL Teammate #1," was assigned to assist the students, and the remaining librarian and ESL instructor, "Library Teammate #2" and "ESL Teammate #2," were assigned to observe students and take notes. Once roles were assigned, an observation model was established.

While an observational style that prioritizes process over perfection is valuable in the Lesson Study model, the team nevertheless determined it was important to provide a loose structure representative of the research focus to the observation itself to create touchpoints for productive, future discussions. To facilitate this, "Library Teammate #2" and "ESL Teammate #2" created a simple, three-column observation form derived from the lesson plan that chronologically listed primary lesson activities in the first column, expected student behavior for those activities in the second column, and finally, observed student behavior in the last column. Additionally, space was provided for supplemental notes as necessary both for maximum flexibility in gathering useful qualitative data, and to ensure the motivations and goals for the first round of the project were satisfied. A sample selection from the observation form can be found in Table 2.

TABLE 2		
Sample Observation Form Selection		
Lesson Activities	**Expected Student Behavior**	**Observed Student Behavior and Special Notes**
Keyword Searching	Conduct progressively refined keyword search on sample topic alongside instructor; making connection to Google Advanced Search	Once students in Academic Search Ultimate, most searching along with instructor, editing searches alongside instructor as well. One student gave example of using Boolean to expand results, one student made note of keyword not being very descriptive.

On the day of the observation, students who consented to participate in the study were seated towards the front of the classroom, with "ESL Teammate #2" stationed facing the students to ensure a clear sightline of the students' facial expressions in response to the lesson plan, and "Library Teammate #2" seated behind the students to ensure a clear sightline of the students' computer screens and work. Students who did not consent to the study were seated in the back of the classroom for their confidentiality and their responses, work, and relevant behaviors were not recorded.

Following the pre-designed observation form, "Library Teammate #2" and "ESL Teammate #2" made note of the consenting students' behavior in response to the lesson plan and activities, rather than noting the teaching behaviors of "Library Teammate #1," separately recording notes in the third column of the form so as not to be influenced by each other's observations in the moment. Following the class, the observation notes were then uploaded to a secure, shared file management system for review by all team members for similarities and differences prior to meeting and discussing the outcomes.

Phase 4: Post-Lesson Discussion, Data Analysis, & Lesson Plan Revision

For Phase 4, the team met for a structured discussion following the library instruction session to review what went well, what did not go well, what was surprising, and what questions remained, as well as to make modifications to the existing lesson plan for Phase 5 of the Lesson Study. Each question was explored, from both an instructor and observer perspective, utilizing the format of the observation document to guide the discussion, with an emphasis on elements central to the success of the research focus. Notable findings from the discussion can be grouped or cross-categorized into six general themes: Clarity of Session & Expectations, Novelty of Google Advanced Search, Ease of Transitions & Computer Navigation, Student Participation & Engagement, Peer Assistance, and Timing.

Clarity of Session & Expectations

The majority of expected student behavior aligned with the lesson plan activities. However, there were a few notable areas that appeared to lack clarity for students. First, due to different language backgrounds and English proficiency levels present in the class, the observers noted that at least one student required the use of an online translator for specific, unfamiliar terminology or phrases introduced by the library instructor, "Library Teammate #1." Additionally, during instruction on the use of Google Advanced Search, "ESL Teammate #2" noted that not all students appeared to have fully connected the importance of internet domains with the assignment directive to locate reliable sources. The library instructor, "Library Teammate #1," also observed that the explanation of Boolean logic as presented in Google Advanced Search took longer than expected and seemed to lack clarity, though students did seem to appreciate the respective strengths of Google Advanced Search and library databases when compared to one another. Lastly, students took note of the importance of keyword selection and formatting as demonstrated during a database activity, but there were nevertheless some persistent challenges in applying and elevating keywords to return stronger, if any, results.

The importance of defining novel terminology and being aware of, and providing time for, students who utilize translation tools before proceeding to the next concept was noted, as was the need to explore the power of domain fields in Google Advanced Search in more depth as well as examples of situations where one would use Boolean logic in Google Advanced Search.

Novelty of Google Advanced Search

Google Advanced Search appeared to be a new tool to all students, as no students raised their hand as having used it previously. This tool was well-received given its utility for helping students find reliable information not present in library databases but still relevant to their assignment, such as government, non-profit, and non-governmental organization websites. Both "Library Teammate #2" and "ESL Teammate #2" noted students' rapt interest in this portion of the class, and the specific questions asked about maximizing use of the Advanced Search interface in their own work, such as how capitalization and hyphenation impact results.

Ease of Transitions & Computer Navigation

The library's website, and the website navigation path chosen to find library webpages required for this session, was not intuitive for students. Additionally, given the number of webpages and features students were required to toggle between throughout the duration of the session, there were multiple points of transition that posed barriers where students fell behind during navigation. Due to these factors, it was noted that the speed of transition between webpages and webpage features did result in multiple students getting lost within the library website and related interfaces.

Student Participation & Engagement

Some students were eager to respond to questions asked, and to ask relevant questions of their own. While not every student verbally asked questions of the instructor, they intently watched the instructor and the screen displays and provided non-verbal confirmation of understanding through nods, thumbs up/down, and replicating the demonstrated tasks on their own devices in most instances. Furthermore, some students took notes of their own volition on tips they wanted to remember after the day's session. Anytime a student briefly lost attention (such as to glance at their phone), they brought their attention back to the front of the room, or present activity, quickly and unprompted.

Peer Assistance

Amongst all Lesson Study team members, it was positively noted the spirit of comradery within the class; finding that students were eager to help one another. It was also noted how students assisted one another if a person fell behind while navigating, or while grappling with a new activity or concept. Additionally, the classroom where this session was hosted was far away from many students' other classes, and late arrivers were welcomed and helped by their peers.

Timing

As previously noted, Boolean operators in Google Advanced Search took longer to explain than anticipated. Additionally, the final activity of the lesson plan required more time than was allotted. Because the instructions were slightly more complex than is standard, additional time to describe the activity, address clarifying questions, and complete the activity itself was required. Ultimately, this time strain resulted in some groups having more time to research their topics than others. This, in addition to the aforementioned challenges in navigation between interfaces, provided useful feedback on areas where more time is needed in the future.

While consideration of all six themes is important to the success of any library instruction session, the Lesson Study team members' observations of the students, their screens, and their interactions reinforced the importance of referring to verbal and non-verbal cues and actions to deepen instructor understanding of instructional practice that better reflects student needs. By observing the students in response to the lesson plan, rather than the instructor delivering it, the team members were able to identify critical, student-centered changes to the lesson plan in service of the established learning outcome for Phase 5 of the Lesson Study, the Live Research Lesson Part 2, in the spring semester.

Phase 5: Live Research Lesson Part 2

For Phase 5, the lesson plan will be revised based on the observations and discussion in Phase 4 and taught again in the spring semester of 2023. The live research lesson will be taught by "Library Teammate #2" and observed by the other three team members which will provide the opportunity for different perspectives than in Phase 3. Another reflection, debrief, revision, and dissemination of relevant findings is planned to follow.

CONCLUSION

Lesson Study is a methodology that encourages collaboration among instructors while maintaining a commitment to student-centered learning. The authors found the time-tested phases of Lesson Study provided the structure required for an equitable, open, and supportive collaboration where each person was able to learn from one another and grow as an instructor. This structure is particularly helpful for cross-disciplinary teams where there may be fewer shared experiences and backgrounds than collaborations within a single discipline.

The unique approach to observing students instead of the instructor led to greater insight into international student learning during the library instruction session itself. Findings such as providing additional time for students to follow and participate during the session, encouraging the use of online translators, and the novelty of Google Advanced Search inform the next iteration of the ESL 115 lesson plan as well as all library sessions for international students. Additionally, Lesson Study allowed the authors to observe affirming student behaviors such as peers assisting one another, student attentiveness, and the impact both verbal and non-verbal cues have on student learning. The continuation of this project will hopefully lead to additional insights into international student learning as well as a greater understanding of the Lesson Study process itself.

APPENDIX A. COMMUNITY AGREEMENT

Community Guidelines

All members commit to:
- Listen Actively: Try to understand others before being understood
- Think Beyond Binaries: Hold multiple perspectives at once
- Repair Harm: Seek space to repair harm when we mess up
- Actively Contribute: Participate in all phases of the Lesson Study
- Respect Deadlines: Use and meet reasonable deadlines to guide progress

Lesson Plan Guiding Principles

- Center on the student and not on the instructor
- Maximize opportunities for students to communicate
- Perfection is not the goal
- Commit to scaffolding and building up students with the goal of having students produce something to demonstrate understanding
- Novel or new ways of teaching are encouraged but should not become a barrier or the focus

APPENDIX B. LEARNING OUTCOMES

Previous 112/115 "Library Day" Outcomes

Students will be able to…
- Familiarize themselves with the library as both a physical and virtual space in order to successfully utilize both spaces and enhance their learning experiences
- Create and design effective search strategies in order to focus and refine their topics and engage more productively in the search process
- Distinguish types of information resources (free online sources such as Google vs. subscription library databases) and their roles in academic research in order to select the most appropriate sources for their research
- Select and search databases in order to locate relevant sources for their research projects
- Evaluate sources in order to recognize and distinguish academic, scholarly sources and understand criteria that indicates a source is reliable. This assists students in selecting the most appropriate sources to support their information needs and provides information to assist them in writing Annotated Bibliographies

Revised 112/115 "Library Day" Outcome

- Students will learn how to develop keywords and search strategies to find trustworthy sources for their research assignment in both Google and Academic Search Ultimate.

NOTES

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