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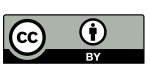

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PRACTICE

Library Publishers as Educators: Crafting Curriculum for Undergraduate Research Journals

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INTRODUCTION Library publishing programs continue to play an increasingly important role in educating their constituents. In particular, library publishers that support undergraduate student journals often provide guidance to students on both mechanical and conceptual issues related to publishing. This article presents a case study for developing a one-credit-hour course to support an undergraduate student journal publication, the *Indiana University Journal of Undergraduate Research (IUJUR)*, at Indiana University Bloomington. **DESCRIPTION OF COURSE** The course is offered every fall as a mechanism for onboarding about thirty new undergraduate editors. The course was developed and taught by a librarian and an undergraduate student in consultation with IU's Office of the Vice Provost for Undergraduate Education. Course curriculum touches on topics that scholarly communication and information literacy librarians alike can adapt for a variety of educational contexts, including authentic activities for understanding peer review models and applying publishing innovations. **ASSESSMENT** The article details both the formative and summative assessment strategies the instructor utilized to gauge student understanding of key publishing concepts. The summative assessment utilizes pre- and post-tests and extends previous library literature to evaluate students' actual understanding of publishing concepts in addition to their perceived understanding and confidence. **LIMITATIONS AND NEXT STEPS** The course curriculum will continue to grow and change in order to accommodate students' misconceptions and interests.

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INTRODUCTION

> "It is such a formative and eye-opening experience to undergraduates to do research, and publishing it only further promotes this work."
>
> -Indiana University Journal of Undergraduate Research (IUJUR) Student Editor

While it is well-known that library publishers are focused on the creation, dissemination, and promotion of scholarly content, their educational role is often overlooked. The instruction that library publishers do extends beyond onboarding editors to the institution's publishing platform; librarians often inform editors of new peer-review models, strategies for incorporating publishing innovations and digital scholarship, and best practices for indexing and discoverability. Library publishing programs that support student journals have an even stronger mandate related to education and outreach, as they train the next generation of scholars by providing guidance on both the mechanical and conceptual issues related to publishing.

Indiana University Bloomington (IUB) Libraries has one such library publishing program, and as such has committed to educating students (both undergraduate and graduate) about publishing issues. The support of student journals—and by extension, the commitment to facilitating an excellent education for undergraduate students broadly—is in line with the mission of the broader university. For example, IUB's Office of Vice Provost for Undergraduate Education (OVPUE) is devoted to furthering key strategic initiatives aimed at improving undergraduate learning, including research experiences, internships, service-learning, and learning communities. IUB also boasts an Honors College, which provides grants for high-achieving undergraduates interested in multidisciplinary and in-depth research experiences.

Of the 50 journals that currently comprise IU Libraries' publishing program, 10 are either administered by students or accept submissions from student authors. The most active student journal on the Bloomington campus is the *Indiana University Journal of Undergraduate Research* (*IUJUR*). Founded in August 2013, *IUJUR* is a student-led journal that publishes annually, accepting submissions from students at any of the eight IU campuses.

The journal is run by over 60 students and includes multiple boards representing the humanities, social sciences, natural sciences, and applied sciences as well as an executive board (which includes two co-editors in chief and a managing editor). While these students are usually called the student editorial board (SEB), most of them actually participate as reviewers in *IUJUR*'s double-blind peer-review process. In addition to student editors, *IUJUR* employs students doing design and public relations work on its other specialized boards. *IUJUR* is overseen by a Faculty Advisory Board, which reviews submissions for quality and relevance and recom-

mends a final publication decision to student editors. The journal publishes research snapshots and full-length articles, of which it has published about 40 pieces since its inception.

In 2016, the OVPUE partnered with IU Libraries to create and deliver a one-credit-hour course, "COLL-X 250: Academic Editing & Publishing," to *IUJUR* student editors. While the course was funded by the OVPUE, the IU Scholarly Communication Librarian was responsible for developing and teaching the course (in consultation with the OVPUE and the executive board of *IUJUR*). This article discusses two iterations of the course: Fall 2017 and Fall 2018.

While the literature on undergraduate research and undergraduate journals is established, library literature on creating curriculum to formally teach students about publishing concepts (such as open access, peer review, author rights, publishing innovations, and journal metrics) is more nascent. When curriculum is developed, it is almost never used to compliment or contribute to a formal student publication like *IUJUR*.

This case study is unique, as both iterations of the course discussed were co-taught with an undergraduate student and formally assessed using a pre- and post-test. The decision to co-teach with an undergraduate student—usually a previous editor-in-chief of *IUJUR*—was intentional. Not only does it enable the course to be tailored to the specific journal's needs and practices, but it also serves as a meta exercise in establishing that undergraduates have something to contribute from the outset of the class. Similarly, the assessment shared extends previous studies as it evaluates students' actual understanding of publishing concepts in addition to their perceived understanding and confidence. While not all librarians will have an opportunity to teach a for-credit publishing course, this workshop-style course is modular and its curriculum could be applied in different contexts, making this case study applicable to information literacy librarians as well as library publishers and scholarly communication staff.

LITERATURE REVIEW

The topic of this article engages several areas of the literature, spanning literature on the importance of undergraduate research, high-impact practices (HIPs), undergraduate student knowledge of scholarly communication concepts, and scholarly publishing literacy. These topics often overlap, both in literature and in practice. For example, librarians interested in teaching undergraduates about scholarly communication often use experimental and high-impact practices (HIPs) to engage students in real-world application of concepts. In addition to summarizing previous discourse, an inherent argument of the following literature review is that these disparate threads of the literature should be combined, so as to enable the creation of a space for shared experimentation between information literacy experts, teaching librarians interested in high-impact practices, library publishing practitioners, and librarians involved in all areas of scholarly communication.

Undergraduate Research (UR) & High-Impact Practices

The Council on Undergraduate Research (CUR) defines undergraduate research (UR) as "inquiry or investigation conducted by an undergraduate student that makes an original intellectual or creative contribution to the discipline" (Council of Undergraduate Research, 2019a). Institutions of higher education have long supported undergraduate research programs. For example, MIT established an undergraduate research program in the 1960s (Jones & Canuel, 2013). *The Boyer Commission Report*, issued in 1998, further fueled the widespread development of formal programs to support UR (Boyer 1998). The report centered on research institutions specifically and recommended a "greater focus on undergraduate inquiry-based learning and UR experiences" (Caprio, 2014; p. 145) to further student success.

In 2008, Kuh et al.'s seminal report on high-impact practices (HIPs) was published by the Association of American Colleges & Universities (AAC&U). The report named 10 HIPs that are "especially effective in increasing student engagement and retention" (as cited in Fraser Riehle & Hensley, 2017; p. 146). One of the HIPs named was undergraduate research. Kuh et al. (2008) identifying UR as a high-impact, pedagogically sound activity found to improve student success (Buck & Valentino, 2018; Caprio, 2014) echoed *The Boyer Commission Report*'s call to create meaningful UR opportunities ten years earlier.

These publications have made undergraduate research more commonplace. As of January 2019, the Council on Undergraduate Research has over 600 member institutions (CUR, 2019b). The benefits of UR have also become well documented. Students that participate in UR have been found to develop confidence in their discipline and more aptly write and present research (Weiner & Watkinson, 2014, p. 2). Stamatoplos (2009) adds that students that participate in UR have higher "self-confidence, [are] more likely to complete their degrees, and are more likely to go on to graduate school" than their peers who did not have a UR experience (p. 238). Marken and Dawson (2017) state that in addition to helping students, UR is also beneficial for institutions, as it aids in student recruitment, improves alumni attributes, and increases the research profile of each institution.

Undergraduate research programs and initiatives involve a variety of departments and units, vary by institutional size and mission, and can be curricular or co-curricular. Examples include scholarship programs that provide research experience, honors programs that provide programming and professional development, research awards, research symposia, and research journals (Hensley, Shreeves, & Davis-Kahl, 2014; p. 423). Fraser Riehle and Hensley (2017) summarize UR as a trend by stating that "undergraduate students are actively participating in the scholarly communication process as content creators. They construct research posters, create digital projects, write articles for undergraduate research and disciplinary journals, and much more" (p. 149).

Students who participate in UR programs often have the opportunity to formally publish the research outputs that they create, including journal articles. There is some disagreement about where undergraduate work should be published, as national disciplinary journals often offer more readership (Burks & Chumchal, 2009; Bauer, Ogas, Shakir, Oxley, & Clawson, 2009). However, this position might be shortsighted, as the creation of undergraduate journals also provides an opportunity for students to manage and edit journal publications. Discussing why students benefit from being editors, Bauer et al. (2009) state that "the great breadth in submitted work [to the journal] exposes students to research methodologies, data-gathering techniques, and statistical analyses they may not have covered in previous course work" (p. 586). Similarly, Jones et al. (2006) find that "what happens after the manuscript is submitted, the processes or peer reviewing, editing, and publishing, is largely invisible to students" unless they participate in an undergraduate journal as editors (A60).

Scholarly Publishing Literacy

In "Supporting the Dissemination of Undergraduate Research: An Emerging Role for Academic Librarians," Jones and Canuel (2013) note that "initiatives encouraging undergraduate research will only be half realized if students do not understand what scholarly publishing is, how it is changing, and how to join its conversation" and that librarians can and should contribute to publishing outreach (p. 529). There have been several areas of the library literature that engage with this idea and advocate for additional scholarly communication outreach to undergraduate students, including more systematic library involvement in formal undergraduate research experiences.

The term "scholarly publishing literacy" was originally coined by Jeffery Beall in 2012 (as cited in Zhao, 2014) but is often attributed to Zhao (2014), who defines it as "the operations, implications and issues around open access and other publishing issues" (pg. 3). Core components of scholarly publishing literacy include knowledge of publishing trends in a researcher's field, an understanding of how journals are ranked, awareness of the different routes to OA publishing, and the ability to evaluate a potential publication venue (Zhao, 2014). Zhao sees scholarly publishing literacy as an intersection of information literacy and digital scholarship, holding that academic libraries promote open access and institutional repositories while providing research assistance but miss the mark on combining these areas. Zhao posits that this leaves researchers, not just students, unable to fully participate in and understand the changing scholarly publishing environment.

There are several case studies of libraries crafting outreach to further scholarly publishing literacy for undergraduate students specifically. However, library practitioners do not generally call their work "scholarly publishing literacy," often referring to it more generally as scholarly

communication or publishing outreach. This literature pre-dates Zhao (2014) and includes Stampalos's (2009) article on library involvement in the Undergraduate Research Opportunities Program (UROP) at IUPUI, Warren and Duckett's (2010) article on integrating OA concepts and the economics of publishing into an undergraduate course at North Carolina State University, Davis-Kahl's (2012) piece on teaching undergraduates about scholarly communication concepts, and Miller's (2013) keynote about requiring students to make their theses open access.

In 2013, the Association of College and Research Libraries (ACRL) published a white paper titled *Intersections of Scholarly Communication and Information Literacy: Creating Strategic Collaborations for a Changing Academic Environment* (hereafter ACRL white paper). The ACRL white paper formalized many of the ideas expressed in previous literature, naming specific areas or "intersections" that librarians should focus on to further their students' scholarly publishing literacy. Davis-Kahl and Hensley, two of the authors of the ACRL white paper, also co-edited a book titled *Common Ground at the Nexus of Information Literacy and Scholarly Communication* in 2013. The book provided several case studies of librarians crafting publishing outreach, most notably Gillman's (2013) chapter on creating a publishing course for undergraduate students.

Most recently, McClellan, Detmering, Martinez, and Johnson's (2017) article on creating a semester-long extracurricular publishing academy at the University of Louisville and Buck and Valentino's (2018) article on creating an undergraduate scholarly communication course at the University of Oregon provide case studies for libraries furthering students' understanding of scholarly publishing.

Undergraduate Research Journals

Of the 125 publishing programs surveyed for the 2018 Library Publishing Directory, 62% partnered with undergraduate students in some capacity, producing 224 student-driven journals (Library Publishing Coalition, 2018). There are several case studies in the literature that describe creating, implementing, and maintaining undergraduate student journals in a range of disciplines. These include the *Pi Sigma Alpha Undergraduate Journal of Politics* (Bauer et al., 2009), the *Plymouth Student Scientist* (Gresty & Jones, 2011), two undergraduate economic journals at Illinois Wesleyan University, the *Park Place Economist* and the *Undergraduate Economic Review* (Leekley, Davis-Kahl, & Seeborg, 2013), and multiple undergraduate psychology journals, including the *Journal of Psychological Inquiry*, *Modern Psychological Studies*, and *Psi Chi Journal of Undergraduate Research* (Ware & Burns, 2008).

In 2014, Hensley, Shreeves, and Davis-Kahl published "A Survey of Library Support for Formal Undergraduate Research Programs," which analyzed surveys from almost 250 libraries in order to better understand the services and resources that libraries provide for formal undergraduate research programs. They found that 32.6% of respondents supported undergraduate research journals (Hensley, Shreeves, & Davis-Kahl, 2014). There are several detailed case studies in the library literature that describe the library playing an instrumental role not only in the creation and maintenance of undergraduate student publications but also in the education of student editors. Examples include a journal started and hosted by the University of Colorado Colorado Springs (Farney & Byerley, 2010), the University of Western Ontario's library collaborating with other units to help create and host a student journal (Ho, 2011), the creation and assessment of a journal at Purdue University (Weiner & Watkinson, 2014), grassroots library support at McGill (Yanofsky, Miller, & Nizami, 2017), a Student Journal Forum at the University of Toronto (Buchanksy & Slaght, 2017), and a presentation about the *University of Saskatchewan Undergraduate Research Journal* (Marken & Dawson, 2017). This literature often describes the important role that libraries play in helping students establish, maintain, and assess their journal publications.

Curriculum to Support Undergraduate Journals

Examples of formal curriculum to undergraduate journals is less common. Jones et al. (2006) discusses a course created to support the University of South Carolina's undergraduate neuroscience journal, *IMPULSE*. While it is not centered on an undergraduate journal publication per se, Schulte, Tiffen, Edwards, Abbott, and Luca (2018) describe the redesign of an Energy Science and Technology course so that it culminates in journal publication. In the library literature specifically, Fraser Riehle (2014) describes a for-credit publishing boot camp at Purdue University. While the course was not centered on a journal publication, it culminated in the creation of an edited book. Gilman's (2013) undergraduate publishing course did not center on a specific journal but they state that they are "seeking further collaboration with Pacific University's undergraduate research journal" for the course (p. 89).

The lack of tangible examples of curriculum developed to support undergraduate journals is a gap in the literature, as developing this curriculum is synergistically beneficial. Coursework developed around a specific journal is often more authentic and purposeful, empowering students to immediately apply publishing concepts. Similarly, student journals benefit from the development of curriculum as it gives editors base knowledge that creates a level playing field, which can alleviate some of the pains of student turnover.

In addition to filling this gap, this case study is a unique contribution to the literature. While Bauer et al.'s (2009) write-up about the the *Pi Sigma Alpha Undergraduate Journal of Politics*

was co-written with undergraduate students, there does not appear to be any literature that describes coteaching or developing a publishing course with a student. Additionally, this article contributes a new perspective on assessing student learning and understanding of publishing and scholarly communication concepts. Multiple articles assess the impact that undergraduate journals have on students (Marken & Dawson, 2017; Leekley, Davis-Kahl, & Seeborg, 2013; Weiner & Watkinson, 2014). However, these assessments are generally perception based and ask students to assess their own learning and growth without actually evaluating their understanding firsthand. Similarly, while McClellan et al. (2017) used pre-tests and post-tests to assess learning in their publishing academy for graduate students, test questions were still perception based, asking students to identify the level at which they are familiar with assessing journals, OA publishing, and other topics before and after the course. Fraser Riehle and Hensley's (2017) mixed methods approach assesses undergraduate student knowledge of scholarly communication concepts generally and is not tied to a specific journal publication. It is perhaps the most rigorous approach, utilizing in-depth interviews with some respondents to better understand their actual knowledge. This article will combine strategies from both McClellan et al. (2017) and Fraser Riehle and Hensley (2017), utilizing pre- and post-tests that ask perception-based questions about students' knowledge and confidence while also asking open-ended questions to ascertain what students really know about key concepts.

DESCRIPTION OF THE COURSE

Course Structure

The one-credit-hour course "COLL-X 250: Academic Editing & Publishing" was created as a partnership between IU Libraries and the OVPUE. The course was specifically developed for *IUJUR* and, as a result, the course is only open to *IUJUR* student editors. Involvement in *IUJUR* is the only prerequisite for registering. An average of 30 new *IUJUR* editors are required to either take or audit the course every fall, as it serves as onboarding to the journal. In addition, the chair of each board, the co-editors in chief, and the managing editor attend course workshops to help facilitate discussion and clarify expectations. The first iteration of the course was taught by Interim Scholarly Communication Librarian Nick Homenda in Fall 2016. This article discusses the two most recent iterations of the course, held in Fall 2017 and Fall 2018.

There were two major challenges in designing the course. The first was the range of student experience levels, majors, and interests represented. Of the 51 students that took the course over both semesters, year in college was fairly evenly distributed, with 33% of students being freshmen, 25% sophomores, 27% juniors, and 13% seniors. While most of the students (80%) had not published an article or book chapter, students were split on whether or not they had

attended a conference in their discipline: 39% had and 58% had not, and one student was not sure. Similarly, 58% had experience doing research in a lab while 41% did not (though this number is likely a result of only a portion of the students being involved in STEM disciplines). This range in student familiarity made course design challenging: instruction needed to be introductory and accessible, but also challenging and novel.

The second challenge was the need to balance practical and conceptual learning. Students are enrolled in the course to be onboarded to *IUJUR* and learn more about *IUJUR*'s specific processes and policies. At the same time, it was important for the course to be forward-looking, challenging students to learn concepts that would serve them after their time with *IUJUR*. Combining practical fundamentals—for example, learning open journal systems (OJS) and evaluating submissions using *IUJUR*-specific rubrics—with larger concepts, including understanding and critiquing various peer review models, comprehending the value of open access, and grappling with ethical dilemmas, was a constant goal of the course. This difficult balance between the practical and the conceptual has been repeatedly expressed in the literature (Marken & Dawson, 2017; Gilman, 2013), with Jones et al. (2006) observing that publishing course topics "lend themselves to rapid swings from the esoteric to the banal" (p. A61).

Both of these challenges were addressed when the course was redesigned in 2017 to be delivered as a series of four three-hour workshops instead of a weekly one-hour meeting. Each workshop was split between lectures about higher-level concepts and hands-on activities and discussion about *IUJUR*-specific processes and policies. For example, the first workshop centered on introducing open access and open source software and training students on the publishing platform Open Journal Systems (OJS). The lecture focused on the importance of open source to the OA movement as well as the benefits and challenges of open source software. In discussion, students articulated that while the platform's user experience was sometimes lacking, the commitment to open infrastructure was a valuable trade-off.

Devoting half of each workshop to discussion and activities was beneficial for inspiring mentorship among participants and building relationships across each board. Students had frequent opportunities to break into discussions by board, as the nature of discussions was often disciplinary. The chair of each board, usually a student with previous *IUJUR* editorial experience, also helped facilitate discussion and field questions during these discussions, building rapport and trust with other students. This intentional course design, centered on active learning and peer instruction, is similar to Fraser Riehle's (2014), which the author summarizes as "guided by the tenets of constructivist learning theory, which prioritize problem-solving, the construction of personal meaning, and active learning pedagogy" (p. 2). Course content, examples, and scenarios were always connected back to *IUJUR*.

Course Content

The full text of the 2018 course syllabus is shared in Appendix A. Course content and subsequent assessments were developed to achieve four learning objectives:

1. Students will articulate the specific roles and responsibilities involved in the academic publishing process.
2. Students will identify best practices for peer reviewing and editing submitted manuscripts.
3. Students will describe and follow ethical publishing standards for maintaining privacy, copyright, blind review, inclusion, and transparency
4. Students will understand the importance of their role as an ambassador for undergraduate research at Indiana University.

The first workshop addressed learning objective 4, and began by reminding students why their work with *IUJUR* was important before covering any content. Students completed an abbreviated design thinking activity in which they were asked to articulate why undergraduate research matters generally and why *IUJUR* matters specifically. Students were asked to share their responses with a partner and then work together to create a refined list of their combined best responses. General responses were that it "primes a generation of future researchers," "prepares students for graduate school and beyond," and "gives students the ability to take a proactive role in shaping the research climate on campus." Some responses were unique, including that "understanding things outside of your field will make you better within it," that UR "facilitates independence and creates a mindset which encourages students to guide their own learning," and that *IUJUR* "links together the university's foundational research and teaching missions."

Subsequent content built upon the assumption that undergraduate research was important and worth sharing. Content was scaffolded and is presented in Figure 1, which adapts Maslow's Hierarchy of Needs to a scholarly publishing literacy context for this course. In an effort to help students feel prepared to serve as a student editor for *IUJUR*, the more tangible building blocks of editing were presented early in the course, with later workshops devoted to ethical dilemmas, publishing innovations, and bibliometrics. While this design empowered students to make connections between *IUJUR* and the larger publishing ecosystem, it also meant that there often was not enough time to cover some of the most complex topics of the course, like copyright.

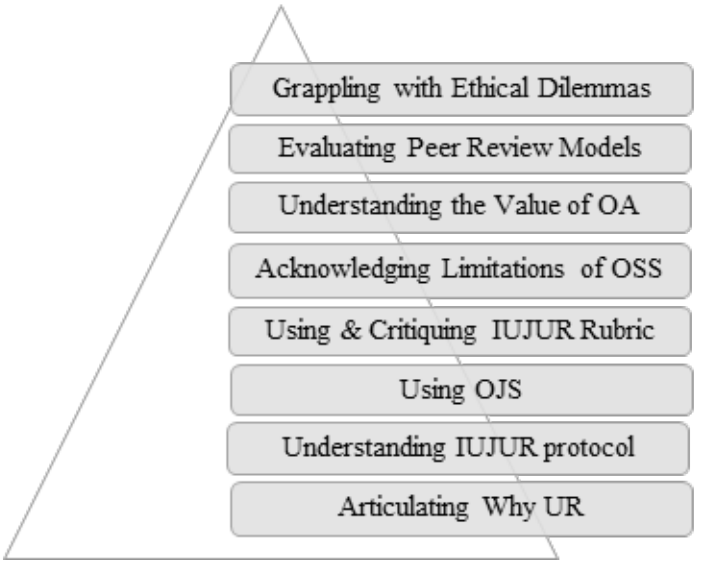

Figure 1. Hierarchy of course topics

The course schedule mimics this hierarchy, building student interest in journals, editing, reviewing, and general open access concepts before diving deeper into ethical dilemmas, publishing innovations, and the pros and cons of various peer review models (see Table 1).

As mentioned previously, curriculum was designed in consultation with an undergraduate student. During both sessions, this student had previously served as editor-in-chief and was familiar with *IUJUR* history, timelines, and workflows. In addition to assisting with curriculum design and giving feedback on in-class activities, the co-instructor often taught a small portion of each workshop. Generally their instruction was centered on *IUJUR* specifics (student instructor content is bolded in Table 1). For example, in the first workshop, they presented an overview of the history and structure of *IUJUR*. The co-instructor also helped facilitate discussion in every workshop, often walking around the class and guiding board discussion.

As a one-credit hour pass/fail course, homework assignments were minimal and were primarily used to help students gain familiarity with a topic before class. Assignments usually consisted of one to two readings about peer review, copyright, or best practices for reviewers. Between the 2017 course and the 2018 course, the instructor consulted with an instructional designer to make homework assignments more meaningful and connected to in-class time. For example, in the 2018 course, two discussion postings intentionally asked students to prepare for the next course. One was a prompt to prepare two questions about copyright and the other was to identify a reputable journal in the student's field in order to prepare for a workshop on evaluating journals and using impact factor.

	In-Class Activities
Workshop #1 *Introduction to* IUJUR *and OJS*	First Half Class Overview, Policies, and Assignments Why *IUJUR* & Undergraduate Research Activity **Student Instructor:** Organization & Processes of *IUJUR* Second Half OA & Open Source Software OJS Overview OJS Review Worksheet One-Minute Paper
Workshop #2 *Reviewer Responsibilities and Best Practices*	First Half What Good Editors Do: Best Practices & Being Constructive Rubrics vs. Line Edits **Student Instructor:** Introduction to *IUJUR* Rubrics Reviewing Submission Activity: Upload Submission in OJS Second Half Peer Review Models Peer Review Worksheet: Diagram Pros/ Cons Ensuring a Blind Review One-Minute Paper
Workshop #3 *Research Ethics Overview (Citation, Plagiarism, Copyright, Transparency)*	First Half Editorial Best Practices & General Publishing Ethics COPE Principles: Discussion of Reading Ethical Dilemma Case Study Activity Second Half Copyright Guest Lecture One-Minute Paper
Wrap Up	Ideas for Utilizing Your *IUJUR* Experience Measuring Impact of Journals (metrics, indexing, peer journals) Publishing Innovation Possibilities for *IUJUR*

Table 1. Course calendar for Fall 2018

Course Activities

While the course involved a range of activities, there were three activities that were particularly successful. These activities served as the active portion of different workshops and helped students understand best practices for reviewing others' work, peer review models, and publishing innovations. Activities are modular and could stand alone as the sole activity in a workshop or one-shot session.

Reviewing Others' Work

In workshop 2, students needed to learn how to use *IUJUR*'s rubric for their specific board. While these rubrics are already developed, the *IUJUR* executive board is very open to making small changes to improve the review process. In 2017, they were interested in a more significant redesign to address challenges previous reviewers experienced. Thus, before diving in to the rubrics, the lecture portion of the workshop focused on *IUJUR*'s process for review: what reviewers were required to submit with their review, the role of each board's chair in consolidating comments and making a decision, and the role of the faculty advisory board. The lecture also reviewed a required reading from the Coalition on Publication Ethics (COPE) on reviewer best practices (Coalition on Publication Ethics Council, 2017) and a supplementary blog post series from Pat Thompson (2012) on reviewing scholarly articles. Discussion focused on when in the process to focus on line edits and how to write constructive feedback that helps authors.

Students were then asked to construct their own rubric for a sample submission they had already reviewed. Each student was asked to draft five indicators they use to determine if a paper is high- quality research. They then had to articulate how they would know a paper was outstanding, acceptable, or poor in these areas, essentially answering the question "What does success look like?" They used this reflection to create a rubric (see a sample in Table 2).

Students then had a conversation with their board about which indicators they used and why. Afterward, students used both the rubric they constructed and *IUJUR*'s existing rubric to evaluate the sample submission. This prompted board discussion about what worked well and how *IUJUR*'s rubric could be improved. This activity led to a major redesign of the rubric for several boards between 2017 and 2018. While not every class or workshop will have an existing rubric, this activity could be modified to give structure to library sessions on the mechanics of peer review. Librarians could also use this activity to facilitate assignments where students will need to review each other's work. Too often we assume that these indicators of quality are obvious. Asking students to articulate which indicators are most important to them and how to measure success helps them to reflect on their own evaluation process (see Table 2).

Understanding Peer Review Models

The second half of workshop two was devoted to discussing various peer review models, including open, single-blind, and double-blind peer review. Despite the fact that *IUJUR* uses a double-blind model and the board is not interested in changing their review process, it is core to publishing literacy to understand how peer review models differ, the benefits and drawbacks of each, and how pre– and post–peer review innovations are changing the peer-review

process. Anecdotally, the instructor has found that while students are required to find peer-reviewed articles for a variety of assignments, they don't often know what peer review actually is or why it matters.

Indicator	Outstanding	Acceptable	Poor
Clear, well-articulated thesis	Thesis is narrow enough to be accomplished. Easy to identify. Compelling.	Thesis is a somewhat large scope but still achievable. Can be located.	Thesis is unclear or there seem to be multiple theses.
Adds something new	Answers the "so what" question. Comprehensive literature review, articulates "gaps" that the article fills.	Answers the "so what" question. Literature review is adequate. While gaps aren't stated, reader is able to infer.	Repeats what others have researched. Unclear what the thesis or argument is.

Table 2. Sample Rubric

Students were asked to read a brief overview of open, single-blind, and double-blind peer review models as homework (Wiley, n.d). In class, students were also introduced to the idea of post-publication peer review using Kathleen Fitzpatrick's *Planned Obsolescence* as an example. Students were broken into groups and assigned one of these three types of peer review randomly. They were given access to two articles on peer-review models in class to consult as they completed the activity (Tennant et al., 2017; Lee, Sugimoto, Zhang, & Cronin, 2013). While these are lengthy articles with comprehensive literature reviews, Tennant et al. (2017) provides a comprehensive table describing the pros and cons of each model that students could easily skim (see p. 12).

Students were asked to use this information to create a compelling argument about why the peer-review model assigned to them is the best option for their board or *IUJUR* specifically, writing out three specific reasons. While students might not personally believe that this specific model is best (as the models were assigned randomly), this exercise requires them to learn more about a model they might have written off. This was intentional: in the 2017 iteration of the course, the instructor found through summative assessment that students believed double-blind peer review was always superior. This was true even when students were presented with evidence that studies have found that OPR is connected to higher refusal rates and an increase in the amount of time reviewers take to provide feedback (as cited in Lee et al., 2013). Students were required to defend their model to the class and articulate three weaknesses of the two other types of peer review.

Finally, students were mixed up so that every table had a few students representing each type of peer review. They informally debated the pros and cons of each model, with each student presenting arguments for their model as well as arguments against the other models. Throughout the debate, students were asked to summarize what they learned about all three models in a table, which was turned in for a grade (see Figure 2).

	Double-Blind Review	Single-Blind Review	Open Review
Pro/ Benefit			
Pro/ Benefit			
Con/ Limitation			
Con/ Limitation			

Figure 2. Peer review table

Student responses demonstrated their understanding of the complexity and nuance of peer review. For example, students often untangled how the benefits and limitations of different models were dependent on context, including authors and reviewers' career level and reputation. Students also articulated that while double-blind review's commitment to bias-free review is admirable, double-blind review might be virtually impossible when working in a niche research area. At the same time, students were articulate about how reviews might improve if reviewers could work together (through OPR), but noted that "groupthink" might also occur. One student commented that they had had no idea how complex peer review was and that this activity made them want to make *IUJUR*'s process more explicit to potential authors. Librarians could adapt this debate activity to introduce the complexity of peer review in information literacy sessions and scholarly communication workshops.

Applying Publishing Innovations

In the final wrap-up session, students explored various publishing innovations, including data publication, open peer review, pre-publication peer review, interdisciplinary scholarship, and integrating 3D objects into scholarship. This activity was less structured and more exploratory. While it is unlikely that *IUJUR* has the desire and capacity to integrate these innovations into the journal, the goal of the activity was to make students aware of the changing scholarly publishing ecosystem and to ask them to consider scalable tools and approaches they might consider adopting. For example, because the library supports *IUJUR* and has a robust media repository, it would not be out of the question for *IUJUR* to integrate streaming media and audio into their articles.

The full text of the publishing innovations worksheet is shared in Appendix B. Students were given real case studies to review. Each case study provided information about a journal that

had integrated publishing innovations, including links to additional information on the publication's site. Students self-selected the case study they discussed based on their interests. Thus, group discussion was not organized by board but instead by interest. Groups were asked to discuss and report back on the following questions:

- What is most interesting to you about this case study?
- How does this example push the boundaries of publishing? How does it redefine what scholarship is?
- What piece(s) of this example should *IUJUR* consider incorporating?

This activity could be adapted by library publishers to inspire conversation with editors, including faculty editors, about new publishing practices. It could also be reworked for a general workshop on publishing innovations.

ASSESSMENT

Formative Assessment

Formative assessments—required one-minute papers distributed at the end of every workshop—helped the instructor continually iterate and improve the course. The one-minute papers were used to record attendance and students were asked to answer the following questions:

- What are the two most significant or useful things you learned during this session?
- What question(s) do you still have?

Through these one-minute papers, the instructor found that students were not only receptive to, but highly interested in learning about OA concepts. As an example, after a 30-minute lecture on open access, students asked for more information about how government intervention might help OA progress, examples of tenure and promotion documents that reward faculty for OA, what kind of open source publishing tools exist in addition to OJS, how to calculate impact factor, and how to find a quality OA journal in a specific field. Other examples of questions included how much libraries spend on journal subscriptions, which Creative Commons licenses are used most often by OA journals, what alternatives to impact factor exist, what studies have been done on the advantages of post-publication peer review, and how authors seek recourse if they feel that their article was reviewed unfairly. One student even asked, "Why do open access journals tend to have lower impact factor if more researchers can read and potentially cite their papers?"

Questions often challenged the instructor, requiring more research and pushing the boundaries of her expertise. They also helped the instructor understand where she glossed over a particular concept and needed to spend more time: every workshop started with a review of one-minute paper questions from the last session, which presented an opportunity to do a deeper dive into specific publishing issues. In this way, the one-minute papers inherently shaped the course curriculum. Students questions were also incredibly encouraging as they confirmed students' interest and curiosity in the complexities of scholarly publishing. The use of formative assessment and one-minute papers was indescribably transformative. Librarians should design learning experiences that prompt students to ask their own questions, as these often lead students to dive deeper and even help design more holistic course content.

The results of the formative assessment also illustrate the engagement that is possible when librarians trust undergraduate students to engage with complex publishing concepts. In 2012, Edward Keane published an article titled "Librarian Viewpoints on Teaching OA Publishing Principles to College Students," which reported on a survey sent to librarians working in scholarly communication. The goal of the survey was to learn about librarians attitudes related to educating students about open access. Surprisingly, a common theme was that some respondents felt that "undergraduate students were chronically disinterested" in scholarly communication concepts (Keane, 2012; p. 345). When asked specifically about teaching OA concepts to students, two representative answers were "It's hard enough to get them to use the resources we pay for and to even understand the differences between a database journal and the web" and "Not sure our students really care one way or the other" (p. 343). While the students taking this course are high-achieving undergraduates, this was not the author's experience. Many students were surprised by content in the course, expressing shock that they hadn't heard about a specific trend before.

We shortchange our students when we don't trust them to engage with complex and difficult content. Moreover, it is our responsibility as librarians to scaffold publishing and scholarly communication concepts and make them applicable to students' lives.

Summative Assessment

The pre- and post-tests mentioned previously functioned as summative assessment, as they did not change the design of the course or curriculum covered throughout the course (though the 2017 summative assessment was used to inform a minor redesign of the course for Fall 2018). The summative assessment utilized identical pre- and post-tests,[1] delivered to students in both

[1] The only difference between pre- and post-tests is that the pre-test included demographic questions. Questions 1–10 were omitted from the post-test, as this information had already been collected. See Appendix A for more details.

iterations of the course (see Appendix C). There were no changes to the assessment between 2017 and 2018. Distribution of pre- and post-tests were approved by Indiana University's Institutional Review Board. The pre- and post-tests were not graded and were distributed during the first and last workshops, respectively. The instructor felt that it was unethical to force participation in an activity that was so closely tied to her own research while she was serving as the instructor of record. Pre- and post-test submissions were not identifiable—students provided demographic information but responses were never connected to their name or student ID. Students had to consent to have their responses included in this research project. Of the full group of students participating, 51 completed a pre-test and consented, while 40 completed a post-test and consented.

The pre- and post-test instrument was informed by the literature, specifically approaches developed by Fraser Riehle (2014), Riehle & Hensley (2017), and Weiner & Watkinson (2014). At the same time, the instrument attempted to extend previous assessments by asking students open-ended questions that actually assessed their understanding *after* they answered perception-based questions about their understanding and confidence. Thus, the tests had three parts: student assessment of their knowledge of specific concepts, including open access and copyright, on a five-point Likert scale; student assessment of their confidence with applying this knowledge on a similar five-point Likert scale; and open-ended questions, which prompted students to apply the knowledge they had previously rated. Data from both sets of questions using Likert scales were combined across the 2017 and 2018 courses and analyzed. Open-ended responses from both courses were analyzed thematically, with particular attention paid to student misconceptions.

Pre-Test Results

Figure 3 is sorted by question and summarizes the results from the pre-tests distributed at the beginning of the course. About 74% of students stated that they were "not at all confident" with their ability to negotiate a copyright agreement. Other topics that at least one third of students stated they felt "not at all knowledgeable" or "not at all confident" about were the publishing platform, explaining open access to a peer, and selecting a publication venue for their own work.

In general, students taking the pre-test rated their confidence level in applying specific concepts lower than they rated their knowledge of those same concepts. For example, they rated their understanding of author rights (i.e., copyright restrictions, intellectual property, and author agreements) higher than they rated their confidence actually reading and/or negotiating a copyright agreement with a publisher. The same was true of understanding open access vs. explaining open access to a peer and best practices for citation

vs. quickly identifying errors in the citation style used in the student's discipline. This suggests that there is a disconnect between students' familiarity with concepts and their confidence in actually applying those concepts, at least in the beginning of the course (see Figure 3).

Figure 4 displays the same data as Figure 3 (pre-test responses), but cleaned up and organized to be more easily digested. The author combined the number of student responses for which students answered "very knowledgeable/confident," "knowledgeable/confident," and "neutral." This value was used to sort questions based on student perceptions of knowledge or confidence. The space where the gray bar (neutral) meets the yellow bar (somewhat knowledgeable/confident) represents the percentage of students that perceived that they lacked knowledge about or confidence in applying a concept. Thus, Figure 4 organizes pre-test questions by concepts students felt least knowledgeable/confident about to most knowledgeable/confident about. For example, students felt much more confident with citation practices than they did with explaining open access. Overall, the concepts that students felt most knowledgeable about in the pre-test were common topics covered in a variety of courses: plagiarism, citation practices, and reviewing manuscripts. Students were also confident about their understanding of their role within *IUJUR*, which is not surprising since they had already applied and been accepted to serve as editors.

Interestingly, the topics students felt least confident about were information literacy and scholarly publishing literacy concepts: copyright, open access, assessing the impact of research, and selecting a publication venue. This pre-test data suggests that even the highest achieving undergraduate students do not perceive themselves as competent or knowledgeable in core scholarly publishing concepts. In the demographic section of the pre-test, every student listed involvement in some mix of intensive research experiences, lab work, research fellowships, student organizations like the Pre-Med club, student publications, and volunteer organizations. This finding suggests that scholarly communication topics need to be better integrated into information literacy instruction, intensive research opportunities, and co-curricular programming.

Post-Test Results

Students showed significant improvement between the pre- and post-tests for both courses. This is expected, as there was an intervention (the course) that exposed students to these concepts. Figure 5 summarizes post-test responses and is organized by question. While improvement was evident in the responses, students indicated that they still lacked confidence in identifying citation errors and negotiating a copyright agreement.

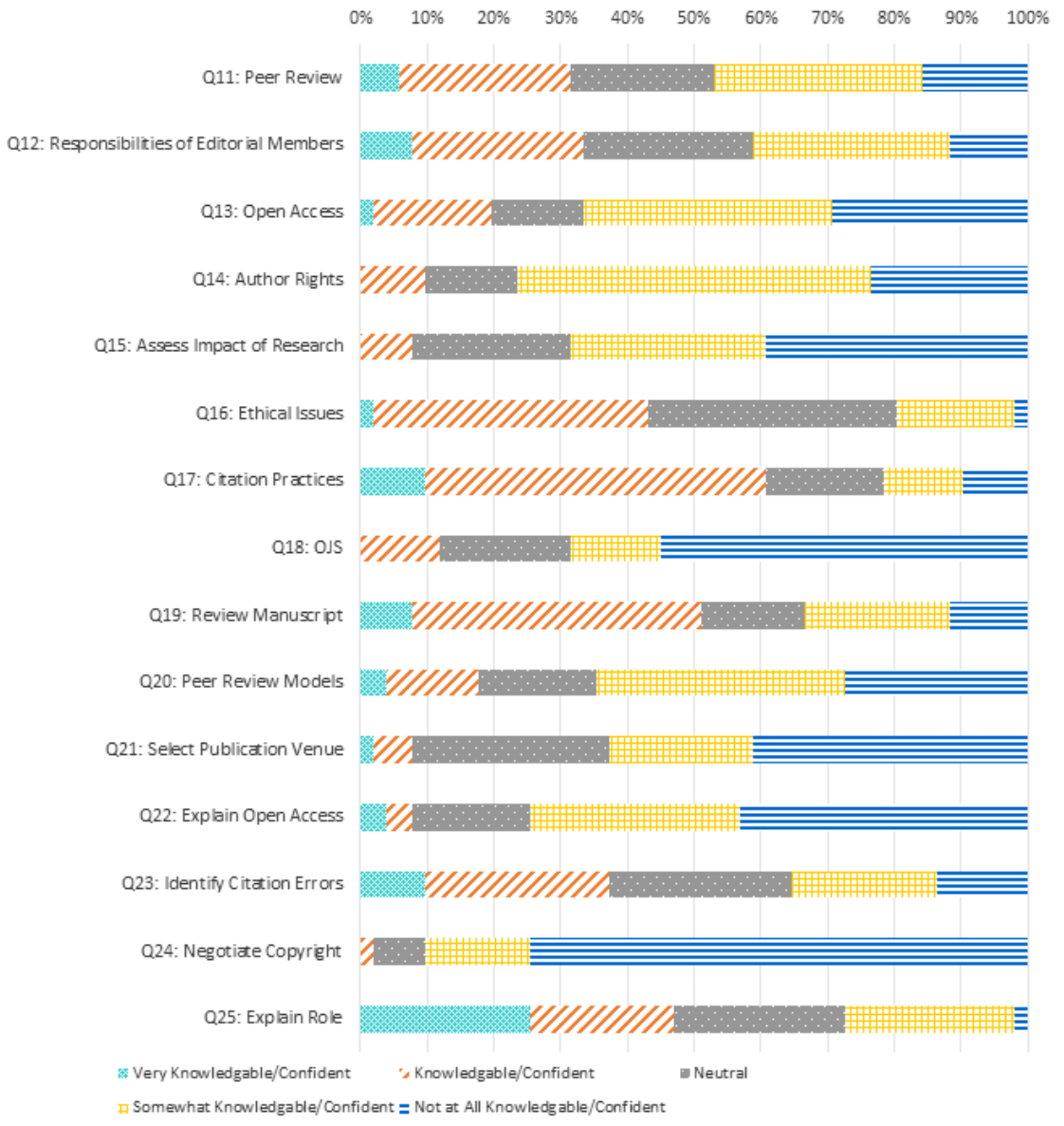

Figure 3. Pre-test results, sorted by question

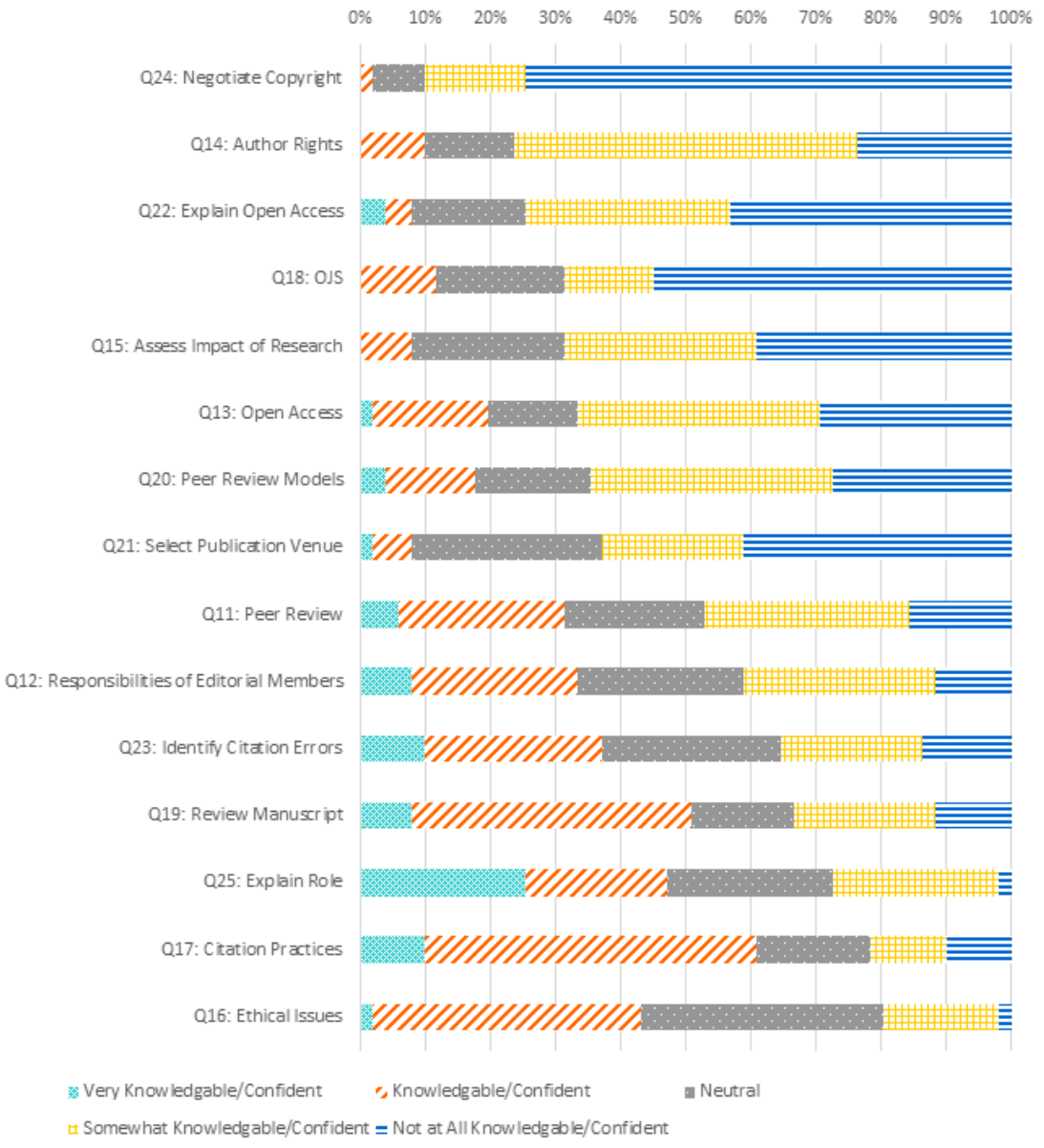

Figure 4. Pre-test results, sorted by highest perception of knowledge/confidence

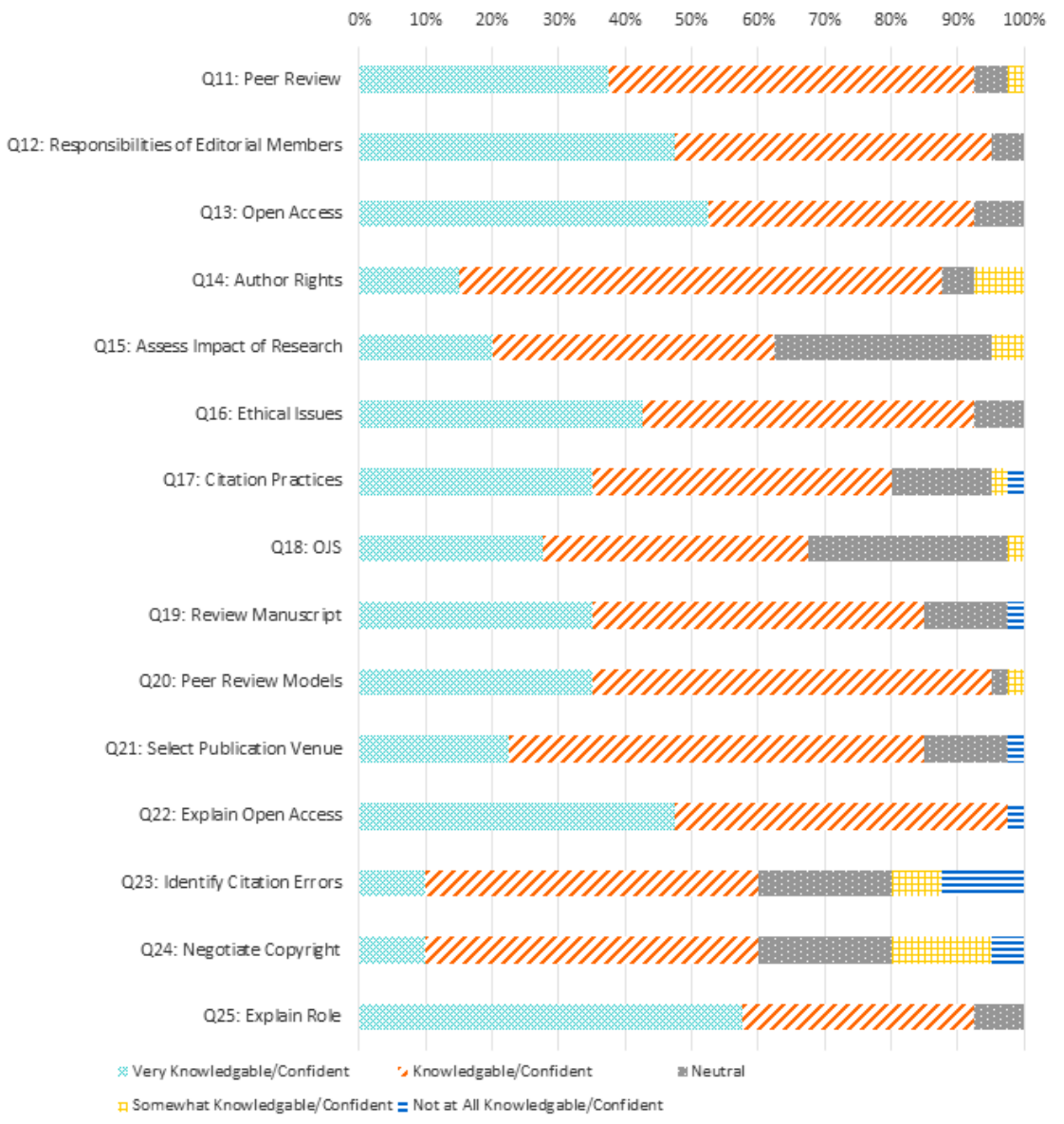

Figure 5. Post-test results, sorted by question

Open-Ended Question Results From Pre-Test to Post-Test

Open-ended responses from both the pre-tests and post-tests were also analyzed by coding for broad themes with a focus on determining what kinds of misconceptions students held when they took the pre-test and if those changed in the post-test. Questions 28 (open access) and 29 (peer review) were the focus of this analysis, as these questions best assess students' application of publishing concepts.

Q28: Describe how open access publishing is different than traditional or closed publishing.

Many students were able to articulate the difference between open access and closed publishing in the pre-test. Of the 52 students who answered this question in the pre-test, 61% (32) had a correct answer. Of the remaining students, 21% (11) had a partially incorrect or unclear answer and 15% (eight) students had a completely wrong answer. These incorrect answers were interesting, as they provide misconceptions that librarians should work to clarify. Some examples include:

- "I think that open access publishing refers to materials published using tax dollars and therefore available to the public without additional financial cost. In contrast, traditional publishing is privately funded and requires payment to access materials published through this method."
- "Open access publishing allows everyone to read your research paper, whereas traditional or closed publishing is research that is accessible only to those within your specific field."

Still, students generally rated their knowledge/confidence lower than what it actually was (see Figure 4, Q22 & Q13).

Responses were much improved in the post-test. Only 10% (four) of the 40 students who responded to this question had an incorrect answer. These misconceptions were centered on the differences between *gratis/libre* OA and gold/green OA. Students also sometimes made blanket statements like this one: "[open access] is free to read, making it more fair for everyone. Authors do not pay to submit and readers do not pay for access." The complexities of OA are incredibly nuanced (and sometimes even debated among scholarly communication practitioners), but these continued misconceptions suggest that additional clarification could be beneficial.

Q29: Describe one flaw of peer review

In the pre-test, students generally defaulted to talking about the potential for bias when discussing peer review. Of the 52 students that responded to this question, 46% (24) men-

tioned bias or subjectivity in some way. A small number (5%, 3 students) talked about peer reviewers having a conflict of interest, illustrating their lack of knowledge about conflict-of-interest journal policies. One incorrect response was that "those who are reviewing your work may not have an in-depth expertise of your topic, which can lead to a potentially flawed or inaccurate/unfair review," illustrating that this student did not understand how peer reviewers are assigned. When comparing students' assessment of their knowledge of peer review in the pre-test to their actual answers, their assessment of their own knowledge was fairly accurate.

In the post-test, 42% (17) of the 40 students who answered this question still discussed bias or subjectivity. However, two students also discussed specific limitations of different peer review models. More students also mentioned a lack of incentive for constructive reviews and the time delay that peer review creates, signaling more complex thinking around peer review as a larger system. The author recognizes that this question could have been phrased differently in order to inspire more thorough answers, as discussed in more detail in the limitations section.

Both formative and summative assessment are highly recommended for librarians hoping to craft similar learning experiences. Students often have a range of familiarity and expertise in publishing topics. Building in assessments whenever possible will help instructors better understand where they should devote more or less time.

LIMITATIONS AND NEXT STEPS

One limitation of the summative assessment was that pre- and post-test responses were not identifiable. As a result, individual students' learning could not be assessed and data had to be analyzed in aggregate. There was also a disparity in the number of students who completed the pre-test and agreed to have their data analyzed (n=51) and the number of students who took the post-test and agreed to have their data analyzed (n=40). Students generally took more time on the pre-test, as the post-test was distributed at the final workshop, which was the week before or the week of finals. Additional methods for distributing assessments should be explored. While the instructor feels it's inappropriate to require students to complete the pre-/post-tests, one potential future strategy could include making the tests optional but providing each student with a unique ID for all one-minute papers, pre-tests, and post-tests in order to track individual progress throughout the course.

The pre-/post-test instrument could also be refined. For example, one of the open-ended questions asks students to name one flaw of peer review. While this question was originally intended to be a catchall for assessing students' ideas about peer review, flaws of peer review

are not actually covered in the course. Questions about limitations of specific peer review models would probably provide more informative responses. Additionally, confidence can be difficult to assess, and it's clear that measuring students' actual understanding (instead of only their perceived confidence) is integral. As a result, confidence questions might be completely omitted in future pre- and post-tests. Finally, the assessment presented in this case study is limited to assessing the Academic Editing & Publishing course and is confined to *IUJUR* editors. Additional assessments could be done to understand how *IUJUR* impacts authors, particularly student authors who are not accepted but still receive feedback from the journal.

Findings from the post-test data suggest that the course itself needs additional adjustments. Application of copyright concepts is still a challenge. One future potential strategy for making copyright concepts more applicable and immediate is to have students debate whether or not a copyright transfer is optimal for authors (as in Gilman, 2013), similar to the peer review debate. Similarly, impact factor might become more tangible if students are asked to manually calculate impact factor for a journal (as in Jones et al., 2006). Additional ideas for improving the course include better integrating key campus partners, such as the writing center.

CONCLUSION

Library publishers are educators. While some library publishers offer for-credit and intensive courses on publishing topics, others educate their users through workshops, consultations, and informal discussions. Both are legitimate and impactful. The unique expertise and perspective that library publishers offer is currently underutilized, particularly in undergraduate research experiences and programs. These experiences can be transformative for students, shaping their career paths and helping them see their work as part of something larger than themselves. Moreover, library participation in—and even leadership of—UR programs further each library's commitment to educate and empower all scholars, regardless of experience level.

One gap librarians experience is a lack of curriculum for presenting key scholarly communication and publishing issues to undergraduate student audiences, perhaps in part because of a lack of confidence in undergraduate students' ability to understand and express interest in these concepts (Keane, 2012). As a profession, librarians must craft curriculum that makes publishing concepts approachable, tangible, and meaningful for all undergraduates, including those involved in research programs. Furthering students' knowledge of scholarly communication issues serves every library's scholarly communication goals, the institution's educational mission, and even the profession's vision for a more open future.

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APPENDIX A: COURSE SYLLABUS
Fall 2018
College of Arts and Sciences, COLL-X 250, Section 15087
Academic Editing & Publishing Syllabus

Class meeting days and times:

Every three-hour session will have a 15-minute break.

- October 21, 2–5 PM
- November 4, 2–5 PM
- November 11, 2–5 PM
- December 2, 2–4:15 PM (wrap up)

Class location: Radio-Television Building 226

Course prerequisites and co-requisites: Involvement with the *Indiana University Journal of Undergraduate Research*

Required texts and materials: There is no textbook and readings will consist of journal articles and other resources available openly or through the Library's electronic resources. When possible, these will be posted to Canvas.

Canvas: Assignments will be turned in and graded via Canvas. It is imperative that you check Canvas regularly, as I will also provide updates and communicate with you in via our course space.

More information: Our one-credit-hour course will serve as a high-level survey of publishing issues, but it is beyond our scope to do a deep dive. If you're more interested in publishing after the course, please contact Sarah and/or peruse the following publication, which offers in-depth coverage of many of the topics we discuss.

Supplementary (not required):

- Morris, S., Barnas, E., LaFrenier, D., & Reich, M. (2013). The handbook of journal publishing. Cambridge: Cambridge University Press.

Course Goals and Learning Outcomes

Course description: The purpose of this course is to inform students of broad academic editing and publishing issues and concepts while giving them a practical skillset for publishing a multidisciplinary undergraduate scholarly journal at Indiana University.

Learning outcomes:

- Students will articulate the specific roles and responsibilities involved in the academic publishing process
- Students will identify best practices for peer reviewing and editing submitted manuscripts
- Students will describe and follow ethical publishing standards for maintaining privacy, copyright, blind review, inclusion, and transparency
- Students will understand the importance of their role as an ambassador for undergraduate research at Indiana University

Grading

Assignment	Due Date	Percent of Final Grade
One-minute papers turned in at the end of each class	--	40% (10% for each class)
Peer review diagram	11/4 in Class	20%
Questions about copyright	11/11 on Canvas	20%
Important journal exercise	12/4 on Canvas	20%

Participation in Class: Full participation points will be awarded to students who are consistently prepared for class and engaged in class content and activities. *I will take attendance in every workshop by collecting students' one-minute papers.*

Peer Review Diagram: In class we will complete a diagram that compares peer review models.

Preparation Assignments: Two assignments, worth 20% each, will be help students prepare for the next class. Before the 11/11 workshop, students will prepare 2–3 questions about copyright, intellectual property, or Creative Commons. Before the 12/4 workshop, students will locate an important journal in their field and describe the journal and how they evaluated it/why they believe it's important.

Schedule

Note: This schedule is subject to change at the instructor's discretion

	Complete **BEFORE** Class	In-Class Activities
Workshop #1, 10/21 *Introduction to* IUJUR *and OJS*	Review syllabus Introduce yourself on the "Introductions" Board in Canvas Watch Public Knowledge Project (PKP) Videos: Background on PKP The Reviewer's Steps	First Half Class Overview, Policies, and Assignments Ice Breaker Pre-Test Why *IUJUR* & Undergraduate Research Sticky Note Activity Organization & Processes of *IUJUR* Second Half OA & Open Source Software OJS Overview OJS Review Worksheet in Pairs One-minute paper
Workshop #2, 11/4 *Reviewer Responsibilities and Best Practices*	Read the *IUJUR* submission assigned to your board Readings on peer reviewer responsibilities and best practices: COPE Ethical Guidelines for Peer Reviewers (scroll down to "guidelines for peer reviewers to access the PDF) Types of Peer Review, Wiley (in Canvas) **Supplementary Readings of Interest (Not Required):** Pat Thompson, Referring a Journal Article: Part I, Part II, and Part III What Editors Do (in Canvas) Common Style Guidelines (in Canvas) Purdue OWL's differences in paraphrasing, summarizing, quoting	First Half What Good Editors Do: Best Practices & Being Constructive Rubrics vs. Line Edits Introduction to *IUJUR* Rubrics Reviewing Submission Activity: Upload Submission in OJS Second Half Peer-Review Models Ensuring a Blind Review Diagram Pros/Cons One-minute paper
Workshop #3, 11/11 *Research Ethics Overview (Citation, Plagiarism, Copyright, Transparency) and Trends in Publishing*	Readings on research ethics and copyright: COPE Principles of Transparency and Best Practices in Scholarly Publishing (pgs. 2–3) Copyright Overview (in Canvas) Creative Commons Overview Compose 2–3 questions about copyright and post them on Canvas discussion board **Supplementary Readings of Interest (Not Required):** Purdue OWL's APA Style Guide Chicago Style Quick Guide	First Half Editorial Best Practices & General Publishing Ethics COPE Principles: Discussion of Reading Ethical Dilemma Case Study Activity Second Half Copyright Guest Lecture: Copyright Transfer and Licenses One-minute paper
Wrap Up, 12/2	Identify a top journal in your discipline/major. Answer the questions on the Canvas discussion board about how you evaluated the journal and why it is respected in your field.	Ideas for Utilizing Your *IUJUR* Experience Measuring Impact of *IUJUR* (metrics, indexing, peer journals) Publishing Innovation Possibilities Post-test Evaluations

APPENDIX B: PUBLISHING INNOVATIONS WORKSHEET
Academic Editing & Publishing
Workshop #4
Publishing Innovations

The purpose of this assignment is to encourage you to consider how innovative publishing practices might be incorporated into *IUJUR*. These case studies also serve as tangible examples of sometimes intangible publishing concepts we have discussed in class, including open access, peer review, and data publishing. Even if these innovations seem out of scope for *IUJUR*, your practical application of these ideas is the point of the activity. Select **only one example** based on your interests and discipline.

1. An Anthropocene Primer (Peer Review)

An Anthropocene Primer is an innovative open access, open peer review publication that guides learners through the complex concepts and debates related to the Anthropocene, including climate change, pollution, and environmental justice. This born-digital publication (www.anthropoceneprimer.org) is a critical and timely resource for learners across multiple fields from academia, to industry, to philanthropy to learn about issues and topics relating to the Anthropocene.

The primer is neither comprehensive (this is, after all, An Anthropocene Primer, not The Anthropocene Primer), nor is it didactic. The primer is a framework to guide individual and collaborative learning from the beginner to advanced levels.

Version 1.0 of An Anthropocene Primer is available for open peer review on the web from October 23, 2017 through February 1, 2018. Open peer review allows users to contribute to and engage with fellow readers and the authors. A video tutorial on how to participate in open peer review is available at www.anthropoceneprimer.org/index.php/videotutorials/.

After open peer review is completed, the primer will undergo traditional blind peer review. The traditional reviewers will have access to the open feedback. After their final review and revisions, version 2.0 of the Primer will be published as both a completed open access ebook and print book.

2. Studies in Digital Heritage (3D and interdisciplinary scholarship)

Studies in Digital Heritage (SDH) (https://scholarworks.iu.edu/journals/index.php/sdh/index) is an innovative, interdisciplinary journal that highlights the role that digital tech-

nology plays in furthering cultural heritage research. Topics appropriate for the journal cover the entire workflow of cultural heritage studies, from discovery and documentation of monuments to analysis, interpretation, and public outreach. Articles should highlight the role of digital technology in facilitating cultural heritage research and applications.

SDH is especially eager to publish work that is innovative and creative in one of two ways: articles whose importance depends on the value of the cultural object studied; and those presenting innovations in digital technologies. For example, an article presenting a new insight or discovery about a key monument such as the Temple of Zeus at Olympia would be appropriate for the journal, as long as that insight arose from the application of digital technology. Equally of interest to SDH are articles about purely technical advances of direct application in one of the fields of cultural heritage.

In addition to articles, SDH also publishes mediated blogs; reviews of books, software, and hardware; and review articles summarizing the state of the technology or art regarding any Digital Heritage topic or discussing the advantages and disadvantages of different approaches to a given task. In addition to text and images, SDH supports the following embedded media: audio, video, and interactive 3D models using a WebGL solution such as 3DHOP, Sketchfab, or Unity.

3. Journal of Open Humanities Data (open data/ new research outputs)

The Journal of Open Humanities Data (JOHD) features peer reviewed publications describing humanities data or techniques with high potential for reuse. Humanities subjects of interest to JOHD include, but are not limited to Art History, History, Linguistics, Literature, Music, Philosophy, Religious Studies, etc. Data that crosses one or more of these traditional disciplines are highly encouraged.

JOHD publishes data papers, which are publications designed to make other researchers aware of data that is of potential use to them. As such it describes the methods used to create the dataset, its structure, its reuse potential, and a link to its location in a repository. It is important to note that a data paper does not replace a research article, but rather complements it. When mentioning the data behind a study, a research paper should reference the data paper for further details. The data paper similarly should contain references to any research papers associated with the dataset.

Data must be made available via a suitable repository. To meet our acceptance criteria, repositories must:

- be suitable for the type of data involved

- be sustainable (i.e. it must have funding and plans in place to ensure the long-term preservation of the data)
- allow open licenses
- provide persistent identifiers (e.g. DOI, handle, ARC etc.)

We are currently inviting submissions of two varieties:

- Metapapers describe humanities research objects with high reuse potential. This might include quantitative and qualitative data, software, algorithms, maps, simulations, ontologies etc. These are short (1,000 word) highly structured narratives and must conform to the Metapaper template.
- Full-length research papers that describe different methods used to create, process, evaluate, or curate humanities research objects. These are intended to be longer narratives (3,000–5,000 words) which give authors the ability to describe a research object and its creation in greater detail than a traditional publication.

Homepage: https://openhumanitiesdata.metajnl.com/
An example of an article: https://openhumanitiesdata.metajnl.com/articles/10.5334/johd.4/

APPENDIX C: PRE- AND POST-TEST ASSESSMENT[1]

Intro

Your completion of this pre-test will assist the instructor in evaluating the effectiveness of this course. There are no right or wrong answers, but please take the time to answer thoughtfully, so that your insights and perceptions are accurately captured.

Consent Page

1. Your responses may be de-identified and used as part of a larger dataset for a research study on undergraduate students' knowledge of publishing issues. The goals of this study are to better understand Indiana University students' knowledge of research and publishing topics, the effectiveness of a one-credit-hour course on student learning, and undergraduate students' beliefs about the importance of having research and publishing expertise. No identifiable information will be linked to your responses and your answers will not be accessed until final course grades are submitted. Are you willing for your responses to be included in the dataset for this research?

[Yes/No]

Demographics

2. Year in school
[Year 1
Year 2
Year 3
Year 4
Year 4+]

3. Age
[Fill in]

4. Which College or School are you in? (select one)
[College of Arts and Sciences; School of Art, Architecture, and Design; IU Kelley School of Business; School of Education; School of Global and International Studies; IU Hutton Honors College; School of Informatics, Computing, and Engineering; Media School; School of Music, IU Jacobs School of Music, School of Nursing; School of Public and Environmental Affairs; School of Social Work]

[1] Only the pre-test included demographic questions like year, major, and research involvement. The post-test was the same instrument with questions 1–10 omitted.

5. What program(s) are you heavily involved in on campus? These can be curricular or co-curricular.
[Extended response]

Have you ever?

6. Published formally, in an edited book, peer-reviewed journal, or other publication?
[Yes/No/Not Sure]

7. Worked in a research in a lab?
[Yes/No/Not Sure]

8. Written a thesis?
[Yes/No/Not Sure]

9. Presented a research poster?
[Yes/No/Not Sure]

10. Attended a conference in your discipline?
[Yes/No/Not Sure]

How would you rate your current level of knowledge/understanding of the following?

11. The peer review process (or the review of scholarly publications, including journal articles and books)
[Very Low, Low, Neutral, High, Very High]

12. The distinct responsibilities of editors, peer reviewers, and authors in the journal publishing process
[Very Low, Low, Neutral, High, Very High]

13. Open access vs. closed/paywalled publishing
[Very Low, Low, Neutral, High, Very High]

14. Author rights (copyright restrictions, intellectual property, and author agreements)
[Very Low, Low, Neutral, High, Very High]

15. Tools for assessing the impact of scholarly research (bibliometrics, citation analysis, and indexing)
[Very Low, Low, Neutral, High, Very High]

16. Ethical considerations for conducting and publishing research (plagiarism, copyright, privacy)
[Very Low, Low, Neutral, High, Very High]

17. Best practices for citation (following a specific style guide, paraphrasing vs. directly quoting)
[Very Low, Low, Neutral, High, Very High]

At this current moment, how confident are you in your ability to do the following?:

18. Navigate Open Journal Systems (OJS) in order to publish an article or issue
[Not at all Confident, Somewhat Confident, Neutral, Confident, Very Confident]

19. Constructively review and edit a manuscript
[Not at all Confident, Somewhat Confident, Neutral, Confident, Very Confident]

20. Articulate the strengths and weaknesses of different peer review models (double blind, single blind, open)
[Not at all Confident, Somewhat Confident, Neutral, Confident, Very Confident]

21. Make informed decisions as an author about how best to communicate your work, including selecting a publication venue
[Not at all Confident, Somewhat Confident, Neutral, Confident, Very Confident]

22. Explain open access to a peer that has never heard of the concept
[Not at all Confident, Somewhat Confident, Neutral, Confident, Very Confident]

23. Quickly identify errors in the citation style in your discipline (APA, Chicago, MLA)
[Not at all Confident, Somewhat Confident, Neutral, Confident, Very Confident]

24. Read and/or negotiate a copyright agreement with a publisher
[Not at all Confident, Somewhat Confident, Neutral, Confident, Very Confident]

25. Describe your specific role and/or responsibilities as an editor for the *Indiana University Journal of Undergraduate Research*
[Not at all Confident, Somewhat Confident, Neutral, Confident, Very Confident]

To the best of your ability, please answer the following:

26. In your own words, why does publishing undergraduate research matter?
[Extended Response]

27. In your own words, describe how open access publishing is different than traditional or closed publishing.
[Extended Response]

28. Describe one flaw of peer review.
[Extended Response]

29. Describe your specific role and/or responsibilities as an editor for the *Indiana University Journal of Undergraduate Research*.
[Extended Response]

30. If you wanted to publish your own work in a journal, what would be your first step?
[Extended Response]

31. Do you have any additional comments?
[Extended Response]