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# Let Wikipedia through the Gates!: A Trojan Horse Approach to Information Literacy

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## **Structured abstract**

*Purpose:* This article investigates which learning targets can be achieved by using Wikipedia as a tool for teaching information literacy within the context of brief one-shot library instruction sessions.

*Design/methodology/approach:* In this case study, a Wikipedia-editing activity was incorporated into two-hour one-shot instruction sessions. A variety of qualitative data was collected during these sessions: student reflections during a facilitated discussion, student responses to exit-survey questions, and instructor observations about the extent to which students completed Wikipedia-editing tasks.

*Findings:* Students found Wikipedia-editing activities and Wikipedia-related discussions engaging, and as a result they seemed to learn valuable lessons about research and writing. Students participating in this project effectively identified gaps in Wikipedia entries, critically evaluated and used sources to address those gaps, and appropriately documented those materials. Students were easily encouraged to be critical about information sources, including Wikipedia and more traditionally scholarly resources alike.

*Originality/value:* While a great deal of attention has been paid to teaching with multi-week Wikipedia assignments and coursework, evidence from this project suggests that Wikipedia-related activities can be used effectively within much narrower time constraints, including during brief one-shot library instruction sessions.

## **Introduction**

Wikipedia, the free online encyclopedia anyone can edit, has excellent potential for encouraging experiential learning of information literacy skills. Wikipedia-editing activities can be deeply and rapidly engaging for learners and teach a wide range of valuable research and writing skills. This article describes one librarian's effort to use rapid Wikipedia-editing activities to foster information literacy competencies and encourage critical thinking. Since one-shot instruction sessions are often the teaching opportunity available to library educators, this project investigates the extent to which information literacy skills can be taught using Wikipedia-editing in these brief single classes with students. Evidence collected during Wikipedia-related learning activities indicates some successful learning about identifying information needs, resource

evaluation and differentiation, searching, using information for a specific purpose, and using appropriate documentation procedures.

A growing number of educators are using Wikipedia as a pedagogical tool, most commonly as part of activities spaced over multiple weeks or over an entire semester. These educators are finding—and the author’s own experiences have yielded similar results—that Wikipedia is a useful tool for teaching valuable lessons about research and writing processes (many summarized in Konieczny, 2012). Others are bolstering Wikipedia content via shorter, daylong Wikipedia “edit-a-thons”—special in-person group meetups during which volunteers create and refine Wikipedia pages. Edit-a-thons have commonly been used to address perceived imbalances in Wikipedia’s content or editor-community demographics. For example, the online encyclopedia is male-skewed in both of those regards (Meyer, 2013; Simonite, 2013). Although attempts to use an edit-a-thon as a pedagogical tool have not been reported, these single-meeting sessions nonetheless hold great potential for immersing learners in collaborative research and writing processes.

For most instruction librarians, the brief (i.e., 50-120 minutes long) single-meeting session is a much more common instructional timeframe, regardless of the particular information literacy lesson/activity. If one thinks of the multi-week or daylong Wikipedia activity as taking a prolonged approach of something like long distance, using Wikipedia in a one-shot looks more like a sprint. This research investigates which learning targets can be achieved by using Wikipedia as a tool for teaching information literacy within what the author suggests is an “edit-sprint”—a Wikipedia-editing activity compressed within a one-shot library instruction session.

The author’s experimentation with the Wikipedia edit-sprint yielded results that indicate that students in the one-shot achieved a subset of the same benefits attributed to multi-session editing activities. When asked to add scholarly support and citation information for unsubstantiated claims within Wikipedia articles, students demonstrated several important learning objectives: They defined an information need within a manageable focus, evaluated potential resources and identified their value and differences, searched relevant resources for a specific purpose, and used an appropriate documentation style to cite sources.

This article provides some of the theoretical perspectives underpinning the use of Wikipedia as a pedagogical tool, discusses some of the arguments in the debate about the appropriateness of its classroom use, reports preliminary findings from classes using Wikipedia-

editing activities in library instruction, and offers suggestions for educators considering using Wikipedia as a teaching tool. A special focus is placed on the teaching approaches used to facilitate Wikipedia-editing activities within one-shot library instruction sessions, as well as some associated challenges and potential future directions.

### **Literature review**

Educators across all academic disciplines are currently engaged in an evolving debate around the role of Wikipedia in students' learning experiences. There has been a visible shift in many educators' perceptions of Wikipedia, with many incorporating Wikipedia-editing assignments or writing-for-Wikipedia projects into formal coursework (e.g., Camihort, 2009; Carver et al., 2012; Cummings, 2009; Kolowich, 2011; M. A. Wilson, 2008; Scharf, 2013). The large number of recent, current, and planned courses on the Wikipedia Education program Courses page<sup>[i]</sup> is perhaps an indication of sustained interest in Wikipedia's pedagogical potential. When these courses use Wikipedia as a platform for teaching courses, they often incorporate students' course-related research and writing as contributions to the online encyclopedia. Some scholars—most notably leaders from academic organizations such as the American Psychological Society and the American Sociological Association—have suggested that academics have an obligation to engage their students in just this sort of Wikipedia-related coursework (Banaji, 2010; E. O. Wilson, 2011). Others have argued that academic experts—especially those who have received public or charitable funding—should contribute their disciplinary knowledge to Wikipedia for the betterment of society (Bateman and Logan, 2010).

Case studies dominate published findings about learning activities involving Wikipedia editing, and studies' qualitative and quantitative data remain sparsely reported. Articles generally suggest theoretical considerations, provide selected student reflections, offer summary conclusions, share lessons learned, or provide suggestions for other instructors and researchers. Although data-driven reports are scarce, many instructors provide accounts that detail the potential benefits of Wikipedia-editing assignments. Several are described below.

Educational opportunities with this kind of potential for real-world impact seem to improve student engagement and motivation (e.g., Bruning and Horn, 2000; Scharf, 2013). Similarly, students welcome the opportunity to participate in a global, “complex discourse community” of content creators with whom they can exchange ideas and from whom they receive a response to their writing seldom seen in more traditional classroom settings (Reilly,

2011). While producing content for the purpose of public consumption, students have reported that familiar research and writing tasks like drafting, information seeking, and source citing became imbued with new and deeper meaning (Forte and Bruckman, 2009). This engagement is beneficial regardless of the learning objective or timeframe, and educators can harness it in multi-week projects, one-shot instruction sessions, and a variety of teaching opportunities in between.

In addition to benefits in student engagement, educators have reported that Wikipedia is a useful tool for teaching valuable lessons about research and writing processes. Students can develop—by scrutinizing and writing encyclopedia-style content—a better understanding of different publication types and their corresponding writing styles (Schulenburg, et al., 2011). They show improved abilities to critically evaluate sources and identify reliable ones (Patch, 2010). They learn to better parse fact from opinion, and they develop a better appreciation for the value (and challenge) in verifying information using multiple sources (Scharf, 2013). They develop a better understanding of the strengths and limitations of Wikipedia while doing their own editing of the site (Reilly, 2011). Students have reported similar benefits. In a survey commissioned by the Wikimedia Foundation as part of a multi-university writing-for-Wikipedia project involving a range of multi-week assignments, students reported that Wikipedia assignments were equal to or better than traditional research papers for helping them improve their writing skills (61%), research skills (81%), editing skills (86%), and critical analysis skills (76%)(reported in Roth, 2013).

Students' improved critical thinking about information lies at the heart of many of the gains observed with Wikipedia-related learning activities. There are several important reasons why Wikipedia can be an effective prompt for critical thinking about information literacy. While traditional scholarly resources provide few opportunities for novice scholars to be critical about those resources (since they have limited experience with them and have not yet learned how to critique them), Wikipedia is a resource that students have meaningful experience with and a resource whose strengths and weaknesses they have directly observed. Students are not as likely to give critical thought to the scholarliness of resources that they have been consistently taught are scholarly (Jacobs, 2009). But they can be easily prompted to think about the shortcomings and scholarly merit of a resource they understand and use with great effect. After active inquiry of Wikipedia and some reflection on its related issues it would be ideal to see students apply

similar criteria to more traditionally reputable resources, Jacobs (2009) argues. Interrogating a familiar and comfortable resource like Wikipedia “opens a door to asking probing questions about other information sources” (Jacobs, 188). Because this approach explores inherently controversial aspects of scholarly communication and is framed around student’s prior experiences and attitudes, it should be highly engaging for learners and potentially effective in prompting critical thinking about research and writing. It is therefore well suited for educational opportunities ranging from brief discussions within one-shot instruction sessions to full-semester-long endeavors.

Many educators have reported findings from semester-long or multi-week activities, but a wide range of fruitful activities are possible in shorter timeframes. Analyzing and reporting on more than five years of Wikipedia teaching experience Konieczny (2012) provides specific lesson plan suggestions, including learning targets, student assignments, and classroom activities. College- and university-level educators might be inclined—as they begin to allow Wikipedia contributions to replace more traditional writing projects—to assign their students to create new Wikipedia articles. However, options for meaningful educational opportunities can focus on refining existing Wikipedia content, with activities ranging from brief to in-depth (Konieczny, 2012). Most Wikipedia teaching approaches involve some form of direct participation by editing, but some ask students to observe or analyze. For example, Jacobs (2009) asks students to compare and contrast coverage of the same topic in different information sources, which readily prompts reflection on advantages and disadvantages of every source examined.

After using semester-long Wikipedia activities to successfully teach information literacy lessons in a research- and writing-intensive course for first-year college students (Epperson and Oliver, 2012; Oliver, 2013), the author began exploring the potential of much shorter activities within brief one-shot instruction sessions by conducting mock one-shot classroom sessions at two educator conferences (Oliver, 2014a; Oliver, 2014b). The semester-long project made many weeks available to give learners firsthand experience with creating and refining Wikipedia content, and the project yielded robust assessment data about students’ evaluation and use of information for scholarly projects. Mock one-shot classroom sessions suggested that valuable lessons could be learned within a much narrower timeframe like the brief library instruction sessions explored in this project.

### **Methods - Learner population**

This project was designed to explore how Wikipedia-related learning activities might fit within a larger information literacy instruction program. Library instruction typically reaches students in a series of one-shot library sessions—ranging from general to discipline-specific—in a variety of courses throughout their degree programs. This case study attempts to explore some of the possibilities and constraints of such activities, including considerations related to learner audience.

Wikipedia-editing activities were used in library sessions for recent high school graduates completing a two-month course called “Race, class and gender” during the summer preceding their first year at college. These students are entering a public, liberal-arts-focused, mostly undergraduate college. Each of the 4 class sections had an enrollment of 14-17 students. These students are participants in New Jersey’s state-funded Educational Opportunity Fund program, which provides financial, curricular, and social support to students from economically and educationally disadvantaged backgrounds. Statewide this program enrolls 12% of freshmen entering the state’s colleges and universities, and, although participation is not restricted by students’ race or ethnicity, EOF sponsors approximately one-third of African American and Latino students enrolled at the 41 participating community colleges and four-year public and private colleges and universities.<sup>[ii, iii]</sup>

### **Methods - Lesson plan details**

The Wikipedia edit-sprint was incorporated into a two-hour one-shot instruction session. The session had four parts: first, a 30-minute introduction to the library website and its resources; second, 20 minutes of facilitated critical discussion about the usefulness and limitations of Wikipedia; third, 10 minutes of lecture and demonstration about the practice and principles of editing Wikipedia, as well as some introduction to the culture of Wikipedia contributors; and lastly, about 30 minutes spent making edits to Wikipedia articles.

Students were expected to achieve the following learning objectives: 1) Define an information need within a manageable focus, 2) Evaluate information sources and identified their value and differences, 3) Effectively search relevant resources, 4) Use found information for a specific purpose, and 5) Use an appropriate documentation style to cite sources. These objectives were aligned with several items from the Association of College and Research Libraries (ACRL) Information Literacy Competency Standards (2000), namely Standard One (“...determines the

nature and extent of the information needed”), Standard Four (“...uses information effectively to accomplish a specific purpose”) and Standard Five (“...uses information ethically and legally”).

#### *Introduction to library website and resources*

Students were taught how to navigate the various parts of the library's website, including the different controls for identifying and accessing books, periodicals, and reference-collection materials. This portion of the lesson also taught students how to read citations for different types of material, since understanding those citations (at least being able to differentiate book citations from article citations) is a prerequisite and fundamental skill for navigating the different pathways on the library's website. Without this understanding, students may struggle to know which of the website's multiple controls and pathways can help satisfy a particular library research need. Special emphasis—through a demonstration and a hands-on practice activity—was placed on accessing full text using the citation information of one specific journal article. Little or no attention was paid to demonstrating searching tactics in the library catalog or subscription databases during this portion of the session. Those learning targets were incorporated into the context of the Wikipedia-editing activity itself.

#### *Facilitated critical discussion about Wikipedia*

The critical discussion part of the Wikipedia lesson began with a think-pair-share exercise that asked students to reflect on Wikipedia's usefulness and on its limitations. Students were asked first to reflect on "What is Wikipedia useful for?" The think-pair-share approach asks students to first reflect individually, jotting down one idea or concept per sticky note. After briefly exchanging ideas with a paired classmate, students shared ideas with the rest of the class and the instructor. Sticky notes were collected and analyzed.

#### *Introduction to Wikipedia editing basics*

Students were shown the basic anatomy of a Wikipedia article (including main article, talk, and version history pages) and were instructed on the guiding principles and governance structure that shape content development in Wikipedia. They were taught about Wikipedia's Five Pillars: “Wikipedia is an online encyclopedia,” “Wikipedia has a neutral point of view,” “Wikipedia is free content,” “Wikipedians should interact in a respectful and civil manner,” and “Wikipedia does not have firm rules” (Wikipedia, 2014). The Five Pillars serve as a summary of the fundamental principles of Wikipedia. They provide a backbone for numerous additional

policies and guidelines that propose ever-evolving expectations about Wikipedia content and the conduct of Wikipedians.

During these sessions, special emphasis was placed on Wikipedia's encyclopedia format, particularly with regard to appropriate writing style and the reliable resources that should be used to substantiate Wikipedia contributions. Special emphasis was also placed on the importance of expecting and exhibiting respect while editing. This portion of the lesson concluded with a brief demonstration and tour of the "featured article" on the main page, which is an example of high-quality Wikipedia content that is refreshed daily.

*Activity: Editing Wikipedia articles*

Students were grouped into teams of three or four, and they were asked to locate and add scholarly support and citation(s) for unsubstantiated claims within a Wikipedia entry. To help students find Wikipedia entries that contain unsubstantiated claims, teams were asked to search the web using the following: *site:en.wikipedia.org "needs additional citations"*. To this search string students added topic keywords relevant to their course, major, program, or other topic focus. This activity was broken into three parts: 1) identify a sentence or paragraph in Wikipedia that contains an unsubstantiated claim, 2) find a source using library resources, and 3) add that source's citation information to Wikipedia. To complete the final step of entering the edit, students logged in using instructor-provided "dummy" accounts. These edits were collected for later analysis.

**Results**

A variety of qualitative data was collected during these sessions: student reflections during a facilitated discussion, student responses to exit-survey questions, and instructor observations about the extent to which students completed the Wikipedia-editing tasks. Although the apparent focus of the session was Wikipedia, students demonstrated that they learned more overarching information literacy lessons. Analysis of this data suggests that students learned about the local library's resources while completing these Wikipedia activities. They effectively found unsubstantiated claims in Wikipedia articles. They searched for and evaluated resources to address those Wikipedia deficiencies, and they used appropriate documentation procedures. These findings also suggest some development toward a more sophisticated understanding of Wikipedia while highlighting some areas of lingering confusion.

*Student reflections during facilitated discussion*

In a facilitated class discussion before the hands-on Wikipedia editing activity, students made a range of comments that praised both Wikipedia's format and the information needs that it can satisfy. Students' comments about the usefulness of Wikipedia were far more varied and numerous than their comments about its limitations. Students mentioned the generally very readable writing style, the highly useable format, the quick findability within most web-search result lists, and the comprehensiveness of topics covered (i.e., near certainty of coverage). They also mentioned the various ways that they use Wikipedia. Most of all, they mentioned that they use it as a springboard for looking for information elsewhere, including using Wikipedia bibliographies as a discovery tool for finding more trustworthy alternatives to Wikipedia articles. They said they use it to get background information for homework and test preparation, and they use it to answer a wide range of personal questions like musician discographies and movie synopses. In contrast, when asked to reflect on the limitations of Wikipedia (again using the think-pair-share approach), there was no variation in their comments. Students predictably offered some version of "It is unreliable because anyone can edit it."

*Student responses to exit-survey questions*

Students were asked to complete a short survey at the end of the session. They were asked to respond to the following prompts:

1. "What is the clearest thing you heard today during the library session?"
2. "What is the most confusing thing you heard today during the library session?"
3. "Name two effective ways to use Wikipedia for college-level work."
4. "My thinking about Wikipedia has changed during today's session." (choice of one of the following: "Strongly agree," "Agree," "Neither agree nor disagree," "Disagree," or "Strongly disagree"). Respondents who agreed that their thinking about Wikipedia had changed were asked to elaborate.

Of the approximately 60 students enrolled in this course, 45 participated in these sessions, and all of those students completed this survey. Most of these questions (all except #4) were free-field and open-ended, so students could provide more than one answer. Therefore, total response counts are greater than the number of respondents and total percentages are greater than 100%. Student responses were coded to reveal patterns, similarities, and differences. See Tables 1, 2, and 3 for those summary coded data.

1. "What is the clearest thing you heard today during the library session?"

The most commonly cited “clearest thing” (n=18, or 40%) was the library’s website and resources. In these comments, students generally mentioned the library website interface or some aspect of journal article databases. Students also frequently said that they better understood how to differentiate publication types based on citation information (n=10, 22%). A total of 19 students (42%) named some Wikipedia-related aspect as a “clearest thing”, with the two most common being the Wikipedia-editing process (n=8, or 18%) and Wikipedia’s limitations (n=7, or 16%). See Table 1 for more details.

2. “What is the most confusing thing you heard today during the library session?”

The most commonly cited “confusing thing” (n=21, or 47%) was the Wikipedia-editing process. Students also frequently mentioned being confused about academic citation procedures and conventions (n=11, or 24%). Students commonly mentioned being confused about how to search for academic sources using library interfaces and subscription resources (n=7, or 16%). A total of 25 students (56%) named some Wikipedia-related aspect as a “confusing thing”. See Table 2 for more details.

3. “Name two effective ways to use Wikipedia for college-level work”

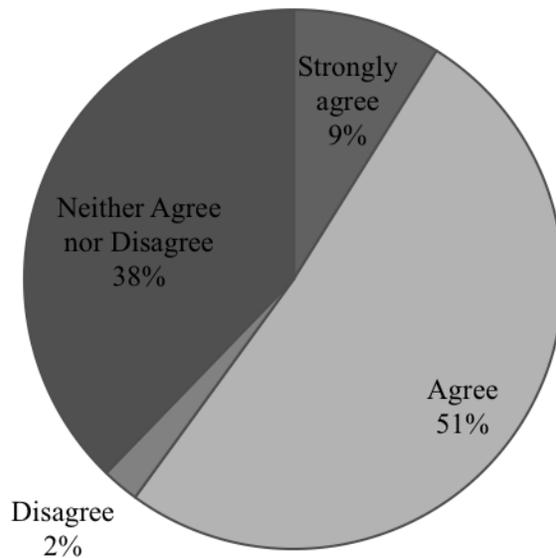
Students most commonly talked about their Wikipedia use being one early step within a larger research process. Responses included the terms “overview,” “background,” “general information,” “basic information,” “general knowledge,” or “fast information” 42 times. Many mentioned using Wikipedia articles’ bibliographies to discover related materials (n=22, or 49%). Some of those students also specifically mentioned that these materials cited in Wikipedia bibliographies could likely be more trustworthy or appropriate than Wikipedia articles themselves. About one third of respondents (n=16, or 36%) mentioned using Wikipedia as a springboard into other resources and materials, making comments like “pre-research,” “starting point,” and “help lead you to what you need to know.”

4. “My thinking about Wikipedia has changed during today's session.”

About half of students (n=23, or 51%) agreed that their thinking had changed, and four (4) (or 8.9%) strongly agreed that their thinking had changed. About one third of students (n=17, or 37.8%) said they neither agreed nor disagreed that their thinking had changed. Just one student disagreed, and none strongly disagreed.

**Figure 1: Student responses to exit-survey question about attitudes toward Wikipedia (n=45)**

“My thinking about Wikipedia has changed during today's session.”



The twenty-seven (27) respondents who said their thinking had changed were asked to explain how. Of those twenty-seven students, twenty-four (24) answered the follow-up question. Ten students said they considered Wikipedia to be more trustworthy than they had previously thought. A variety of comments suggested that those respondents had a more nuanced understanding of Wikipedia, with four (4) suggesting that greater openness to editing could potentially improve Wikipedia content, another four (4) mentioning that Wikipedia should be used with care, and three (3) mentioning that Wikipedia is more appropriate for some uses over others. In contrast, three (3) respondents said they saw Wikipedia as less trustworthy as a result of the session, and three (3) respondents said they had not realized how easily Wikipedia can be edited. One respondent mentioned that the encyclopedia format of Wikipedia could be a limitation and a consideration. See Table 3 for details.

*Instructor observations about the extent to which students completed the Wikipedia-editing tasks*

Several student teams completed Wikipedia edits within the approximately thirty minutes allotted. In four (4) different sections of this class, a total of fifteen (15) teams made seven (7) edits to Wikipedia. For those teams that did not fully complete the activity, most were very close to finishing when their session ended. Nearly all completed the first two tasks (i.e., identifying an

unsubstantiated claim in Wikipedia and identifying a resource to offer support for that claim), leaving only the step of adding citation information to Wikipedia. In one of the four (4) sections, the session started about ten minutes late and, although all students made meaningful progress, just one of the section's four teams finished.

### **Discussion**

This project's assessments suggest that Wikipedia-related activities helped facilitate successful learning. The project also highlighted some areas of lingering confusion about Wikipedia and aspects of college-level research and writing. Analysis of students' Wikipedia edits side by side with instructor observations of in-class activities suggests that students were effective in identifying information discrepancies in Wikipedia, evaluating resources, using information for a specific purpose, and using appropriate documentation procedures. In open-ended exit-survey responses, most students reported feeling more comfortable with library research, resources and processes; many expressed relief or comfort with the Wikipedia-editing process; and all named appropriate ways to use Wikipedia. In both in-class discussions and exit-survey responses, students showed some degree of critical thinking related to information sources. In contrast, some students remained confused about the role of Wikipedia in their academic lives.

In exit-survey responses, students commonly mentioned lessons related to use of local library interfaces and general research processes. It is fair to note that although some of the sessions' discussions and activities involved Wikipedia, a meaningful portion of the session was spent covering more fundamental aspects of library research. This at least partially explains why three (3) of the four (4) most common sets of "clearest thing" comments followed this thread: navigating the college library's website and resources (n=18, 40%); interpreting citation details in order to distinguish publication types and facilitate navigation of library resources (n=10, 22%); accessing journal article full text (n=7, 16%). Although a portion of each session's time and attention was focused on direct instruction about specific library interfaces and resources, the Wikipedia activities arguably provided practical and experiential opportunities to reinforce and apply these fundamental lessons.

In addition to this high concentration of comments about general library resources and processes, responses about Wikipedia were nearly universal, with nineteen (19) clearest-thing comments (42%) and twenty-five (25) confusing-thing comments (56%). About one-fifth of

students (n=8) mentioned some aspect of the Wikipedia-editing process as a clearest thing. Notably, the most commonly cited “confusing thing” was the Wikipedia-editing activity (n=21, or 47%).

Evidence of student confusion during and after these sessions might be explained by several different factors. The editing activity carried a certain inherent messiness because it was learner-driven, calling for multiple self-directed steps with minimal instructor intervention. The narrow timeframe also presents a significant challenge, constraining the learning activities and limiting the potential for instruction or remediation. It is also likely that, given the strength of students’ prior and existing attitudes toward Wikipedia, the change in thinking called for by these activities is too abrupt for some students to make in a relatively short amount of time.

Most students said their thinking about Wikipedia had been changed by the session, with twenty-three (23) (51%) responding “Agree” and four (4) (9%) responding “Strongly agree.” Many students (n=17, or 38%) said they neither agreed nor disagreed that their thinking had been changed. Just one student disagreed and none strongly disagreed. These responses suggest that students often hold simplistic attitudes toward Wikipedia, and that those ways of thinking are easily made more sophisticated. However, the phrasing of the question was problematic - it potentially invited students to provide an answer that would satisfy the library instructor and may not reflect more carefully considered student reflections.

When asked to elaborate on how their thinking had changed, this subset of students (n=27) provided interesting responses. These students were asked, “How has your thinking about Wikipedia changed?” Analysis of these responses suggests that the session helped most students learn and fostered confusion in a few others. Most made comments suggesting that they view Wikipedia as more trustworthy after the session (n=10, 22%). Some of those respondents reflected an appropriately nuanced thought process about this. For example, one student wrote, “Wikipedia is trustable but one must be careful.” Another wrote, “I thought of Wikipedia as a totally worthless enterprise because it could be edited by anyone. I have now learned that Wikipedia is safer to use to gather general information concerning a topic.” Other respondents—a smaller subset, thankfully—seemed to misunderstand, expressing trust in Wikipedia to an inappropriate degree or for inappropriate uses. For example, one student wrote, “I now know that the people who write all the information are basing it off of facts and that not just anyone can edit at any time.” Some specifically mentioned being confused about potential ambiguities

surrounding Wikipedia's use in academic pursuits. A few students apparently resolved those ambiguities by ignoring them, swinging from fully distrustful of Wikipedia to fully trusting.

One of the starting assumptions for these critical-thinking and experiential activities is that students have already learned to exhibit certain negative attitudes about Wikipedia, namely that the "anyone-can-edit it" aspect makes the resource wholly untrustworthy. These students mostly bear out this assumption. However, there were a few students who started the session with very trusting attitudes toward Wikipedia. The session led these students to a more guarded view of Wikipedia: "I always believed that it was a very reliable source, but now I understand that just like people it's not perfect" and "It is not so much reliable." Similarly, there were few students who hadn't realized that Wikipedia is so open to editing. For example, one student wrote, "I never knew that information [in] Wikipedia could be changed so quickly by anyone."

Relatively few students mentioned the two points that should be ideal targets for critical thinking: 1) content development by more Wikipedia editors potentially improves (not harms) its quality, and 2) Wikipedia's encyclopedia format is arguably the most compelling reason for limiting its use. For example, one student wrote, "I never considered the fact it can be a good thing it's so public." Another wrote, "Wikipedia will never be a good source to cite. This is mostly due to the fact that it doesn't go deep within a concept." Another wrote, "Wikipedia is an online encyclopedia. Do not cite it because it doesn't delve into too much detail." These learning targets will receive greater attention in the author's future teaching efforts.

Further study is needed to assess the transfer of learning to information sources beyond Wikipedia. While this project's activities potentially addressed overarching information literacy skills (e.g., identifying information gaps and providing sources for unsubstantiated claims) and facilitated more sophisticated ways of thinking about research (e.g., critical thinking about the criteria of trustworthy sources), the study design does not permit conclusions about student learning related to sources besides Wikipedia. Future research should incorporate pre-intervention assessment of a wider range of student skills, attitudes, and behaviors, thus allowing more robust post-intervention analysis of the effect these activities have on learning. Additionally, detailed content and bibliographic analysis of student Wikipedia edits could be conducted, which could help assess students' ability to find, evaluate and integrate sources. Future efforts should extend these Wikipedia-editing activities into other student audiences. For example, there might be distinct advantages to using Wikipedia-editing activities in advanced,

discipline-specific classes where students' emerging disciplinary knowledge might permit them to make more substantial edits to Wikipedia.

### **Conclusion**

Wikipedia can be an effective teaching tool for a wide range of learning targets and in a variety of contexts, including the brief one-shot library instruction session. Students found Wikipedia-editing activities and Wikipedia-related discussions engaging, and as a result they seemed to learn valuable lessons about research and writing. Students participating in this project effectively identified gaps in Wikipedia entries, critically evaluated and used sources to address those gaps, and appropriately documented those materials. Students were easily encouraged to be critical about information sources, including Wikipedia and more traditionally scholarly resources alike. Although students initially struggled with nuanced critical discussions about a resource they have been consistently warned to avoid, it appears that only relatively few remained confused about how Wikipedia might appropriately figure in their academic and professional careers. Overall, these Wikipedia-focused one-shot sessions were effective in introducing students to fundamental library resources and interfaces. This project's assessments suggest that Wikipedia-related activities can be used effectively to facilitate information literacy learning within brief one-shot library instruction sessions.

### **Appendix: Suggestions for educators**

1. Consider the many assessment possibilities
2. Link with campus partners
3. Practice with your colleagues
4. Give a targeted (and brief) introduction to Wikipedia editing basics
5. Empower students to find deficient Wikipedia entries on their own

1. Consider the many assessment possibilities

Wikipedia-related learning activities have the potential for generating robust assessment data. One important feature of Wikipedia is that every edit is saved and viewable in perpetuity. Instructors can therefore view and analyze students' edits, as well as follow those edits over time to see how the wider editor community refines them. In the case of the add-a-citation task used in this project, it's potentially useful to analyze the quality of the information sources students

choose to cite, as well as to examine the accuracy of the citation information they provide. Other Wikipedia tasks carry similar assessment potential. For example, if educators ask students to make a contribution to a Wikipedia article's Talk page—e.g., by critically evaluating an article with an eye toward identifying information gaps or unsubstantiated claims—those contributions could be easily found and analyzed.

## 2. Link with campus partners

When looking for faculty campus partners, it is helpful to explore several paths: 1) Based on compatible course topics, 2) Based on known or anticipated technological interests or affinity in faculty, 3) Within existing partnerships. Many topics lend themselves well for including Wikipedia in college courses, but its community-driven essence makes social and cultural themes particularly fitting: social justice topics, women and gender studies, and African-American studies because of existing underrepresentation problems in Wikipedia (Meyer, 2013; Simonite, 2013); sociology topics because of Wikipedia's massively collaborative essence; and methodology courses in any discipline because of the potential to discuss information reliability and aspects of Wikipedia's content-development process. Another option is to seek out faculty members whose teaching or scholarship involves Wikipedia or other pertinent educational technology. Still another option is to use Wikipedia within existing faculty partnerships. My experience with one writing department faculty member is potentially instructive. A long-running collaboration (partnering over library instruction sessions in the freshman writing program) drew her to a mock-classroom Wikipedia-editing activity for campus faculty. She started the session by volunteering "I tell you, I just hate Wikipedia." However, after a brief group discussion about Wikipedia and a short editing activity, she initiated a lively and engaged conversation about the pedagogical potential of Wikipedia. She said she felt she had a professional obligation to be more critical and less unilateral in how she talks about Wikipedia with her students, even as she remained committed to her objections to Wikipedia. She even strongly encouraged me to move forward with planning and implementing Wikipedia-editing activities in library instruction sessions with students, including in courses she teaches. This example suggests that there is great potential for faculty collaboration even with instructors who are not overtly technological in their teaching approaches or who are resistant to Wikipedia specifically.

## 3. Practice with your colleagues

Practicing with colleagues in a mock-classroom setting can be useful on a few levels. This practice allows an instructor to become comfortable with what students are likely to do during the activity as well as some of the likely barriers to understanding. These practice sessions have served as valuable experimental iterations, helping me to refine the lesson plans that provide structure to these hands-on activities. With activities as learner-directed as these, the loss of instructor control can feel intimidating for some educators, and both the practice and experimentation can help. Keep in mind that just 2 or 3 colleagues would be enough.

Practice sessions with colleagues could also begin a variety of conversations among librarians (and even with disciplinary faculty), including discussions about the role of Wikipedia in the contemporary academic experience, the nature of collaborative and iterative writing, the challenges of experiential learning activities, the potential real-world impact of student research products, and the potential benefits of interrogating long-held attitudes or teaching points. This firsthand Wikipedia-editing experience often provides librarians and disciplinary faculty with a new perspective or more nuanced opinion on Wikipedia.

#### 4. Give a targeted (and brief) introduction to Wikipedia editing basics

Wikipedia editing basics are essential for newcomers to learn, but this can be made relatively brief (as little as 10-15 minutes in my experience). This is largely because of helpful Wikipedia interfaces like citation templates and a what-you-see-is-what-you-get text editor. In short, Wikipedia can be edited with minimal interaction with its special markup language. Wikipedia's Five Pillars serve well as an incomplete-but-sufficient introduction to this community, since learning Wikipedia's many conventions could easily fill a semester-long course. It is useful to emphasize that "respectful and civil" behavior among editors is crucial to Wikipedia content development process. This reminds them that they are likely to encounter a supportive environment when they contribute content to Wikipedia.

An instructor need not be a Wikipedia expert to provide this overview or to facilitate these activities, and the brief Wikipedia tutorial for educators is likely training enough.<sup>[iv]</sup> Konieczny (2012) offers prudent and reassuring advice on this matter: "As a rule of thumb, being able to do all the things required of students should be sufficient."

#### 5. Empower students to find deficient Wikipedia entries on their own

I highly recommend that educators give learners the duty of choosing which Wikipedia articles to edit. Some targeted web searching makes it relatively easy for students to find

Wikipedia articles in need of editing. Although this might seem to add more potential for delays by giving students an additional subtask to complete, it has been my experience that this results in consistently faster completion of the overall activity compared with when students are provided with instructor-selected entries. Wikipedia editors and bots mark individual entries with cleanup categories, adding highly visible banner labels at the top of potentially deficient articles. These banners suggest a wide range of edits. One useful example instructs readers “This article needs additional citations for verification...Please help improve this article by adding citations to reliable sources. Unsourced material may be challenged and removed.” (Wikipedia, 2013). Such banners provide useful access points for learners searching for problematic Wikipedia content. For example, if asking students to find unsubstantiated claims on Wikipedia, it is helpful to search the Web with the following: *site:en.wikipedia.org “needs additional citations”*. To this search string, learners should add topic keywords relevant to their course, major, program, or other topic focus. Even if this specific approach isn’t used, it is crucial to provide some support and structure to student’s Wikipedia article selection: In my first few mock-classroom Wikipedia-editing sessions, individuals given no such support (e.g., the advanced web search strategy suggested above) spent the entire session reading a long series of Wikipedia articles without settling on one to edit.

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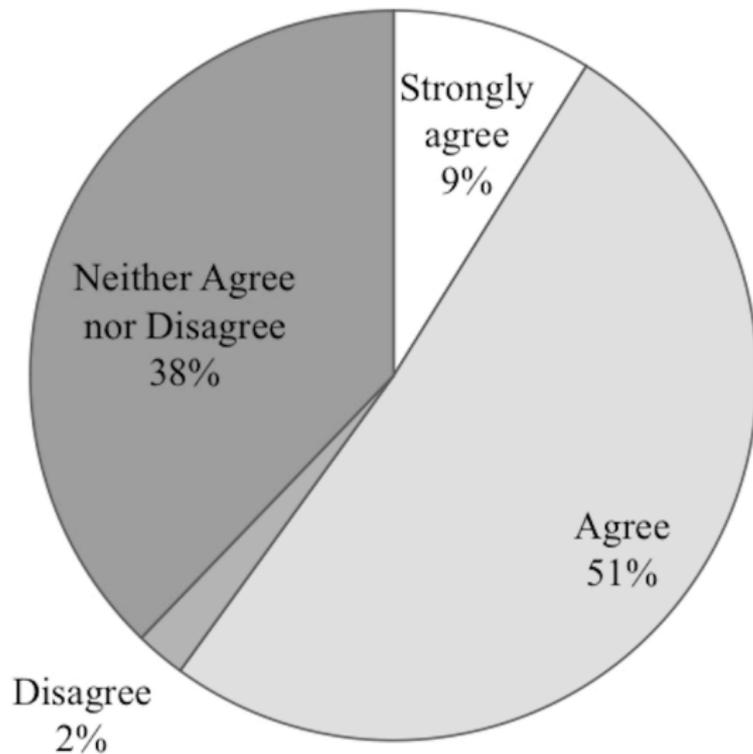
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“My thinking about Wikipedia has changed during today's session.”



**Table 1: Summary data of student responses to "clearest thing" exit-survey question. Respondents were allowed to give more than one answer to this question. (n=45 students)**

<b>“What is the clearest thing you heard today during the library session?”</b>	<b>Number of comments</b>
Library website/resources	18
Differentiating publication type by citation	10
Wikipedia editing process	8
Accessing known journal article full text	7
Wikipedia limitations	7
Wikipedia, appropriate uses	3
Providing citations to support work	1
Searching for sources	1
Wikipedia is more trustworthy because of more editors	1
Wikipedia is useful for an overview	1
Wikipedia should be used carefully	1
Library student job search	1
Wikipedia unspecified	1
Wikipedia, any mention	19

**Table 2: Summary data of student responses to "most confusing thing" exit-survey question. Respondents were allowed to give more than one answer to this question. (n=45 students)**

“What is the most confusing thing you heard today during the library session?”	Number of comments
Wikipedia-editing process	21
Citation procedure	11
Searching for sources	7
Nothing was confusing	4
Differentiating publication type by citation	3
Identifying information need	3
Library website/resources	2
Ambiguity about Wikipedia trustworthiness	2
Wikipedia unspecified	1
Wikipedia general	1
Library student job search	1
Accessing known journal article full text	1
Wikipedia, any mention	25

**Table 3: Summary data of student responses to exit-survey question about changes in Wikipedia attitudes. Respondents were allowed to give more than one answer to this question. (n=27 students)**

“How has your thinking about Wikipedia changed?”	Number of comments
See Wikipedia as more trustworthy	10
More contributors may improve Wikipedia	4
Wikipedia should be used with care	4
See Wikipedia as more useful	4
See Wikipedia as less trustworthy	3
Believe that Wikipedia has appropriate uses	3
Realize now that anyone can edit it	3
Believe Wikipedia's encyclopedia format is problematic	1
Wikipedia isn't so bad after all	1
Believe Wikipedia editors always base contributions on facts	1