THE IMPACT OF A WIKIPEDIA ASSIGNMENT ON STUDENT LEARNING

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Abstract- This study describes how a Wikipedia assignment was integrated into a psychology course to replace the traditional research paper typically assigned in such courses. Thirty three students worked on significantly expanding and improving eight different Wikipedia articles over a period 15 weeks. In addition, a comparative sample of 33 undergraduates enrolled in general psychology and completing a traditional research project was also assessed to ascertain whether the Wikipedia assignment yields any additional benefits over and above those experienced as a result of a typical introductory psychology course research assignment. A survey was administered at the end of the academic semester in order to capture and quantify the perceptions of students, in both the Wikipedia and the traditional classrooms, of their course experiences. The survey yielded both qualitative and quantitative data on the perceived benefits of the Wikipedia assignment across multiple domains, and on ways the Wikipedia assignments could be improved. The Wikipedia assignment increased students' perceived ability to work collaboratively more than the traditional research paper assignment. In contrast, the traditional research paper assignment increased student's perceived research skills more than the Wikipedia assignment. Students indicated that they feel gratified by the permanency and accessibility of their contributions to Wikipedia but that they also had difficulties in learning and using the Wikipedia editing code. Focus group data were collected four months after the end of the course to shed additional light on students' long-term perceptions of the Wikipedia editing experience. The findings from this study suggest different strategies that instructors and Wikipedia monitors could use in order to make the Wikipedia editing experience more effective for students.

Index Terms- active learning, college learning, introductory psychology, Wikipedia

I. INTRODUCTION

Motivation is an important factor in successful learning. The motivation students have for learning is, in part, due to the style and method of the teaching they receive. College introductory psychology classes primarily use a lecture/discussion tactic for learning [1], but recent research has demonstrated that students may be more motivated and thus learn more effectively in classrooms using active learning pedagogies [2]. Learning in today's internet-dependent world necessitates the use of new pedagogies that appeal to the new generations of students and that allow them to be responsibly engaged in the world, contributing meaningfully to the existing online resources. Active learning can be attained through web-based activities such as writing entries for Wikipedia, the free online encyclopedia that is composed and monitored by people willing to volunteer their time to contribute to it [3], [4]. Student experience active learning when they work collaboratively in teams to create new contributions to Wikipedia. They also experience active learning as they edit and refine their contributions in response to the feedback they receive from Wikipedia monitors [3], [5], [6].

A recent survey by the German Higher Education Information System [7] reported that 80% of college students use Wikipedia articles. Wikipedia views every user as a potential editor or author, and relies on users to contribute in order to for Wikipedia to maintain its quality and breadth [4]. Yet, 77% of students never edit and 85% never write Wikipedia entries [7].

To help remedy this problem and to improve coverage of psychology topics on Wikipedia, the Association for Psychological Science recently launched a Wikipedia initiative that aims to encourage psychology instructors to offer a Wikipedia editing assignment in their courses. Many psychology instructors have recently joined the Association for Psychological Science's Wikipedia Initiative by having their students expand Wikipedia articles in order to offer students assignments that fit their interests and to ensure that Wikipedia represents their disciplines more fully and accurately. While anecdotal evidence seems to suggest that the Wikipedia assignment has positive outcomes, few studies have been conducted to formally assess its impact and its effectiveness. In this study, we investigated the quantitative impact of having introductory psychology students write Wikipedia pages, instead of traditional research papers, on student learning. We also explore students' qualitative reactions to the experience of writing for Wikipedia.

II. METHOD

A. Participants

Thirty-seven students (46% Freshmen, 35% Sophomore, 11% Junior, and 8% senior) enrolled in an introductory psychology course worked in groups

of four to create or significantly improve nine Wikipedia articles over the course of a 15-week long academic semester. A comparison group of 33 students (45% Freshmen, 42% Sophomore, and 12% Junior) enrolled in a different section of introductory psychology was used. Students in the comparison group individually wrote traditional psychology research papers during the same academic semester.

B. Procedure

Within the Wikipedia classroom, team members were selected so as to have a balance in comfort level with editing Wikipedia and in the number of psychology credits completed. Teams completed significant edits to their articles early in the semester and then spent the rest of the semester improving them by adding images and links to other pages, addressing the suggestions from their class peers, and addressing the feedback from the Wikipedia reviewers and the public on the articles' discussion pages. The students were required to make edits on are article while their article was simultaneously being edited and critiqued by Wikipedia editors and by peers. Within the traditional classroom, students individually wrote a traditional library research paper on a topic of their choosing and submitted it to their course instructor for grading at the end of the semester.

C. Measures

At the end of the semester, students in the Wikipedia classroom and those in the traditional classroom completed a survey in which they rated what they learned from the course assignment on a 5-point scale ranging from 1 (not at all) to 5 (very much so). The end-of-semester survey also contained some open-ended questions to find out what students thought were the most rewarding and most difficult aspects of the project, and to learn about the aspects of the Wikipedia assignment that students thought most needed improvement.

Four months after the end of the course, six students in the Wikipedia group participated in a focus group to discuss their experiences in more depth. The focus group discussed three specific questions: (a) “What was the most rewarding aspect of this project?”, (b) “What was the most difficult or frustrating part of the project?”, and (c) “Would you work on more articles in the future?”.

III. RESULTS

This study examined the impact of the Wikipedia assignment vs. a traditional research assignment on student learning in an introductory psychology course. Independent samples t-tests were conducted on the end-of-semester survey items in order to explore differences between students in the traditional classroom and students in the Wikipedia classroom in their perceptions of their learning gains. As shown in Table I, there were three domains where significant learning differences were found between the students in the Wikipedia classroom and students in the traditional classroom.

Students in the Wikipedia classroom rated their learning significantly higher than students in the traditional classroom in the domain of working collaboratively with others. On the other hand, students in the traditional classroom rated their learning significantly higher than students in the Wikipedia classroom in the research skills domain. Specifically, they reported higher levels of research skills and knowledge of psychological research methods.

Table I
Mean Scores in the Wikipedia vs. Traditional Classrooms

Survey Item	Wikipedia	Traditional
Working collaboratively with others	3.58*	2.82
Research skills	3.42	4.00*
Knowledge of psychology methodology	3.42	4.12*

* Denotes group differences that are significant at $p < .05$

Student in the Wikipedia classroom provided answers to three open-ended survey questions. The first question was “What have you found to be most rewarding and/or helpful about the Wikipedia assignment?” Sixteen students reported that contributing to the world was most rewarding, and 10 students indicated that collaboration with classmates was what they found to be most rewarding. Members of one group mentioned feeling proud that the Wikipedia page they created was being used in the field of counseling psychology when their page was suggested to a practicing counselor for information. Students also reported feeling as though they were part of something bigger and more permanent because they did not just hand in a paper for their professor to grade and never look at again. Another group felt rewarded for their efforts when their page received over 5,000 in a short amount of time.

The second open-ended question asked “What have you found to be most frustrating and/or challenging about the Wikipedia assignment?.” Forty one percent of the respondents indicated that the most frustrating or challenging part about the Wikipedia assignment was learning the coding language necessary to edit pages, especially adding references and images. Five students indicated that getting work deleted by Wikipedia editors was their greatest struggle.

The third open-ended question was “What suggestions do you have for improving the Wikipedia assignment?” Seventeen students answered that in-class demos or extensive tutorials would help. Ten

students thought it would be an improvement to offer the Wikipedia assignment in higher level courses rather than in an introductory course.

Focus group data were coded by two coders independently to establish reliability. With regard to the rewards of completing the Wikipedia assignment, permanence of one's work emerged as the main reward that students in the focus group discussed. Students reported feeling as though they were part of something bigger and more permanent because they did not just hand in a paper for their professor to grade and never look at again. One student stated, "It's not just a paper that's going to be thrown away. Another student stated that "Of course we're holding ourselves accountable, but I liked how when other people came in from outside, not necessarily a part of the school, to check our work, we had to try to make sure that our work was done properly."

Programming difficulties emerged from focus group discussions as the most challenging aspects of the Wikipedia assignment. For example, one student shared that "The sandbox was actually nice, but once again it was just buried. It was so bad to try to get into there. Direct links to things would be wonderful as well." Some students had negative interactions with the editors, which they explained in detail. One student stated, "I spent an hour and a half going through and fixing all the citations, and I was halfway done with them and one of the editors came in and didn't look at what I was doing, but just saw that I was editing a lot and he undid all of them." Some students saw improvements in their interactions with editors over time, as one student explained by saying, "I think the first guy who started making comments was kind of rude and condescending, but there was a guy who defended us later on and he showed us some examples too."

The final focus group question concerned whether students were still editing for Wikipedia. Most replied that they were too busy to continue editing on their own time. For example, one student stated "I don't know if I would edit for fun, unless I really liked it, because it is a lot of work to figure out all the codings and this and that and I haven't done it since class." However, some students have continued to edit, as one student stated, "I've gone on [TV Tropes] and edited multiple things, but that's because I enjoy the content I'm editing and adding to it. I was like, oh, somebody missed that. That should probably be in there. And it was just like one or two sentences, not like whole article things." Another student explained that "I have gone and edited other things on my own, because I felt like it. I think it just kind of depends on what experience you had with it. I've actually added a few things to my watch list since the class and I'm planning on editing maybe during the summer. Just for fun."

IV. DISCUSSION

We investigated the impact of replacing a traditional research paper assignment with a Wikipedia assignment on learning within the psychology classroom. In an introductory level psychology class students were asked to create a new page through Wikipedia on a specific course related topic. The students' perceptions on their learning were compared to those of students in another introductory psychology class that used a traditional research paper assignment.

End-of-semester data revealed that after completing the course project students who completed the Wikipedia assignment report higher levels of collaborative learning than students who completed a traditional research paper assignment. This finding is supported by the findings from previous research that suggests that active learning strategies such as the Wikipedia assignment would facilitate students' ability to work together [1], [8]. Higher collaborative learning skills, in turn, facilitate more effective learning [9].

This is probably because the Wikipedia assignment involved intensive group work over many weeks that included critiquing others' work and responding to classmates suggestions for improving the writing for Wikipedia. The students visited with their groups throughout the course of the semester, provided numerous opportunities to learn from failed attempts at group work and to practice strategies that promote a positive outcome within the group. Collaboration was also intensive in editing the Wikipedia page as the coding language for editing the Wikipedia pages required students who are experienced with programming to contribute their expertise and share what they know with the less experienced students.

Students in the traditional classroom reported gaining significantly more research knowledge and skills than students in the Wikipedia classroom. The students completing a traditional research assignment may have been able to achieve higher research skills and knowledge of the psychology method due to their independent work on individual research papers. For the Wikipedia assignment, which was completed in groups, the division-of-labor that the project allowed may have lightened the pressure for each single member of the group to learn the exact same set of research skills. Students in the Wikipedia classroom also could not devote all their time to actual research activities because they had to also learn the coding language and technicalities involved in editing a Wikipedia page and were repeatedly refining their submissions in response to feedback from peers and Wikipedia monitors. In addition, Wikipedia does not require or even accept APA style for submissions, which meant students in the Wikipedia classroom did

not get an opportunity to practice writing research reports in APA style.

Student responses to the open-ended questions on the survey and to the focus group discussion questions revealed additional insights. Many students felt that they had contributed helpful, lasting knowledge to the world. This could possibly lead to a more engagement and motivation in their courses [9]. The main challenges reported through the open-ended questions; quite a few students said that they were having a difficult time with the coding of Wikipedia and the formatting style used through Wikipedia. This could be improved through having experienced students or Wikipedia representatives going into the classroom to teach a class on how to edit Wikipedia. In addition, using a more familiar editing tool and/or more intuitive formatting styles would help Wikipedia gain more contributors as it would make Wikipedia editing more manageable for students.

Students reported having a hard time with the editors of Wikipedia and their phrasing of critiques. It is likely that in order for Wikipedia to compete with the Encyclopedia Britannica for quality, Wikipedia's editors feel they need to be very vigilant in ensuring the writing style is representative of their goals [10]. It is encouraging to see, however, that despite these difficulties, several students indicated their intent to continue editing Wikipedia pages ti improve coverage of topics that they are interested in.

This study had some limitations that are typical of action research. The Wikipedia section of the introductory psychology course was taught by a different instructor than the traditional section. Even though both sections used the same textbook and were taught in the same semester, the differences in group means may be due to the different personalities or teaching styles of the instructors rather than the assignments they gave. In addition, the sample size was limited by the classroom enrollment and thus was relatively small. Finally, using a pre-post design would have provided more certainty about the gains in learning that students experience over the course of the semester.

CONCLUSION

Classroom instructors using a Wikipedia assignment would be advised to provide sufficient time and resources for technical support to minimize student frustration and maximize the time that students spend on learning valuable research skills. Wikipedia monitors would be advised that disheartening critiques could be better worded in order to motivate students rather than discourage them to contribute to Wikipedia. It might also be a good practice for Wikipedia to use banners in order to identify student editors and ensure the Wikipedia monitors provide them with the encouragement and support they need along with the necessary critiques. The findings from this study point to the importance of providing students with opportunities for active learning. The findings also indicate that instructors should aim to give students assignments that will benefit others in meaningful and lasting ways as this clearly motivates students and affirms their work.

REFERENCES

[1] R. W. Grossman, "Encouraging critical thinking using the case study method and cooperative learning techniques," Journal on Excellence in College Teaching, vol. 5, no. 1, pp. 7-20, 1994.

[2] M. Martyn, "Clickers in the classroom: An active learning approach," Educause Quarterly, vol. 2, pp. 71-74, 2007.

[3] P. Konieczny, "Wikis and Wikipedia as a teaching tool: Five years later," First Monday, vol. 17, no. 9, Sept. 2012.

[4] S. Rafaeli, Y. Ariel, "Online motivational factors: Incentives for participation and contribution in Wikipedia," Psychological Aspects of Cyberspace: Theory, Research, Applications, pp. 243-267, 2008.

[5] F. Su, and C. Beaumont, "Evaluating the use of a wiki for collaborative learning," Innovations in Education and Teaching International, vol. 47, no. 4, pp. 417-431, Nov. 2010.

[6] N. Witzleb, "Engaging with the world: Students of Comparative Law write for Wikipedia," Legal Education Review, vol. 1, no. 1/2, pp. 83-97, Jan. 2009.

[7] D. Orr, K. Schnitzer, and E. Frackmann, "HIS Hochschul-Informations-System GmbH (Ed.): Social and economic conditions of student life in Europe: Synopsis of indicators - Final Report - Eurostudent III 2005-2008. Bielefeld: W. Bertelsmann Verlag, doi: http://dx.doi.org/10.3278/6001920w, Retrieved from https://www.ssoar.info/ssoar/bitstream/handle/document/52949/ssoar-2008-orr-Social_and_Economic_Conditions_of.pdf?sequence=1 on 2/23/2018.

[8] I. Karasavvidis, "Wiki uses in higher education: exploring barriers to successful implementation," Interactive Learning Environments, vol. 18, no. 3, pp. 219-231, Aug. 2010.

[9] M. P. Notari, and B. D. Honegger, "Learning in an active, collaborative space," Looking Toward the Future of Technology-Enhanced Education: Ubiquitous Learning and the Digital Native, pp. 275-294, 2010.

[10] B. Meyer, "Defense and illustration of Wikipedia," Jan. 2006, Retrieved from http://se.inf.ethz.ch/~meyer/publications/wikipedia/wikipedia.pdf on 2/23/2018.

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