BUILDING COMMUNITIES OF PRACTICE: EXPERIENCES IN A SOCIAL AND COMMUNAL CONSTRUCTIVIST ENVIRONMENT

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ABSTRACT
Focusing on an education graduate student’s investigation into their participation in a class wiki, the paper documents the ways student perceptions of a wiki can change their contributions, the wiki itself, and the community that surrounds it. Specifically, wikis and the ways they function as social constructivist and communal constructivist learning tools, pushing the boundaries of their members’ collective zone of proximal development, are discussed. The paper provides evidence that the wiki has the potential to play a valuable role in the construction of a community of practice, if social aspects are taken advantage of. It examines how the perceptions students have of the reliability of their peers’ research and writing skills directly affect their attitudes towards the usefulness of the wiki and discoveries are made about how the collaborative knowledge base of the class wiki should be utilized and participation improved upon. These findings are applied to the possibility of creating a similar wiki community in online and face-to-face secondary classrooms, and the implications and challenges of doing this, such as digital literacy, reliability and socialization, are explored.

PERCEPTIONS OF PARTICIPATION
I had grand ambitions. As I embarked on the process of leaving my mark on our Principles of Learning (PoL) course wiki, I was thinking as an individual who has ideals about credit for a job well done and the quantity of posts with my name on them. Instead, I encountered an environment that requires a very different perspective from all of its members, if it is ever to meet its potential. Here, I will investigate the applications of social and communal
constructivism and communities of practice in a (PoL) course wiki and how my perceptions of my expected participation affected these applications.

**Contributions**

My contributions were primarily built around subject matter that was not previously a part of the wiki and required me to construct new pages and links; the benefits and shortcomings of this decision will be further discussed in later sections. While I posted new information to the wiki on five documented occasions throughout the semester, the research for, and construction of, the pages was a lengthy and ongoing process. My first official contribution on January 19, 2017 was the page, “Spaced Learning” PoL course wiki and was my only contribution not related to the topic of makerspaces. Makerspaces have recently gained popularity as workshops where people of all ages can build, program, design, and share ideas with one another. In primary and secondary education, they have been popping up in school libraries and classrooms as places where students are offered the freedom to explore Science, Technology, Engineering, Arts, and Mathematics (STEAM) education. Once I began by defining them on January 28, 2017, I realized how broad and multi-directional a single topic can become when you are the one responsible for maximizing its specificity and depth for others’ understanding. Thus, my consequent posts on March 5, 8, and 10, 2017 were a result of a great deal of external work to create a high degree of thoroughness in my articles about makerspaces and their related topics. In attempting to create reliable resources for my peers, my work was often interrupted as I discovered topics that had not yet been addressed, but needed to be defined before I could contribute what I had been working on. My processes and decisions about contributions will be further examined as they relate to the collaborative nature of the wiki in a social and communal constructivist environment and my participation in the emerging community of practice the wiki represents.

**Wikis as Social Constructivist Collaborative Learning Tools**

Collaborative writing on a wiki can be considered a social constructivist activity, in which students build on their personal knowledge through the social interactions and the support and influence that they find in each other (Helen, Du Sam, Chu Randolph, & Chan Wei He, 2016). According to Bransford, Brown and Cocking (1999), community-centered intellectual camaraderie in a learning environment enhances cognitive development because it offers opportunities for students to gain insight from others’ experiences and perspectives and can change brain structures towards better problem-solving capabilities.

The wiki’s simplicity, openness, and linking capabilities make it a wise choice when choosing a collaboration tool for building in-depth group knowledge (Ioannou, 2011; Laruszon & Alterman, 2009; Shriki & Movshovitz-Hadar, 2011). As long as members are using wikis in a social manner, they have the potential to push the boundaries of individual zones of proximal development (Vygotsky, 1978), through peer collaboration, towards a more collective zone of proximal development that reaches past the knowledge construction capabilities of individuals alone (Kuteeva, 2011; Lund, 2008). Additionally, knowledge building is enhanced through a rigorous collaborative editing process that can be considered assessment-focused (Bransford et al., 1999; Helen et al., 2016).
While there were opportunities to participate in the class wiki in the ways highlighted previously, I believe that I did not completely understand my role. I made quality contributions that took many days to construct. My first wiki page, “Spaced Learning” included an overview, strategies for use, benefits, concerns, and a student testimonial. I used only peer-reviewed journals as my sources, I made sure that I had more than one source for each section, and my writing followed proper APA style guidelines. Subsequent entries followed this same style, with attention to detail. However, they were mostly individual contributions that did not make adequate use of potential formative feedback. I was under the assumption that I had the choice to either edit or contribute, but that in the end, participation was participation. I now see that my lack of participation in editing for my peers and opening my own work up for critique was limiting to the construction of my own knowledge and the communal database. While I was strongly contributing to the knowledge of the community in choosing to contribute only individual writing, I was not encouraging or allowing my knowledge to grow or be affected by alternate perspectives.

**Wikis as Communal Constructivist Learning Tools**

Communal constructivism refers to the process of constructing knowledge for the community, as opposed to social constructivist theories of individual learning as a result of an environment (Kelsey, Lin, & Franke-Dorak, 2011). All of my decisions about what to write were a result of the communal constructivist qualities of the class wiki. While researching for an assignment that required us to explore the wiki, I realized how endless the possibilities for contribution were. For example, I chose to complete my first entry about spaced learning, as it was brought to my attention by Sharples et al. (2016), because I noticed that nothing could be found about it in my searches of the wiki. Additionally, I came into the course with a goal to branch away from makerspaces in my learning, because they had dominated my studies thus far, but when I found makerspaces on the “Help Wanted (work to be done)” page I was shocked and genuinely felt that the community was missing out on important knowledge. In this way, I did not write the page about makerspaces to enhance my own knowledge; I wrote to construct a more thorough knowledge for the community. I also wrongly assumed my first entry about makerspaces would be about the learning theories supporting them. When I started researching this, I realized that I had to define makerspaces first, because there were students in my class that had not had experience with the term, even though I was so familiar with it. I brought my research back to a very basic level, and the page became an entry describing what a makerspace is, types of makerspaces, the history of makerspaces and the benefits and barriers of using them, in order to make the topic more approachable for my peers.

The class wiki seeks to satisfy, to some extent, the assertion that if communal constructivism can be implemented effectively, then each time a course is put into effect, knowledge may be built upon, rather than repeated (Kelsey et al., 2011). This is the process that has been taken in the construction of the class wiki, with each new cohort of students building on the work of the last, while the community becomes larger. As I stated in the previous section, a shortcoming of my work on the wiki so far is that I have not embraced my role as an editor to benefit the community. To do this, I will need to view all of the work that is on the wiki as my own, and take ownership of its inadequacies, as well as its strengths, by making an attempt to better it for future members.
Building Communities of Practice

**Wikis as Tools to Inspire Communities of Practice**

Communities of practice (CoPs) are a key component in the existence of knowledge. CoPs are defined as the constantly developing network of relationships between people, activities, and the world in which meanings are constructed through participation and the practice that participants are mutually engaged in. Members are meant to “belong” to the joint enterprise of creating a communal set of resources (Roberts, 2006; Shriki & Movshovitz-Hadar, 2011), in much the same way as in communal constructivist theory. Mutually interested groups of people can choose to collaborate in their leaning in the real world, or the virtual (Ataizi, 2012). It is through this constantly evolving social participation that individuals become professionals (Roberts, 2006; Shriki & Movshovitz-Hadar, 2011). Indeed, I found that while I had been immersed in makerspace culture in my educational career, there were things about their history that I did not know. I discovered this, and expanded my own professional knowledge, through my research for my contributions.

Wikis offer valuable collaborative environments for members of CoPs to build their collective expertise, despite geographical distances (Shriki & Movshovitz-Hadar, 2011), which is the purpose of the class wiki. Writing for social contexts can be identified as a cyclical process, where we shape our work to engage our peers, but are also influenced by the perceived expectations of our peers, as part of a CoP (Kuteeva, 2011). In my own writing for the wiki, I am conscious of how useful my work will be to my peers if they are conducting research for another class assignment, because this is how I expect to be able to use the wiki. In this sense, I ensure that my work is clearly labelled, well-researched and documented and is appropriately linked to other pages in the wiki. For instance, while I was trying to link my makerspace page to a STEAM education page, I discovered that there was none. This prompted me to put the continuation of my makerspace research on hold. I created the “STEAM” page that included a definition, as well as an in-depth review of the benefits and challenges of using the STEAM approach in education. This entry required extensive linking. Many of my peers had referenced STEAM education, so I had to search for the term to find all of their pages and edit them all to link to my STEAM page. Therefore, motivation to produce quality writing and resources was created through a desire to meet peer expectations and collaborate, where no grade is involved.

A challenge that the class wiki faces in becoming a CoPs is the neglect of its use as a social space. The wiki lacks the communicational benefits of traditional CoPs, as described by Roberts (2006), such as the sharing of stories and inside jokes. The social construction of knowledge through discourse, argument, and questions is something that wikis are used for in educational CoPs (Shriki & Movshovitz-Hadar, 2011). As there is no governing body to address and potentially create these opportunities in the course wiki, it becomes our responsibility, as members, to decide that the wiki, in its current state, is not enhancing our learning in a satisfactory way and to create social outlets within the wiki to serve this purpose.

**Perceptions of Trust in Communities of Practice**

Finally, trust, and perceptions of credibility and reliability, between members in a CoP, is essential for transfer of knowledge to take place (Roberts, 2006). In particular, the concept
behind a wiki is one of trust that information will be relatable for the target audience and editing will be done with respect to previous contributions (Shriki & Movshovitz-Hadar, 2011). For my fourth contribution, I created a section on the makerspace page for pedagogical theory and teaching methodology. I included seven key theories and methodologies. While the list had the potential to be much longer, I had trouble finding quality references to back my claims, so I chose to include only those that I could support with substantiated evidence. I linked each of these theories and methodologies to their appropriate wiki pages. However, this same degree of care is not always taken by all members of the class wiki, and it is difficult to discern which pages have been worked on by those that publish only work that meets the standard required by the target audience of graduate students.

Andrews and Delahaye (2000), explain this issue in further detail with their psychosocial filter model. They identify factors that individuals use to mediate their contribution and acquisition of knowledge in organizational learning. One factor they discuss is the process individuals use when searching for information, which involves decision-making about who they will accept information from and whose information could be potentially useful. Importantly, the professionals in their study understood that quality information comes from quality individuals. In theory, our wiki includes contributions from every Master of Education and Master of Arts in Education student attending University of Ontario Institute of Technology (UOIT) since 2010. While they are all listed on the “Authors” page experience has made me sceptical about the reliability of the research skills of my peers, even though they may be professionals in their/my field. During my time in graduate education, I have found a few of my peers to be reliable, well-documented fonts of information, and have made conscious decisions, as Andrews and Delahaye (2000) suggest, to do further work with them and seek information from them. However, as the wiki is a collaborative work between many of my peers whom I do not know, I am not able to make decisions about whose information I trust, based on identity, which is an important part of assessing reliability when reviewing literature that has not yet been through a rigorous peer-review process.

Traditionally, collaborative information on a wiki becomes reliable through a more informal peer-assessment process (Shriki & Movshovitz-Hadar, 2011). However, in the case of the class wiki, peer review is optional, and there are posts that remain un-reviewed. My first impressions of the wiki left me questioning the resources that were used and the poorly cited contributions on many pages. Therefore, due to reliability issues, I am not comfortable using the class wiki as an academic reference, in my own writing, but can it be used to benefit research in other ways?

**Rethinking Usability of the Class Wiki**

Wikipedia, "the largest reference website on the internet" (Barnett & Baer, 2011), is similar to the class wiki in the sense that it is used as an "open source," collaborative, information gathering site. Wikipedia does not portray itself as a scholarly publication and is largely self-regulated, warning against relying on its articles for quoting and reference purposes (Barnett & Baer, 2011). What Wikipedia sacrifices in accuracy, reliability, readability, and verifiable support from scholarly books and journal articles, it makes up for as a current,
open, and easily accessible first-response information source, with links to some reputable resources (Barnett & Baer, 2011; Mesgari, Okoli, Nielsen, & Lanamäki, 2015). The difficulty the class wiki faces is that it seems wedged between two states: that of an open, first-response knowledge building source, like Wikipedia, and that of an academic, reference-worthy, but more limited wiki, like Wikipedia’s short-lived predecessor, Nupedia (Barnett & Baer, 2011).

As the class wiki is generally only edited by graduate students (upon request), in the faculty of education, who are practicing professionals in their field and occasionally by faculty (particularly their own pages), the peer assessment process provides a measure of reliability, but, as previously discussed, a lack of complete member participation in this process has prevented the wiki from achieving this standard. An argument that must also be considered is that no level of publication can, in fact, guarantee reliability. Peer-review for publication in journals ensures a level of quality and minimum standard, but cannot guarantee that the sources, and the studies within the sources referenced are without error or bias. To scrutinise research to an extent that would guarantee reliability, could stifle it (Barnett & Baer, 2011).

Use of Wikipedia involves the user being capable of assessing articles and their sources, through information literacy, for reliability (Mesgari et al., 2015). The same must be said for the class wiki, and while individual articles published to the class wiki, may not be useful in academic research, the references that they provide may cut down the research process on external resources and databases. For example, my final contribution, during the course, was intended to be about tools used in makerspaces, but I found an online resource that effectively listed many possible tools, with external links, so I chose to link it to my page, instead of trying to recreate it. I also found five more web links to external sources that I considered invaluable in establishing a makerspace and created links, with brief explanations, to those as well.

Wikipedia articles are found to become more reliable over time, with most errors occurring at the beginning of an article’s life time, and becoming fewer with greater peer review (Mesgari et al., 2015). If this trend is applied to the class wiki, then the need for members to contribute to the peer review process as well as individual articles is even greater. My participation in the editing processes of the wiki is vital to the reliability and usability of the CoPs as a whole, and my own level of skill in assessing the usability of the resources my peers reference could, potentially, be the key to finding usability in the class wiki.

**ORIGINAL CONCLUSIONS**

Fostering learning in collaborative online environments is not easy (Kuteeva, 2011). My contributions to the class wiki were shaped by both its strengths and its shortcomings, as a social and communal constructivist environment, and as a burgeoning CoP. I also see how the work I put into the wiki, including my lack of revisions on existing entries, has shaped the wiki for those to come. My perceptions of what it means to be a participating member of a collaborative online community have changed.
While it is impossible to do a reflection of this kind without first contributing to the wiki, it was only through researching wiki use in social constructivist and communal constructivist learning that I uncovered an idea of what my participation should have looked like and how I should expect to be able to use the wiki. I hope that I can use what I have discovered to continue my contributions to the wiki in a more meaningful way and I hope that this knowledge can be transferred to future collaborative writing assignments.

As the class wiki is ongoing, I plan to contribute to the “Authors” page. This may aid in creating a sense of community. This is not a prescribed action, and I had intended to do it, but forgot while I was absorbed in other posts. If everyone contributes a little bit about themselves and connects it to a picture, we, as a community, will be enhancing the social component of the wiki by giving each other a face to put a name to and allowing others to see where our specialties lie, as proof of our expertise, but also as a source of reference, when our peers have questions. In this way, we will be able to seek out collaboration for problem solving from those that we deem to have knowledge in the context of the problem. I also want to upload the papers that I have written to “Course projects and papers”, so that my work may make the initial wiki processes easier for future members. While this particular wiki’s function is that of a community resource, in order for us, as contributors, to benefit fully in the community of practice that surrounds it, we should seek out and embrace its other social aspects as well.

**Looking Back**

One semester after the completion of the PoL course, I noticed my use of the course wiki as a first-response knowledge building site. On occasion, I have accessed the course wiki to quickly find details about terms and topics as they relate to education, specifically at a graduate level. Some of these terms and topics can be found through the use of common web-based search engines, but the content on the pages may be written from a different subject matters’ point of view, such as sociology. While I do not reference information found on the course wiki in my own work, I do use it to expand my personal understandings through the perspectives of those who are in similar fields as myself and to find potential links to pages that can make concepts clearer. I still feel that the wiki has the potential to be more than a first-response knowledge building site, but that it would require greater ownership from all of its members to progress towards positive changes.

After having the opportunity to use the course wiki towards my progress in subsequent courses, I began to question how my experiences in the wiki can influence my own practice, in secondary classrooms. I believe that the benefits we, as graduate students, experienced from our participation in building knowledge to contribute to the wiki, and from doing so for the benefit of our peers, rather than solely for grading purposes, can be experienced by high school students as well. My knowledge of the topics that I chose to contribute was solidified through the research and resource-creation process. Additionally, I believe that if I had fully participated in the social and editing opportunities available, these too may have enhanced my own personal knowledge of topics in the course. A wiki assignment of this nature, implemented in my secondary classrooms, could therefore provide my own students the same benefits, while also allowing them to contribute to a quick-reference
resource that they could take with them into final assignments and subsequent grade levels.

As a teacher, I like the constructivist characteristics of a wiki assignment of this kind, because it shifts the focus onto learning through student communication and gives the teacher the opportunity to take on a guiding role. I also appreciate that it gives students the ability to focus on course topics that are of personal interest to them. However, in order for this type of class wiki to work at a secondary level, a number of challenges must be addressed. One of these challenges would be in encouraging socialization in a way that is not prescribed. Students must not be participating in the social and editing opportunities of the wiki to satisfy requirements for grading. Further investigation into how to inspire this intrinsic motivation is needed.

Lastly, the difficulty of defining digital literacy is explained in greater depth by Boechler, Dragon and Wasniewski (2014). Largely, digital literacy has come to represent the competence and skills necessary for interacting with technology, but newer branches of the definition, such as digital competence and multimodal literacies take into consideration the daunting task of navigating the complex worlds of social networking, online gaming, and digital creation. In my personal experience, my students need a great deal of guidance in both information literacy and digital literacy to operate in online environments where they are expected to meet a standard of reliability, recognize that standard in their peers’ work, and respond to one another in a positive, yet critical way. In both online and face-to-face secondary classrooms, creating a sense of community is very important. While wikis offer opportunities for students to both create and contribute to their class community, they also make the need for an established classroom community even more critical. In order for a class wiki of this nature to work, at this level, wiki features, as well as prior discussion and activities, specifically addressing etiquette and camaraderie-building between students, would need to be built into the course.

Using the lessons from my own experiences with the PoL course wiki, I feel confident that successfully implementing a wiki of this kind, in a secondary classroom, would be beneficial to student learning and community. I think students would find topics that interested them within the given subject matter, in the same way that I gravitated towards writing about makerspaces, and would be positively impacted by the peer review process and socialization involved in the wiki processes. The initial class preparation, on the teacher’s part, both technologically and socially, would be great, but would ultimately offer students the kind of independence in, and ownership over, their learning that we strive to provide them.
REFERENCES


**Biographical note:**

**Terri-lyn Jones** worked as an intermediate teacher in northern Manitoba before returning as a secondary LTO teacher for the Durham District School Board. She is currently nearing completion of her Master of Education. Her research interests include STEAM education, mobile technologies, and indigenous education.