WIKI'D TRANSGRESSIONS: SCAFFOLDING STILL NECESSARY TO SUPPORT ONLINE COLLABORATIVE LEARNING

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ABSTRACT
This paper is a reflection of my own individualistic participation in the EDUC 5001G: Principles of Learning (PoL) class wiki assignment. Specifically, I investigate the need for increased scaffolding strategies to facilitate direct collaboration among its participants. In order to do this, I first conducted a preliminary examination of the efficacy and suitability of wikis as tools for knowledge construction as well as some of the strategies that have been documented in their implementations. The examination revealed that although wikis have proven to be expedient tools to foster collaborative knowledge construction, the social aspects of the activity need to be reinforced in formal learning environments. Accordingly, an analysis of my own and other students’ behaviour, in different documented cases of wiki application, indicated that predispositions to work independently may be aggravating factors inhibiting the natural occurrence of collaborative events. Finally, my conclusions reiterated the critical role of the facilitator in scaffolding collaborative behaviour to overcome students’ inclinations to complete wiki assignments autonomously. Examples of scaffolding strategies discussed include: structuring wiki activities according to relevant theoretical frameworks, encouraging students to use existing avenues for communication and providing alternatives, and assigning students to specific and differentiated roles. This paper contributes to existing literature which has emphasized the need for an established framework to guide effective wiki implementation in formal education settings.

KEYWORDS: Wiki, Online-collaboration, Scaffolding, Social-constructivism.
INTRODUCTION
When first implementing the PoL wiki, Hunter and Austin (2015) was inspired by a taxonomy of classroom uses for wikis that were first postulated by Phillipson (2008). Particularly, he endeavoured to create what Phillipson (2008) regarded as a “Resource Wiki” which is, most fundamentally, an artifact that can be accessed as a learning resource for current and future students. While Hunter stated that the “intention of using it had much more to do with engaging students in collaborative discourse...than in producing an authoritative information source” (Hunter & Austin, 2015, p. 527), some aspects of the structure and the implementation of the wiki assignment may have inadvertently stifled the prospect of it being used as an effective collaborative tool.

Conole and Dyke (2004) highlighted the affordances that contemporary information communication technologies (ICTs) can provide to support teaching and learning. In fact, they described an extensive taxonomy of the educational affordances inherent to ICTs which included: enhanced accessibility to immense amounts of information, the mediation of rapidly changing information, exposure to a diversity of experiences that can inform learning, improved engagement in communication and collaboration, and extended opportunities for reflection and critique that are otherwise not possible in transitory face-to-face discussions. However, despite such advantages, Conole and Dyke (2004) were aware, nonetheless, that encouraging collaboration in virtual settings could be problematic. They stated that in online or integrated learning environments, the construction of collaborative activities needs to be meticulously designed and orchestrated (Jones, 1999) and called for the exploration of a theoretical framework to support further understanding of the prospects and challenges of ICT use.

Thus, although participation in the PoL wiki assignment was supposed to engender engagement and participation in the social constructivist activity of building a wiki (Hunter, 2017), I contend that some aspects of the design and implementation of the PoL wiki did not fully support this outcome. Specifically, I argue that insufficient support was provided to ensure that students participated collaboratively in the wiki assignment, and the social aspects of the assignment may have consequently been omitted. Accordingly, since students’ contributions to the wiki may not have been a result of direct collaboration, I have called into question the benefits of utilizing the wiki as a collaborative constructivist learning activity.

Therefore, in this paper, I will seek to confirm these observations by:
1. exploring pertinent wiki and constructivist literature to understand, respectively, the potential of wikis as effective collaborative tools and observe the theoretical justifications for their use in educational settings;
2. demonstrating the essential role that the instructor/designer plays in providing scaffolding to students in the co-construction of a wiki; and
3. analysing the independent nature of my own contributions and investigating the implementation and design factors in the PoL collaborative wiki environment responsible for this outcome.
However, the ultimate purpose of this paper will not be to argue that the PoL wiki assignment was inherently ineffective, rather the goal of this paper will be to illuminate the necessity for explicitly fostering meaningful collaboration and discourse among students within the wiki environment so that future PoL cohorts may benefit more from the social constructivist activity in following semesters.

RELEVANT LITERATURE
The following review of relevant literature will provide an overview of wiki software to demonstrate its potential as a collaborative tool in educational settings. As well, it will highlight the most relevant learning theory related to online collaborative wiki construction to bring to bear the considerations that must be observed when implementing and facilitating such instructional strategies. Finally, the role of the instructor/instructional designer in facilitating discussion and knowledge construction using various scaffolding and design methodologies in the collaborative wiki environment will be discussed in detail.

Wikis
Increasingly, Web 2.0 technologies, such as wikis, are being exploited by educators as tools for increasing student engagement through online discussions and content generation (Buraphadeja & Kumar, 2012). Web 2.0 technologies can be described in a variety of ways. Notably, the term doesn’t refer to a change in any technical aspect but a change in the way webpages are used. Some general and salient characteristics of Web 2.0 are that the webpages can be accessed from anywhere, the value is based in the content, networks and collaboration are encouraged, and the data can be shared readily from the bottom-up (Walcott, 2007). Wikis, then, are systems that connect numerous webpages containing information that can be restructured, expanded, and further linked by any participant (Karasavvidis, 2010). Lin and Reigeluth (2016) regarded wikis as an “Internet genre for quick knowledge construction” (p. 529) that features unique characteristics that support collaborative activities. They stated that wikis afford participants the capability to openly edit content, review the history of revisions made to content, and provide opportunities for communication. Accordingly, as malleable documents that invite and foster content manipulation, wikis are appropriately used as platforms for collaborative knowledge building (Ertmer, Newby, Liu, Tomory, Yu, & Lee, 2011).

Wikis can be used to encourage and support collaborative and constructivist learning (Jung & Suzuki, 2015) as well as evoke higher-order thinking skills and meaningful knowledge construction (Bravo & Young, 2011). In fact, Ertmer et al., (2011) cited that the use of wikis in college classrooms has continued to increase (Vratulis & Dobson, 2008) despite a framework to exact their full potential as collaborative knowledge construction tools. Nonetheless, when properly designed, collaborative wikis can help engage learners and instructors in communication and content generation which will positively affect learning processes and outcomes (Esichaikul, Myint Aung, Bechter, & Rehman, 2013). To this end, educators attempt to strategically use these technologies to invoke student engagement in discourse pertinent to course materials and concepts to increase critical thinking, reflection, shared meaning-making, and the co-construction of knowledge (Buraphadeja &
Kumar, 2012). Accordingly, Wheeler, Yeomans, and Wheeler (2008) stated that the unique and affording features of wikis “enable students to collaboratively generate, mix, edit and synthesize subject-specific knowledge within a shared and openly accessible digital space” (p. 988). By providing students with opportunities to incite, reconfigure and share content, wikis have the potential to shift the nature of instruction from a traditional, behaviorist oriented knowledge-transmission model to a transformative learning environment (Bonk, Lee, Kim, & Lin, 2009).

Despite the versatility of the tools, the benefits and the potential transformative learning that may occur while using wikis is dependent on the collaboration that transpires among its participants (Ertmer et al., 2011). Mezirow (1997) described the nature of transformative learning, with adults, as the “the process of affecting change in a frame of reference” (p. 5). In other words, since adults have amassed a significant amount of experiences that have shaped their behavior and perceptions, they have a strong inclination to disregard any ideas that do not match their preconceptions. Thus, transformative learning occurs when circumstances allow for frames of reference to develop into a more inclusive and reflective experience. Mezirow (1997) explained that frames of reference are principally the result of “cultural assimilation” and exposure to the unique proclivities of our primary caregivers and emphasized the importance of discourse to engender interaction with “competing interpretations.” Through discourse we are exposed to alternative points of view, and through critical reflection and communication, we can transform our frames of reference. Therefore, since learning is a social process which involves learners becoming critical and cognizant of their own and others’ assumptions and frames of reference, it is incumbent upon educators to construct environments in which students:

- have full information; are free from coercion; have equal opportunity to assume the various roles of discourse (to advance beliefs, challenge, defend, explain, assess evidence, and judge arguments); become critically reflective of assumptions; are empathic and open to other perspectives; are willing to listen and to search for common ground or a synthesis of different points of view; and can make a tentative best judgment to guide action (Mezirow, 1997, p. 10).

Provided that wikis encompass the requisite features to foster collaborative activities, incite higher-order thinking, and create transformative learning experiences under the right circumstances, they are justified in their use in educational settings.

Theoretical Perspectives and Considerations
Collaborative wiki projects are rooted in social-constructivist theories of learning (Heafner & Friedman, 2008; Su & Beaumont, 2010). In this respect, wikis can redefine the nature of instruction from traditional teacher-oriented, information-transfer models to student centered approaches where students actively participate in the knowledge construction and meaning-making processes. At the crux of social-constructivist pedagogy is the learner which allows instructors to reflect on instructional practices from the learner’s point-of-view (Adams, 2006). Adams (2006) outlined several common principles and practices of
social-constructivist pedagogy to serve as references for informed practice. These principles were characterized by the focus on growth rather than proficiency, the role of learners as active co-constructors of knowledge, guidance over instruction, a focus on the process itself rather than the outcome, and assessment that actively recognizes a shared understanding. Some of these principles have been exemplified in existing wiki research. For example, Beaumont, O'Dorherty, and Shannon (2008) claimed that providing students with guidance during the process of wiki construction, rather than subsequent feedback after an assessment, was more "highly valued" by students and was more conducive for learning.

However, wiki projects are also attributed to connectivist theory which outlines how learning can occur through online peer networks such as wikis, blogs, and discussions forums (Downes, 2010; Siemens, 2005). According to connectivist principles, students are encouraged to discover information on their own and share that information with their peers. Siemens (2005) noted that in connectivist learning, knowledge becomes less about what a person currently knows and more about their potential to gain knowledge from a networked community as a whole. In this sense, actively making connections between ideas and concepts and deciding what is and what is not important, in a chaotic information replete digital landscape, is an integral part of the learning process (Siemens, 2005). However, connectivist theory falls short of providing effective guidelines for structuring and implementing these web-technologies in formal online learning environments. In virtual learning environments, success for students is dependent on a greater level of support from the instructor (Reese, 2015). For example, Young (2006) noted that disassociation (detachment or disinterest from the activity) may be a consequence of students being left to their own devices without additional support and direction from the instructor or access to their peers when working in an online setting. Thus, it is reasonable to assume that the type of learning connectivism describes doesn't necessarily provoke meaningful collaboration among students participating in a shared knowledge construction activity. In fact, Wheeler et al. (2008) revealed that students can be inhibited by an online collaborative space (wiki environment) that is too unstructured and that boundaries are necessary for students to make sense of the learning. These suggestions are similar to those made by Karasavvidis (2010) who recommended that wiki assignments should be designed to be more manageable and tasks should be organized sequentially. Thus, other constructivist frameworks that reflect such suggestions may complement connectivist perspectives when applied to activities such as online asynchronous collaborative wiki construction.

Harasim’s (2011) Online Collaborative Learning theory (OCL) effectively outlines ideal stages of knowledge construction in online collaborative environments, and therefore, it may arguably serve as a suitable framework to facilitate collaboration in wiki projects. The processes of OCL are described in three sequential and recurrent stages of knowledge construction. The first stage, “idea generating” can be understood as the brainstorming phase where disparate ideas from the group participants are amassed. The second phase “idea organizing” is where discourse begins to contrast, analyze and categorize those ideas. Finally, during “intellective convergence,” ideas are synthesized and a consensus is reached...
which is demonstrated through the construction of final collaborative product. In OCL, online discussions and the shared construction of knowledge are the primary avenues for learning as a focus on fostering discourse results in more equitable participation (Harasim, 2011). Students are emboldened take responsibility for their learning which produces more equal engagement. However, the importance of discussion for constructing knowledge in OCL is dependent on the instructor’s ability to provide expertise and knowledge to students at each phase of the process. A point that is further illustrated by Kane (2011) who observed that “top contributors” are likely to act as community leaders in the wiki environment. The rich experiences of these leaders outside of the collaborative environment as well as their expertise can contribute to the quality of collaboration that materializes. Thus, the instructor (as an expert leader) that facilitates discussion is central to the successful maintenance of online collaborative learning environments.

The Role of the Instructor

Collaborative wikis require the input of scaffolding to be successful tools for knowledge construction. Karasavvidis (2010) highlighted that wikis are different from other software tools. She emphasized that wikis have a “flat structure” in that scaffolding is not an inherent component in their design. Thus, scaffolding becomes one of the most imperative measures incumbent on the instructor in collaborative wiki projects. Bruner (1983) explained that “scaffolding” is the personalised guidance provided to the learner during the learning process which is increasingly withdrawn until the learner no longer requires it to independently complete a task or understand a new concept. This corresponds to the recurrent knowledge construction cycle described by Harasim (2011) and accentuates OCL’s suitability as a framework to facilitate collaboration in wiki projects. She proposed that the process of knowledge construction, in online collaborative environments, is cyclical in that the learner may repeatedly participate in the process of generating, organizing, and synthesizing ideas at increasingly more profound degrees before arriving at possible applications. In this process, the instructor is a representative of the “knowledge community” and provides input at each stage. Therefore, by this logic, learners will initially require more scaffolding, though as they become more proficient in the knowledge construction process, the amount of support required from the instructor will gradually be reduced.

Scaffolding provided by the instructor is necessary for successful wiki collaboration as it is the instructor who determines the kind collaboration that will occur among the participants (Meishar-Tal & Gorsky, 2010). That is, it is incumbent on the instructor to allocate the division of labour, set the parameters of the activities, and designate roles to participants. Accordingly, Jung and Suzuki (2015) also outlined three common instructional scaffolding strategies that positively impacted knowledge creation in collaborative wiki environments: worked examples, grouping, and assessment and feedback. They noted that providing non-specific examples and forming heterogeneous groups for collaboration were effective ways to increase socialization, and further, they stressed that regular and continuous feedback and assessment is crucial for equitable participation and motivation. Likewise, Ertmer et al. (2011) reported that second year preservice teachers who participated in wiki collaboration experienced higher levels of
satisfaction when intrinsic motivations of learning were accompanied by regular feedback from the facilitator.

Feedback from the instructor is also an essential part of “Rapid prototyping,” a strategy that has been used to enhance and accelerate the creation of collaborative wiki pages (Shih, Tseng, & Yang, 2008). Hadjerrouit (2011) described rapid prototyping as a powerful “evolutionary” approach to “quickly generate an initial text that can be improved, changed, and modified collaboratively through incremental revisions” (p. 434). Hadjerrouit (2011) explained that feedback from the instructor and instances of peer-review are used to develop a series of prototypes that can be quickly revised and improved upon incrementally. Rapid prototyping is an inherently collaborative process that requires the use of many “cyclical revisions” by project members to ensure that the wiki application is meeting its objectives or the “user’s needs.” Hadjerrouit (2011) integrated rapid prototyping into his approach to designing an ideal wiki construction process. He stated that the development of wiki applications needed to be designed in a way that evoked students’ motivation to participate in the type of collaborative writing opportunities that wikis provide. Hadjerrouit (2011) speculated that collaboration among participants could be fostered if the approach was focused on the participation of a group of collaborating students, and rapid prototyping was used to provide feedback and review of several emergent prototypes. His “Wiki Construction Process” encompassed six stages of development, all of which entailed continuous review and feedback from the instructor and peers.

Furthermore, several other perspectives exist regarding the scaffolding methods that instructors should use to promote the social aspects of wiki collaboration. For example, De Wever, Van Keer, Schellens, and Valcke (2009) discovered that knowledge construction can be enhanced when students are assigned into certain roles in online discussion. They asserted that the differentiated assignment enabled students to internalize the skills related to that specific role, and thus, would increase transfer of those skills to future activities. Further, rotating roles and creating a summarizing or synthesis role can facilitate higher levels of knowledge construction (Buraphadeja & Kumar, 2012). Thus, the instructor should specify the tasks involved in wiki discussion to promote higher levels of knowledge construction. Further, Esichaikul et al. (2013) confirmed the benefits of a wiki as a collaborative learning tool; however, they emphasized the need for facilitators to encourage the use of the wiki as such as opposed to simply just an implement for editing. Instructors also play an important role in explaining the importance of constructive criticism, and designing tasks that truly require collaboration. Their study found that collaborative wikis are regarded as having high usability and can lead to increased engagement from the learner, but the activity must also have observable and articulated benefits.

Alternatively, some researchers have suggested that the design of wiki assignments should inextricably link completion with collaboration. For instance, Karasavvidis (2010) suggested that in order to address the lack of communication and collaboration in wikis, wiki assignments should be designed in such a way that they are impossible to complete
without participating in direct collaboration with other students. Similarly, Wheeler et al. (2008) suggested that wiki content creation should be an activity that is incorporated into lesson routines, while the teacher should act as a moderator. Despite the disparity of methodology among all of these strategies, they all share one common theme: interventions, on the part of the instructor/designer, that act as catalysts for collaboration.

**ANALYSIS**

From the review of related literature, it was demonstrated that wiki software can be an effective platform for the implementation of collaborative constructivist activities in educational settings when design and implementation is carefully planned. In the following analysis, I will examine the independent nature of my own contributions in the PoL wiki and illustrate the underlying causes for this outcome. As well, I will highlight the neglected and underutilized discussion component in the design of the wiki that acted as an aggravating factor and further influenced my individualistic mode of participation.

**Autonomous Attendance**

In order to understand how collaboration occurs in wiki environments, Meishar-Tal and Gorsky (2010) proposed to classify the types of actions carried out by participants in a hierarchical taxonomy. To do this, they drew upon a taxonomy previously developed by Pfeil, Zaphiris, and Ang (2006) and sought to rearrange their thirteen, ostensibly parallel, categories of wiki editing actions by “imposing a hierarchical class structure...” that may consequently “… add order and clarity to the kinds of editorial actions carried out” (p. 27). In their new restructured taxonomy, editorial actions during collaborative writing are designated into two main categories: 1) actions that add, delete, or move entire sentences, or 2) actions that make changes to words within an existing sentence thereby altering their composition or content. The hierarchical taxonomy proposed by Meishar-Tal and Gorsky (2010) was intended to serve as an objective assessment tool to effectively typify participants’ editorial actions in a collaborative wiki environment. Figure 1 illustrates their hierarchical taxonomy.

After utilizing Meishar-Tal and Gorsky’s (2010) taxonomy of editorial actions to categorize my own contributions to the PoL wiki assignment, I discovered that my contributions were characterized mainly by the addition of new content to new (my own) or existing wiki pages and the deletion of previously written information. The former is congruent with the findings of Meishar-Tal and Gorsky (2010) who found that the clear majority of students (approx. 90%) were hesitant to delete existing sentences and usually only added new information to the wiki. Whereas, deleting text was carried out by only a minority of students.

Nevertheless, although the contributions I made to the PoL wiki were arguably of sufficient quantity, I constructed my posts entirely in isolation, and they could not be considered the product of collaboration with my peers. That is, although a significant amount of my editor-
-ial actions in the wiki were characterized by adding, removing, or relocating information from existing pages, those pages had been created by students from a previous cohort and I had no direct instances of communication with them. In fact, the majority of my contributions revolved around a single page and topic in the PoL wiki. The page titled “Multimedia Learning,” which I edited most frequently, had a total of only three contributors over a period of 6 years with the most recent past contributor making changes in 2014. Table 1 illustrates the nature of my contributions to already existing and/or multiple authored PoL wiki pages.

Table 1.

<table>
<thead>
<tr>
<th>Wiki Page Title</th>
<th>My Actions</th>
<th>Editorial Actions</th>
<th>Total Number of Authors</th>
<th>Number of Simultaneous Authors (same cohort)</th>
<th>My Instances of Communication with Other Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multimedia Learning</td>
<td>16</td>
<td>13</td>
<td>9</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Google Translate</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>Mobile Assisted Language Learning</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Translanguaging</td>
<td>8</td>
<td>1</td>
<td>0</td>
<td>2</td>
<td>0</td>
</tr>
</tbody>
</table>
Thus, the independent nature of my posts and the absence of communication with previous wiki participants may have undermined the collaborative nature of content generation that the wiki was intended to evoke (Hunter, 2017). Indeed, others have also documented instances in which students had resorted to independently contributing to wiki assignments. For example, in a study that assessed the perceptions of both graduate students and lecturers in using a wiki for conducting group projects, Elgort, Smith, and Toland (2008) found that while on some occasions students conformed to work in a group, it was apparent that in other instances, students’ contributions were entirely individualistic. What’s more, many of the students who had participated in a group expressed that they could have done work better if they had worked autonomously. The authors indicated that if teamwork and group collaboration are the intended outcomes in wiki production, then scaffolding strategies should not go unheeded. Further, predispositions for students to work independently in wiki projects was also observed by Wheeler et al. (2008) who noticed that students were inclined to only observe the pages that they had contributed to. Further, students’ proclivities to default to individualistic approaches in completing wiki assignments, in one way, can be understood by their previous conditioning and experiences in traditional education settings (Karasavvidis, 2010).

Students are more accustomed to traditional instructional practices, and the differentiated nature of work required in wiki assignments may present salient challenges for students (Karasavvidis, 2010). Karasavvidis (2010) discovered, in an examination of the barriers of successful wiki implementation in a higher education setting, students struggled to cope with the collaborative and communicative nature of wikis. She explained that students have become “habituated in certain modes of work” (p. 227) which largely reflect traditional behaviorist models of teaching and learning. Since the traditional practices that students are accustomed to are essentially solitary and do not involve much two-way communication and collaboration, certain measures must be taken to account for students’ lack of knowledge and ability to contribute to collaborative tasks such as class wikis. This point reinforces the need for instructors to provide students with substantial scaffolding (Jung & Suzuki, 2015) in (online) collaborative environments and strategies should be explored for promoting the concept of shared meaning-making among students (Karasavvidis, 2010).

Wheeler et al. (2008) compared the kinds of skills needed to work in a collaborative wiki to the skills required to participate fully in the 21st Century knowledge economy. Such skills include the ability to generate creative content, give and receive constructive criticism, and become self-directed learners and workers. However, they expressed the need for instructors to mitigate the anxieties that students may encounter when receiving criticism from their peers on the web. Wheeler et al. (2008) provided several suggestions for assuaging such barriers to students’ collaborative participation in wikis. For instance, they concluded that instructors should inform students of the possibility that their work, during the construction of the wiki, may be edited, expounded, or even removed entirely if other students perceive it to be erroneous, incomplete, or inaccurate, respectively. Further, instructors should make clear to students that the information they post in the wiki is
public, and they can claim no individual ownership of that knowledge once it has been posted. As well, students must understand that collaborative learning means participating in negotiation of meaning and the open exchange of ideas. Content editing is a natural and informal feature of wikis, and instructors should accentuate to students the importance of collaboration over competition during the construction process (Wheeler et al., 2008).

**Missing Avenues or Missing Directions?**
The design and implementation of PoL collaborative wiki may have unintentionally precluded the possibility of scaffolding events to occur by neglecting essential avenues for communication. As emphasized earlier, the role of discussion, in online collaborative settings, is central to the co-construction of new knowledge (Harasim, 2011); however, the discussion channels in the wiki platform (MediaWiki) were not effectively utilized or promoted by the instructor. This may have caused the PoL course wiki to become characterized by the same kind of “flat structure” described by Karasavvidis (2010) in that there were no (known) avenues for communication to facilitate scaffolding events and communication among students. Yet, the benefits of built-in modes of communication are illustrated quite simply by Wu, Vassileva, Zhu, Fang, and Tan (2013) who were able to conclude that group collaboration in wikis can easily be supported through the introduction of a dialogue box. Specifically, a dialog box was shown to increase a users’ awareness of task conflict and can enhance individual and overall group performance. Despite the PoL wiki platform having a “discussion” tab on each page, students did not receive adequate encouragement to use it.

Discussion boards, in online asynchronous settings, are regarded as fundamental components for providing students with opportunities to co-construct new knowledge and engage in higher degrees of critical thinking (Hew & Cheung, 2011; Ng, Cheung, & Hew, 2012). By drawing on past experiences through critical and reflective thinking, discussion posts afford students ideal opportunities to co-construct knowledge (Mason, 2011). Though, most notably, discussion boards provide an avenue for the instructor to set clear expectations, give directions, and provide feedback, thereby promoting motivation through scaffolding events that will lead students to engage in constructive dialogue and increased participation (Mokoena, 2013). However, little research has directly examined the use of instructor led discussion boards to manage and orchestrate collaborative wiki construction. Further, although discussions avenues were not specifically mentioned, several sources have emphasized the need to explore strategies for configuring wiki collaboration. For example, Bonk et al. (2009) noted that there is insignificant knowledge surrounding the best strategies for structuring wiki collaborations to produce a sense of value in participation and confidence among learners. Whereas, Ertmer et al. (2011) concluded that the research in the area is insufficient and that an effective structure for facilitating wiki collaborations has yet to be described.

**Conclusions**
My purpose in writing this paper was to demonstrate that although wikis have great potential to be effective collaborative tools in online educational settings, some characteristics of the design and implementation of the POL wiki assignment may have
precluded direct collaboration among the students. Specifically, I argued that the lack of structure and avenues for scaffolding from the instructor did not lead to meaningful collaboration among students which might have undermined the social-constructivist nature of the assignment. Ultimately, this paper reinforced recommendations for careful and increased attention to the implementation of wiki assignments since collaboration among students will not spontaneously occur on its own (Jung & Suzuki, 2015).

A range of previous scaffolding strategies from instructor feedback (Jung & Suzuki, 2015; Ertmer et al., 2011) to extrinsically linking wiki completion with collaboration (Karasavvidis, 2010) were discussed. However, in order to exploit the full benefits of using wikis as tools for online collaboration, I suggest that established social-constructivist theoretical frameworks, such as OCL (Harasim, 2011), could be used to guide their implementations. Also, to support collaborative discourse, I contend that integrating and encouraging the use of proven communication channels, such as discussion boards, could address and ameliorate circumstances where students defaulted to working independently. A recommendation similar to that of Kasemvilas and Olfman (2009) who specifically suggested that to better support collaborative writing in MediaWiki environments, external applications should be integrated to help facilitate discussions. As well, since assigning students into distinguishing roles has been observed by some to lead enhanced knowledge construction and the differentiation of tasks in wiki construction (Buraphadeja & Kumar, 2012) their use should also be considered in the design and implementation of future PoL wiki assignments.

Moreover, I discovered that although there is a plenitude of research that discusses the importance of instructor facilitated discussion in wiki projects, there is a limited amount of research which directly investigates the impacts of integrating instructor-led discussion forums aimed at scaffolding knowledge construction processes in wiki collaboration. Future research should explore the consequences of implementing various forms of instructor-led collaborative discussion on the degree of students’ collaboration in wiki construction. Also, research is needed to confirm or reject both my own observations and the assertions made by Hunter and Austin (2015) by empirically investigating the perceptions of past and current students participating in the PoL wiki assignment.

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