#HASHTAGS: making online conversations more productive

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Abstract

This is a reflective study focusing on participation in an online graduate-level teacher-education course in a Canadian University. We examined discussion tools within a constructivist framework and reviewed the literature and our own reflective practice around LMS tool use of hashtags. This study is meaningful to the microcosm of this course and to the wider macrocosm of learning professionals [1] and asks: In what ways can a tool like hashtag influence discussions in an online graduate-level asynchronous course? Do hashtags make online discussions less overwhelming and more constructive? This work is also significant for other students who often find themselves overwhelmed by the mechanics of participating meaningfully in an online academic conversation that seems too 'loud', with too many competing voices.

Keywords: Web 2.0 tools, technology, online learning, hashtags, Community of Inquiry, constructivism, research projects

1 INTRODUCTION

The purpose of this study is to identify ways in which online discussions can be made more productive, engaging and meaningful for online learners. This reflective study examines how the use of hashtags served as a tool to make online threaded discourse more constructive for the researchers in an asynchronous online course. This is a first iteration towards a larger research on the use of tools to make asynchronous online learning more productive. In this phase, the researchers hypothesized, based on their personal experiences and interpretations, that the use of hashtags enhance student learning by facilitating constructive discussions amongst online learners.

The following research questions inform this study: In what ways can a tool like hashtag influence discussions in an online graduate-level asynchronous course? Do hashtags make online discussions less overwhelming and more constructive?

The common conception when talking about asynchronous online courses is that the discussion forum naturally promotes a dynamic, collaborative learning experience: we hope this virtual learning environment is one "in which students are likely to learn as much from one another as from course materials or lectures...a creative cognitive process of offering up ideas, having them expanded on, and being able to reshape ideas in the light of peer discussions" ([2],[3]). Distance education may have started as linear, from teacher to student, but since the advent of Web 2.0, social networking and learning management systems (LMS), new distance education pedagogies are taking advantage of the intervention and social-constructivist views of learning ([4],[5],[6],[7]).

Ideally, in online course discussions, the boundaries for learning are more fluid. A teacher sets out a program of study, but there is often room in the discussion forum to explore ideas and develop knowledge more particular to an individual student or group of students. Technology, in this constructivist framework,
is a way to "identify tools necessary that learners will need to construct knowledge...students are encouraged to utilize multiple ways of solving problems" [8].

Online courses in general, and the course in which we, as researchers examined our use of a hashtag tool in particular, use online discussion forums within an LMS for asynchronous discussions. Ostensibly, the LMS allows students to engage in co-creating knowledge relevant to themselves and their community. Yet, the reality experienced by many students, including the researchers, is that often the voices are too many, and too loud, and the discussion online can end up being a lack of discussion. As students in a graduate-level teacher-education course, Teresa, one of the researchers, posed a query inquiring if there was a better way to find and enter discussions online that were meaningful and relevant to her. Wafa, another researcher, indicated that hashtags were a tool available within the LMS, and could serve to make conversations more productive. Following this initial conversation online, the three researchers decided to use hashtags proactively within personal discussion posts and to document by memos reasons why they created and used the hashtags. Next, the researchers used an excel with common categories to systematically reflect on how hashtags were used by them.

2 THEORETICAL FRAMEWORK

Online learning at the graduate level in education is often framed by a constructivist approach: learning is active, students are co-creators in constructing their understanding. Real world application is important to link experiential and reflective knowledge: "meaning making is the goal of learning processes; it requires articulation and reflection on what we know" [9]. Knowledge is collaborative, an interaction between external and internal conditions: something specific "occasions and evokes [thinking]" ([10], [11]). Computer supported intentional learning environments ([12],[13]) embed ways of sharing knowledge in their design. Ideally, these environments will "promote intentional control over learning by providing an environment that requires students to plan, monitor, set goals and solve problems" [9]. Students can build or construct knowledge which involves them connecting old knowledge with new knowledge [9].

Early online learning was very text based and often asynchronous or time-dependent. Technology, and Web 2.0 networking, allowed the online environment to implement more tools, like the threaded chat rooms we use for learning and more dynamic exchanges. One of the hallmark models that takes into account more dynamic and technologically mediated learning is the Community of Inquiry (CoI) model by Anderson, Rourke, Garrison and Archer (2001). CoI frames dynamic interaction with social constructivism and online collaboration to create "a cohesive, purposeful and worthwhile community of inquiry" [15]. This building of a knowledge sharing community where students collaborate and extend ideas is a purposeful environment where, ideally, "a community of learners collaboratively [are] constructing meaning" or an online community of inquiry (CoI) [11].

This study is reflective around our own participation as learners in the online discussion environment, and draws from our observations within the LMS, including our own use of student-led interventions to more productively participate in the online dialogue that is our own community of learning. We wanted to share our findings and suggestions in a way that is meaningful not only to the microcosm of this one course but to a wider community or macrocosm [1] of learning professionals who design courses and LMS platforms and for students who often find themselves, like us overwhelmed by the mechanics of participating meaningfully in an online academic conversation that seems too ‘loud’ with too many competing voices. Dewey [10] provided a foundation for the idea of reflection of how practitioners think in action. Schon’s [16] ‘epistemology of practice’ included two processes as the core for the reflective practitioner. First, reflection-in-action is the tacit processes of thinking that accompanies doing and interacting in a way that modifies practice for new learning. Second, reflection-on-action which is retrospective analysis of their performance to gain knowledge from experience. Johnston and Badley [17] link reflective practice to looking critically at one’s own practice and that of one’s peers. Ideally, reflection on teaching and learning makes “conscious and explicit the dynamic interplay between thinking and action” [18] and embodies
Shulman’s idea of “the wisdom of teaching” so teachers can learn from their work [19]. We were cognizant, in reflection that we should look at our own contributions first at face value, then more deeply to find meaning and connection to community and in our interaction with others [18]. We also had the goal of adding to our own personal and intellectual growth as teachers and researchers [18].

3 LITERATURE REVIEW

Postsecondary institutions are offering an increasing number of distance learning opportunities, most of which are delivered asynchronously, using course management software (CMS), alternatively referred to as learning management software (LMS). Courses delivered asynchronously most often use threaded discussions for interactions between students and the instructor. An asynchronous text-based threaded discussion allows multiple conversations, where many students can interact with many other students and the instructor at the same time. Bourne suggests that this type of asynchronous discussion activity accounts for 40% of the overall online course experience [22]. Threaded discussions are one of the more popular (amongst students) and effective activities used in online courses. According to Wu & Hiltz’s study, over half of the students from three online courses reported that they learned a great deal from their peers through online discussions [20]. Threaded discussions have been identified as a useful tool in facilitating student metacognitive awareness and development of self-regulatory processes and strategies [21]. However, while online discussions hold promise for collaboration and richness but the actual comments are often “disjointed” and “do not build on each other” [22]. Students often have no easy way to purposefully select threads or posts: “important precursors to students making contributions that build on and progress the existing discussions” [22].

3.1 What is overload? (and why does it matter?)

Despite the popularity of threaded discussions in online courses, research suggests that students are challenged by the time required for reading and participating in online discussions. Overload is one of the main reasons reported by online learners who found it difficult to keep up with the discussions in asynchronous text based online courses ([24],[25]). Information overload may occur when there is a high frequency of postings in an online discussion forum, as a result of which students are unable to process the posts and respond to them adequately [26]. As the number of notes in the discussion increases, students get overwhelmed and use coping strategies like skimming through the notes, skipping a few notes or ignoring the messages altogether ([27], [25]). According to Jones, Ravid & Rafaeli, students are more likely to end contribution in an asynchronous online discussion if information overload occurs [28]. Kear & Heaps’s (2006) study indicated that, “One of the most important contributors to students’ sense of overload was the number of unread messages waiting when they logged into the system” [24].

Vonderwell and Zachariah also address the challenges associated with the time students spend in weekly course participation in online learning, and the concept of “information overload” [21]. In their study, Brown & Green also determine the amount of time students spend in just reading the text of the discussions [29]. Edmunds and Morris describe information overload based on the effects it has on people as, “the feeling of having too much information, which takes up too much of their time….” [30]. Peters & Hewitt indicate participants as feeling overwhelmed by the number of messages in the online discussions [25]. Making online discussions less overwhelming for learners is crucial: the messages sometimes need to be filtered to make learning more meaningful and productive. Students need to be able to manage the incoming information, “in order to cope with high information density[. . .] people must be able to screen incoming information” [31]. One way is to use embedded tools or system enhancements like clickable message maps, improved message titles, a way to filter messages, or even a way to note useful messages to help address overload ([24], [23]).

3.2 Technology of Knowledge Building
Technology affordances, both the competencies of the students and the tools within the platform also play a key role in helping students negotiate their own knowledge building in the online environment. Part of becoming part of the knowledge construction is becoming familiar with the technology itself. Hillman, Willis and Gunawardena pointed out the difference between a learner’s perception of an interface as a separate mode of connection, and the use of an interface to facilitate interaction between learner-content, learner-teacher and learner-learner [32].

While online learning provides a potentially rich place to collaborate and build on knowledge, there are also some constraints of commonly used discussion forums. For example, Gao, Zhang & Franklin reveal that threaded forums, even though the most popular, often “do not foster productive online discussion naturally” [33]. Often, the technology or format of a threaded discussion does not “support the interactive and collaborative processes essential to a conversational model of learning” [34]. The hierarchy discussion format, for example, does not always promote interactive dialogue. Many notes remain unread and students can have a hard time deciding what to read [33]. Students do not always see the interrelatedness of threads or posts based on the visual representation [35]. Synthesis of ideas, an important concept in taking knowledge and building on it in a community of inquiry, is also hard with the multiple branches sometimes providing “little support for convergent processes” [33].

Some preliminary studies have investigated the ways tools or models can be used to help students negotiate their online participation. A search tool like CTL-F (Find) can take a student out of the context of the conversation, which can also detract from knowledge building. Marbouiti and Wise uses the LMS, Starburst, to “search for and retrieve posts embedded in their discussion context” [22]. This study reinforced that For example, The Starburst study by Marbouti & Wise finds. that students indicate “a desire to (re)find specific posts as they interacted in the discussion but [had] difficulty doing so” [22]. Another possible work around involves instructors considering the motivational power of social media to increase student participation and engagement in online educational spaces. Using social media and Web 2.0 tools that students use in their personal lives on a daily basis could have possible advantages for engagement, motivation, and learning in online courses ([36], [37], [38]). (Martindale & Dowdy, 2010; McElvaney & Berge, 2010; Sclater, 2008). This is indicated by Makos (2017) in her study. According to her research, a ubiquitous social media tool such as the “Like” button, much like the Like button used on Facebook, when integrated into students’ posts using the Pepper learning management system, provides students “with a low-cost social scaffold to primarily replace their need to type “I agree” in response to peers’ notes” in text-based asynchronous discussions [39]. The research also suggests that the Like button provided students with a low-cost mechanism for social interaction in their online courses, which had a positive influence on the students’ sense of community ([39],[40]).

3.3 An Online Conversation

Although the online discussion board can enable synthesis of ideas, we also know that the representation of threads online does not always easily promote "coherent and interactive dialogue necessary for conversational modes of learning" [34]. In fact, Pincas says that students can only participate in virtual discussion collaboratively in so far as that discussion is perceived as 'normal' [41] (Pincas, 1998, p.14).

Yet, online academic discussion is still novel to many students and teachers: Thomas’ model of online discussion indicates some of the differences that can make online discussion harder for students. While online discussion has potential for collaboration in different ways, Thomas asserts that online discussion is not normal. First, participants are isolated: students never really 'come together', even in time, to learn. Students do not interact with another student, but "with another student’s writing" [34]. So, online discussion can be limited to individualistic learning, especially if notes are not read or replied to by anyone. Second, the message organization “lacks the cohesion of a normal face-to-face discussion” [34]. Significantly, the number of individual voices that can even be 'heard' are limited along with interactive dialogue. Third, discussion online is not rich but inhibited by the "written form and oral function of technology-mediated communication" [34].
The typical linear text-based format displays posts chronologically with indentations to indicate relationship. The structure of the discussion or the relationships between threads is not “visually salient” [42]. Students report few useful indicators to help them navigate the discussion: they are overwhelmed by the number of messages. Students will open messages at the top or bottom of the screen ([43],[44],[45],[46]). So, if a student who participates online is not in a 'normal' conversation, how can the conversation still be facilitated to allow productive collaboration?

Thomas’ study suggests developing “radically different tools for online collaboration” and posits these tools need to extend beyond the task of online discussion. Innovative tools would, ideally, “promote collaborative engagement” and be “productive means of realizing truly conversational modes of learning” [34]. Making the conversation purposeful or visually organizing the structure of online discussions can potentially reduce the cognitive load in keeping track of relations between posts ([47], [22], [48], [46]). The look and feel of the interface can influence which posts the students read, in what order and where they make replies: in other words, the entire discussion ([49], [50], [51], [22], [42], [44], [23]). In the LMS used, PeppeR, participants can add a voice note, but the communal speech affordances of addressing and engaging a group are not present.

3.4 Why Use #hashtags?

A hashtag is one word or a group of words that begin with the # or pound sign and has no spaces between the words, creating searchable links. Whenever a hashtag is added to a post on PeppeR, it is indexed and becomes searchable/discoverable. Once someone clicks on that hashtag, they will be brought to a page that aggregates all of the posts with the same hashtags. A hashtag can be used to bring together posts about specific topics, a great way of organizing or grouping similar posts or inquiries together. Hashtags can also be used to help online learners find topics that interest them, and to encourage learners to participate in discussions that seem more important and relevant to them, making discussions meaningful. Such meaningful discussions will connect like-minded individuals together in an online learning community, motivating them to take an active role in knowledge construction and meaning-making [52]. This construction of knowledge through meaningful communication between learners can enhance their cognitive presence [53]. The hashtag tool in PeppeR also allows a participant in a conversation or a community to see all the posts that are centred around a particular topic together, consequently facilitating active, meaningful learning.

3.4.1 Familiar Means of Communication

A hashtag is commonly used in social media to indicate that a posted comment can be linked to another comment or discussion. The emergence and pervasiveness of new communication technologies, platforms, and social media with the use of hashtags has enabled a participatory culture and transformed digital communication [54]. Also, the popularity and widespread use of user generated content and use of hashtags foster inclusion, and democratic in that it equalises potential power inequalities while fostering inclusion [55]. Hashtags have become an ubiquitous and seminal feature of communication within social media [56], and utilized in an array of social media platforms in students’ personal lives. Further, hashtags are not just a trend, but appear to be permanent and crucial currency for users in digital environments extending beyond social media platforms, while serving as a broadcasting function to increase visibility of content [57]. Online, computer-mediated learning environments- such as an LMS - provide an ideal opportunity as active learners to apply familiar, intuitive hashtag communication actions within similar online community spaces in their learning experiences.

3.4.2 Engagement & Architecture

Hashtags within educational technologies offer a new architecture of learner participation and engagement. Studies have found that Twitter hashtags have been successful in keeping learners
engaged in reflective discussion activities within asynchronous online learning spaces for a long period of time ([58], [59], [60], [61]). In addition to the positive correlation between use of hashtags and enhancing engagement within online learning environments, research indicates that usage of hashtags also reinforces a strong sense of online community as well as facilitation of in-class formal and informal learning that goes beyond the classroom [62]. Findings also indicate that increased hashtag usage improves the students’ feelings of curricular engagement [61]. In addition to enhanced student engagement and fostering a sense of online community, successful use of hashtags within online learning represent a new form of data architecture as well as an ‘architecture of participation’. Research studies investigating the instructional benefits of asynchronous online discussions find that the structure of an online discussion directly correlates to the quality of learner discourse and engagement ([63], [21]).

4 METHODOLOGY

The reflective research participants for this study are all from the same graduate-level education course at a large Canadian public university. The course is a 12-week course and is fully online. The three researchers used analytic memos as a reminder to capture reflections ([64], [65]): these memos include personal in-course posts, in-course hashtag tools and journaling to record and reflect on their own experiences from weeks 1-10 of the course. Memos can also trigger the researcher to recognize and note common themes or patterns. The three (3) reflections were then explored for similar themes and patterns of using hashtags were noted. We made a list of all of our personal uses of hashtags. Then we all used the same excel file to categorize the hashtags, noting the hashtag, date of note, week & topic area likes received, intended purpose of note, and other observations about the note. The categories used for deciding the discussion specific content of the note were as follows: RC (Citation of weekly readings, e.g. the learner specifically cites and article or chapter from the Week's Readings), CC (Personal interpretation of content or content knowledge), PK (Prior knowledge and outside resources), RW (Personal experience, professional/academic experiences), MI (Going beyond information given, constructing new knowledge), FQ (Questions posted by facilitator of discussion thread), FR (Response posted by facilitator of discussion thread), IP (Instructor Post) which were inspired by categories used in a similar study regarding the structure of online discourse [66]. We also highlighted notes that were the only ones using a particular hashtag, and noted if we were the only author to use a particular hashtag, even if we used it a few times. We looked for common themes and patterns as well as noted individual experiences that seemed to indicate something outside of our common collective experience. Our task was to find and express relevant, meaningful themes or patterns of interaction that could be “noticed convincingly in an array of other observations and arguments” [67].

Our reflections are situated and we feel they adequately represent an artifact or production of how we as researchers, educators and online students view the conversation online. What we noticed within our own discourse and decisions is also influenced by our self-monitoring, self-observation and self-discipline ([68], [67]).

This study uses an online platform, PeppeR, which was developed at the University where all three researchers attend. PeppeR was created within the University to afford a discussion based community for collaboration in this and similar higher-education courses. As researchers, we are also active in varying degrees with the creators of this system which has expanded and developed as other faculty researchers have continued to develop their own pedagogy of teaching and learning online. The core technology incorporates a “web-based collaborative workspace offering specialized knowledge-building features and social networking tools to support learners in building learning communities” [69]. One of the unique features of PeppeR is that the design supports a socially constructed learning environment.

There are a few limitations to this research. The thematic analysis is limited to one course. We cannot make definitive conclusions from our limited study. But, as Yates [67] posits, even though small numbers make it harder to see specificity and context in fine grain, this type of study does provide a valuable
means to engage with relevant literature and research. Follow-up research will more broadly address the ethical considerations of adding mixed-methods data including wider classroom analytics of peer interaction around the hashtags as well as student and teacher reflections.

5 RESULTS

The researchers reflectively examined their own experiences and explored common themes around their learning experience. All of the researchers independently realized they were more deliberate about hashtag use after the initial discussion online with course participants about the issue of overload in asynchronous text-based courses, and how overwhelming it can get to see the number of unread notes when logging in on PeppeR.

Total Number Hashtags used in weeks 1-10 = 403
Total Number Hashtag topics = 86
Average participant = XX hashtags

Top 5 Hashtags

- #seekingcomment = 59 in XX notes
- #resource = 39 in XX notes
- #greatidea = 22 in XX notes
- #agency - 38, in XX notes, XX likes
- #PeppeR - 37, in XX notes, XX likes
- #hashtags - 38 in XX notes, XX likes

Graph

A like is represented online by a thumbs up image, and other students can click on a like button to show a variety of possible responses around general approval or agreement with this button. For example, Teresa’s notes that used #onlinelearning received the most likes (5-7): “This is encouraging. In an online discussion, when I add knowledge that I am passionate about, it seems that my comments also are more engaging with others. That makes me want to contribute more,” (Teresa, 2018).

Likes Per Hashtag

The categories for why individual researchers used hashtags also had differences that reflect different learning styles and goals. Researchers used hashtags differently when they were leading discussion: MI (going beyond information given), XX.

Categories Showing Author’s Hashtag Purpose

All of the researchers used hashtags #PeppeR and #hashtags intentionally to promote the use of hashtags in the course. Each researcher also introduced new hashtags: Teresa (#), Andrea (#), Wafa (#). Wafa used the hashtags #seekingcomment, #greatidea, #resource and #PeppeR initially to introduce them as foundational hashtags to the other learners. According to her evaluation, these foundational hashtags were used the most number of times in the course. Some of the hashtags introduced by the researchers were adopted by others in the course, but some were not. ## For example, Teresa was the only one to use: #reallifeproblems, #practicalexamples, #pop, #anonymous, #collaborate, #community, #learningstyles and #onlinediscussion. Andrea was the only one to use XX. Wafa was the only one to use #digitalcitizenship, #engagingdiscussions and #techtool. Teresa introduced #PeppeR: 19/32 posts containing #PeppeR were written by her and 10 were written by Wafa.
Both Andrea and Wafa organically used #resource. Andrea used #resource in 73% of her hashtag posts, 91% of which were classified as PK (contributing prior knowledge in addition to outside resources). Wafa used #resource in ??% of her hashtag posts, XX% of which were classified as CC (mirror above).

CONCLUSIONS AND FUTURE WORK

This paper presents initial findings of the reflective examination of the researchers related to their own experiences and interpretation of thematic patterns around their use of hashtags within the course they participated in. As reflective researchers, we set up opportunities to think self-critically about the attributions we are making about the meaning of our experiences, and related these meanings to larger education issues in the context of our study ([67], [71]). Within the context of this study, the literature review provided a way for us to draw agendas to apply to the texts or our own responses.

Common themes that emerged included finding ways to use hashtags to organize course materials and additional information for follow up later by participants. For example, #resource became a self-constructed tool to indicate the citation of scholarly journals and resources outside of the course readings, making the online discussion more productive and relevant. The hashtag #resource was further used by these two researchers to locate academic resources shared in the course, construct personal knowledge and build on prior knowledge for the participants: “By connecting external knowledge to our active learning classroom, I was hoping to negotiate not only my own understanding but mutual understanding through our interaction but also constructing new meaning making through supplementary resources,” (Andrea, 2018). It was evident that one of the primary uses of hashtags was to alert other learners to additional resources brought forward into the discussion, with the hope of new learning pathways and interconnected conceptual frameworks.

Sometimes hashtags were used to get a conversation going: #seekingcomment, #greatidea, #resource and #PeppeR. Introducing a new hashtag also would seem to have an effect on other students’ postings. For example, when Andrea also introduced the hashtag #business which differentiated posts about group dynamics and academic versus professional online learning course development and training. Hashtags, #seekingcomment and #greatidea became a way to seek out feedback from others in the online community and to track ideas that could become lost in so many conversations: “With the help of hashtags, I was able to locate discussion threads that were of interest to me, without having to go through hundreds of notes. This definitely made learning more productive and meaningful for me,” (Wafa, 2018). As part of a Community of Inquiry, participants are more likely to be engaged as they make the conversation more productive.

Content creation of hashtags allows users to create, assemble, tag/organize, locate, and share content that is relevant to their discussion posts, specific weekly readings, or meeting their own distinct information organization or access needs within an online course environment. As such, hashtags associated with discussion posts become learner-driven information and knowledge repositories, allowing for more widespread participation and user-content creation within meaningful discourse of the distributed learning environments. This increased user contribution leads to the growth of collective intelligence, as well as reusable dynamic content, thereby encouraging engagement and enhancing a sense of community [72].

By reflecting on our own experiences online we hoped to "elicit and demonstrate some patterns of broader significance" [67]. The current state of research regarding use of hashtags within discussion
boards within online learning environments is rather limited, which provides future opportunities for us to build on our research findings in future computer-mediated learning environments. It is our belief that continued research will shed additional light on hashtag usage as an integral part of process-constructs of learning. Further, use of hashtags will prove to be a significant and growing technology player in social and interactive learning that is informed by constructivist theoretical frameworks while supporting student engagement and individual meaning-making. It is our hope that our future work will build on this pilot and further explore continued reflective research, as well as use of hashtags more broadly within future courses in supporting authentic, learner-centered learning principles.

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