11. Developing Critical Thinking Among University Students Through Curriculum-Embedded Participatory Activities

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Abstract: The development of students' critical thinking is an important aim of many tertiary institutions today and is regarded as essential for graduates. In current times, digital tools are omnipresent in the everyday lives of learners who are already familiar with creating content outside their formal school settings. While students' online creations are often considered informal out-of-school activities, there is a need to understand how activities could be leveraged to help students develop critical thinking for academic purposes. One means of nurturing critical thinking is to develop learning environments that facilitate and support opportunities for students to engage in a participatory culture. This research elaborates the development of an active community of participatory culture to facilitate critical thinking through using knowledge blogs in a higher education program. Positive outcomes were observed in this study; the themes included *social support* and *co-learning*. This study calls upon further exploration into the understanding of the effects from participatory activities for learning in school and how participatory pedagogy could be applied across other domains.

Introduction

Critical thinking is of increasing importance to students' employability after their graduation; many tertiary institutions regard critical thinking to be essential for today's graduates. Critical thinking was defined in *The Delphi Report* as "purposeful, self-regulatory judgment which results in interpretation, analysis, evaluation, and inference, as well as explanation of the evidential, conceptual, methodological, criteriological, or contextual considerations upon which that judgment is based" (Facione, 1990, p. 2). Various universities have acknowledged the importance of these skills and incorporated critical thinking as their desired graduates' outcomes (Moore, 2004; Mummery & Morton-Allen, 2009; Prasad, 2009). One means of developing students' critical thinking is to develop learning environments that can facilitate and support opportunities for students to engage in a participatory culture (McLagan & Nel, 1997; Zacharis, 2009).

While new media developments have allowed millennial learners to be involved in various forms of online and social media activities, students' online creation outside of their formal school settings has hardly been a topic area of discussion for education. Digital technology and involvement in participatory media activities have become integral in the lives of 21st-century students, but formal school settings often do not encourage students to express themselves academically in such ways. Moreover, most millennials' online postings are often seen as self-centered expression and hardly encouraged as an active form of participation that encourages critical thinking. A participatory culture as defined by Jenkins (2006) describes contemporary cultures in which members of society not only consume media content but are also creating and distributing it. Members in participatory culture believe their contributions matter and feel some degree of social connection with one another; in the process, informal mentorship is also passed along to novices (Jenkins, 2006).

Although most millennials own a social media account and are involved in some form of content creation and distribution, most of these activities are for recreational purposes and rarely involve mentorship or establishing discussions that could help critically further their thought. Research that investigates millennials' use of user-generated media found that Facebook is the most used social network among millennials for fulfilling their information,

entertainment, and mood-management needs (American Press Institute, 2015; Shao, 2009). Most millennials were also cited as using the social network for recreational purposes such as sharing of personal photographs, seeing what their friends were talking about, and to find things that entertained them (Malik, Dhir, & Nieminen, 2016; Shao, 2009) rather than creating and distributing content or building social connection with one another. Bird (2011) stated that media engagement might take many forms other than the creation of more media; likewise, Ochoa and Duval (2008) suggested that perhaps only 9% of online users would contribute to a few elements online and the minority, 1%, would contribute a lot online. Although the possibility of learning through their online creation is relevant to our millennial learners today, the literature by Bird (2011), Ochoa and Duval (2008), and Malik et al. (2016) showed that there possibly have been more users who are passive consumers of media than those who are actively creating and distributing content.

To encourage students to develop critical thinking, it is central to connect teaching and learning to students' everyday lives in a way that could reflect the actual multimodal lifeworld that they are familiar with (Biesta & Lawy, 2006; Dewey, 1916/2005). It is hence important to understand the efficacy of students' online creation in detail and how these participatory activities could be scaffolded and transferred to help students develop critical-thinking skills for academic purposes. As such, continued research into effective design, implementation, and assessment of its learning outcomes is essential to facilitate successful student learning. This leads to the foci for this paper: Can participatory activities help in developing students' critical thinking? How can participation activities help encourage students' knowledge construction?

Methods

A series of blogging activities that involve students to complete weekly blogging tasks both independently and in groups, collectively, were carefully designed and embedded as curriculum-participatory activities (CPA) in this study. Blogging was selected as there are many affordances offered by blogging; for example, the commenting function through which instructors, peers, or external reviewers can provide feedback on student-created content could serve social constructivist approaches to learning that focus on students' active participation in knowledge construction through social interactions (Ferdig & Trammell, 2004; Fessakis, Tatsis, & Dimitracopoulou, 2008; Franklin & van Harmelen, 2007). The participants in the study were 13 students enrolled in a communication module for their psychology degree from an Australian university based in Singapore. Through an online learning community, students created and constructed knowledge blogs over a 15-week course. The International Critical Thinking Reading and Writing Test (ICTRWT) served as the main framework for the design of the CPA and also the coding template for the thematic analysis (Paul & Elder, 2006). The ICTRWT was one of the critical thinking–assessment tools developed and designed by Paul and Elder, and it has been widely used to assess students' critical thinking (Aunurrahman, Hamied, & Emilia, 2017; Lu & Xie, 2019). The test consists of five forms—paraphrasing, explicating, analysis, evaluating, and role-playing (see Table 1). The primary sources of the data were the pre- and postblogging activities' writing samples as well as blog posts throughout the course. An informal group interview was conducted at the end of the course. The group-interview approach was an informal conversation to allow the opportunity for each participant to share his or her experiences openly (Kvale, 2008). The approach also served to minimize power structures between the students and interviewer; this helped to put each interviewee on a common standing. In the interviews, the students were encouraged to express their attitudes toward the CPA and explain their reasons.

First Level	Paraphrasing	Accurately translating an author's wording into our own
Second Level	Explicating	State main point in a sentence Elaborate the key idea with greater detail Provide examples of what you are saying Generate metaphors, analogies, pictures, or diagrams of the basis thesis
Third Level	Analysis	Identify key elements of thought including purpose, question, information, interpretation and inference, concepts, assumption and, implications and consequences
Fourth Level	Evaluation	Appling intellectual standards such as clarity, precision, accuracy
Fifth Level	Role-Playing	Role-play the thinking of the author

Table 1. An example of codes developed a priori from the template of codes.

The method of analysis chosen for this study was a hybrid approach of thematic analysis, which incorporated both the data-driven inductive approach of Boyatzis (1998; see Table 2) and the approach outlined by King and Brooks (2017), which was the deductive a priori template of codes (see Table 1). The research analysis was an iterative and reflexive process; this approach allows the researchers to cycle back and forth between the stages (King & Brooks, 2017) to devise themes more extensively "where the richest aspect of the data is found" (Brooks & King, 2014). The researcher and a colleague coded the student pre- and postblogging independently using the initial template. Word-processing software Microsoft Word was used for the coding and storing of data throughout the research project. The researchers compared their individual coding and discussed points of difference and similarity in their coding to achieve intercoder reliability (Creswell, 2003). Subsequently, some adjustments were made to the original coding framework to refine the domains and their descriptors. The revised coding framework then guided the researchers' final coding of the student writing data. Finally, memos and writing samples were reanalyzed using the revised coding framework to determine the themes in this work. The themes included *social support* and *co-learning*.

Can Participatory Activities Help in Developing Students' Critical Thinking?

Social Support

The CPA has encouraged students to develop critical thinking in several ways; codes derived from the postwriting data showed attitude, explicating, analysis, evaluation, role-playing, social relationship, and juxtaposition (see Table 2).

Codes	Pre	Post	Definition
Attitude		x	*Confident of self-expression* *Demonstrates self-belief as a writer/reader/thinker, etc.; finds composing easy* *Having a goal/self-believe/ambition*
Remembering	x	x	*Recognizing* *Recalling*
Paraphrasing	x	x	*Accurately translating an author's wording into our own*
Explicating		x	*State main point in a sentence* *Elaborate the key idea with greater detail* *Provide examples of what you are saying* *Generate metaphors, analogies, pictures, or diagrams of the basis thesis*
Analysis		x	*Identify key elements of thought including purpose, question, information, interpretation and inference, concepts, assumption and, implications and consequences*
Evaluation		x	*Appling intellectual standards such as clarity, precision, accuracy*
Role-Playing		x	*Role-play the thinking of the author*
Self-centred	x	x	focuses primarily on the bloggers' own needs as learners and writers, and it does not consider the needs of readers Include photographs of him/herself/selfies
Social relationships		x	Has the intended audience in mind, speaks directly to them and engages them in a conversation/dialogue Seeks support, dialogue with feedback givers, blogging community, or makes friends with other writers Addresses other peers/group writers on similar assignments
Juxtaposition		x	Happy but sad that they have come to the end of the blogging journey

Table 2. Coding: Analyzing pre- to postwriting samples.

Consistent throughout the study was a need for students to seek *social support* from their peers and teacher. To begin with, the CPA helped students realize that there is a real audience reading their work besides their teacher. The students in the current study began the course with a weak concept of the audience; in their prewriting samples, the audience was seen as an abstract concept. Most of the prewriting samples were directed to no one in particular or only to the teacher and focused primarily on the bloggers' own needs. This can be seen in Suzy and Jenny's (not their real names) prewriting samples (Note: Spelling in all student excerpts is quoted as in the original student writing.):

> Suzy: I may not work in the makeup industry, but I feel it is a good skill to have [...] I like doing nails, and usually around Chinese New Year or any special occasions my friends will ask me to help them beautify their nails! Below is one if the nail design I have done for my friend for the upcoming CNY.
>
> Jenny: Greetings, Professor! Nothing to report! Hmm? What's that? You're curious about me Professor? Well, I

> don't know if I'm all that interesting but very well! Allow me to introduce myself! The name's Jenny! […] Surprised Professor? Don't you worry though! I do take my job and assignments seriously I assure you that.

Suzy and Jenny's prewriting samples demonstrated expression of self-centeredness that primarily focused on their own needs. Posting of *selfies* (self-portrait digital photographs) and travel photographs were also a common feature in almost all of the students' prewriting samples. This is consistent with McGrail and Davis's (2011) findings that show early student writing to be self-centered and often not addressed to anyone in particular.

In analyzing the students' blogs, it can be observed that the active engagement in using the comment feature helped them apprehend that there were readers other than their teacher (see Table 2). This finding is consistent from the group interview, in which students felt happy that there was an audience reading their blog entries; they felt further gratified when they received a *like* from their classmates. Motivation to continue writing and competition among the students to perform better were also observed. When asked about their feelings when they received a *like* from the teacher, most expressed that they felt a sense of acknowledgment and encouragement.

> Charlie: When I saw my friend received a *like* from teacher, I will think like what did she wrote and what's missing from my blog, so I will read her blog and try that [what she did and I didn't] in the next post

> Alice: Sometimes after reading my classmate's post, I was like, why didn't I think of this [the topic] in such way

Students felt encouraged that there was a real audience reading their post and someone was appreciating and anticipating their next blog entry.

> Suzy's comment to Shi: Aloha Shi my friend, let me start of by saying that I really like reading your blog post! It is always so entertaining! Not too like boost your ego, but I could like read your blog without getting bored at all! Love that you gave really concise information […] Anyways, it was great reading your blog post, can't wait to read the next one! Cheers

A juxtaposition of both relief and sadness can also be observed in their end-of-the-module post. Most students expressed that they felt relieved that they had arrived at the end of the journey but also expressed sadness that they are going to miss their classmates after the course. This shows connection and social interaction with their audience; the audience was perceived as real people and as personal friends.

> Suzy: Ah the day has finally come, where I upload my (maybe) last blogpost. I honestly do not know how you can beat the pure bliss in that, […] but, I have to say its rather sad I will miss all my readers ❤

> John: High Folks! Welcome back to my blogpost! It has been a long journey my friends, but we have finally made it! The final blogpost! Okay, let's not get too dramatic, shall we? I know I know, I am going to miss you guys too, BUT every end marks a new beginning, so, save your tears little penguins, for nothing is ever over!

> Natalie: Hey Alice! I'm so sad but a little happy that this will be our last blog post and this will be my last comment for you […] Take care Alice!

The students' blog posts showed increased social support and friendship formed over the course of 15 weeks. The students expressed receptiveness toward the CPA, and the blogging platform allowed them to engage in various discussions and the active blogging community helped them realize that they had an audience other than their teacher. Throughout their blogging journey, students received acknowledgment and support from their peers and teacher. This encouraged and motivated them to write more and to perform better in their subsequent posts.

How Can Participation Activities Help Encourage Students' Knowledge Construction?

Co-Learning

Students' postwriting samples demonstrated a shift from self-centered expression to a high level of explication, analysis, and evaluation, and most students demonstrated role-playing in their final blog post (see Table 2). While Lu and Xie's (2019) study omitted ICTRWT's level of *role-playing* because the level is challenging for EFL students, the students in this study were able to demonstrate the role-playing level. This was mainly due to the nature of the blog post task, which involved them to reflect and to take on the role as a producer to co-create a video that demonstrated their understanding of user-generated content (UGC). In this task, the students were given the agency to decide on the content of their UGC. After a few discussions and scaffolds from the teacher, the students were able to decide how their story should proceed. Most of the students had no prior experience with video editing, yet most of them expressed that they had no problem editing the video. They were also able to seek help and learn from members who were more experienced with video editing.

In addition, students improved each other's ideas and helped clarify each other's thoughts using the comment feature. For instance, in a reflection post about the understanding and interpretation of feminism, Joey's comment for her classmate highlighted that reading her friend's post had given her a new perspective on this topic.

> Joey: Hi groupmate!! I share the same thought with you that I think feminism is to fight for equal rights of women. You brought out another point that is to stop objectifying women. I don't know much about it but after reading your post I agree that it should be stopped [...] We are still responsible for the consequences even if we didn't plan to hurt anyone or to cause a crisis. I love your informative post! Look forward to your next post!:))

Separately, in a reflection activity about the issues of media ownership, Shi's comment to his classmates shows that the use of local events in his friend's blog helped him to make the topic of discussion more relatable to him.

> Shi: Hey there Josephine! This is a well detailed blogpost you have written. It informs me of the drawbacks and the advantages of each types of media, and you made it more relatable through the use of recent local events. I do agree that people do easily get influenced by the any sort of controversial news that fiddles with their emotional state, especially the pioneer generations of Singapore[...]

This was also consistent with the responses received from the group interview, which asked about how the CPA helped their understandings of semiotic analysis:

> Yes it does improve my understanding about semiotic analysis as by commenting and receiving comments, we learn more from each other's mistakes.
>
> Yes It does improve my understanding about illustrative analysis. By listening to the perspectives of others allow me to further and cement my understanding about semiotics analysis.
>
> Allows us to understand different points of view and encourages critical thinking whether to accept or reject our peer's ideas

The students' responses above demonstrated their ability to improve their understanding by learning from each other's mistakes and critically seeing the different points of view from their peers. This is consistent with one of the principles of knowledge building. In principles of knowledge building, Scardamalia (2002) expounded that students would be able to rise higher through continuous improvement in ideas and understanding, which allows students to create high-level concepts in a knowledge-building community. The comments from the students show continuous improvement in ideas

and understanding through their active engagement in the act of commenting and responding to each other. When asked during the group interview to compare their feelings of completing activities on their own and with their peers, the students said:

> When working on a task alone, you tend to have ideas only from yourself, so sometimes, it lacks in perspective since there is only so much one person can know. However, when you work in a group, it allows a variety of viewpoints that may clash, relate or be totally different, which can come off more interesting and knowledge-building than working alone (provided that knowledge is consolidated at the end of the activity)
>
> When working alone, I feel that you won't have another person to correct you or support your ideas and everything
>
> Working individually requires your own knowledge and research however working as a team you get to be exposed to different perspective and therefore brainstorm together

The above responses show students were receptive and appreciative of the CPA. With this informal mentorship, students were able to build knowledge by improving ideas and understanding, learning from each other's mistakes, seeing the topic from different perspectives, and helping make the topic more relatable in their lives.

Conclusion

This research aims to understand the learning outcomes of students through CPA; the major themes that emerged from this study were *social support* and *co-learning*. The students in this study expressed receptiveness toward the CPA; specifically, the active blogging community helped them realize that they had an audience other than their teacher. There was evidence that students' awareness and understanding of the audience improved toward the end of this research, and the CPA also provided an opportunity for them to discuss various issues beside talking about themselves. Throughout their blogging journey, the acknowledgment and support received from peers and teacher encouraged and motivated students to write more and to perform better in subsequent posts. Through the 15-week journey, the students developed a friendship with classmates from whom they sought social support and with whom they co-learned. The active and participatory components of blogging in this research not only invited students to express and support their ideas but also fostered an informal mentorship among themselves. Students were able to build knowledge by improving each other's ideas, learning from each other's mistakes, seeing the topic from different perspectives, and the CPA helped to make the topic more relatable in their lives. The development of critical thinking is a complex process; while positive outcomes were observed further exploration of the effects of CPA is necessary. Future research can focus on how a participatory pedagogy could be applied across other domains. This will help in designing more socially engaging learning environments to facilitate an active community of participatory culture.

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