



Research article

Can online discussions facilitate deep learning for students in General Education?

Semiyu Adejare Aderibigbe^{*}

Department of Education and Institute of Leadership in Higher Education, University of Sharjah, Sharjah, United Arab Emirates



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ABSTRACT

Studies suggest that online discussions complement teaching and students' learning. However, research also indicates that some tutors and students are uncertain about the value and quality of the learning process in online discussions. The debate and uncertainty necessitate more studies on students' learning quality and depth in online discussions. Therefore, this study aimed to explore how the quality of students' learning and posts are influenced by the deep learning approach in General Education classes through the online discussions. Data collection and analysis were done using both qualitative and quantitative strategies. For the qualitative part, students' posts were retrieved verbatim and mapped deductively with the deep and surface learning approaches, while the number of students' post were collected and analyzed descriptively. The findings indicate that most students' posts are of high quality and are grounded in the deep learning approach through their engagements in online discussions and a reflective assignment. The study concludes that online discussions can foster deep learning if instructors provide students with clear guidelines and reasonable time to engage with colleagues.

1. Introduction

General Education (GNED) programs where students take courses apart from their core classes are getting broader acceptance in higher institutions worldwide (Ma, 2018). This is because the programs complement students' core courses in helping them develop soft and transferable skills to communicate effectively, think critically, and analyze issues (Csomay et al., 2015; Furman, 2013). Notwithstanding, the literature indicates that not all students appreciate the GNED courses; some are less committed to the classes, unlike their core courses (Head, 2014; Rutledge and Lampley, 2017).

Given the importance of GNED courses, instructors need to strengthen students' engagement and learning in the classes using different pedagogical approaches and tools. Escobar Fandino and Silva Veandia (2020) contend that educators need to keep exploring strategies for improving students' learning using online learning approaches. As reported in the literature, technology-augmented pedagogy offers opportunities to strengthen the teaching and learning process (Aderibigbe, 2020; Magyar et al., 2020). It is also explained that young people are intrinsically motivated to use technology, and educators are exploiting the situation to help strengthen students' engagement and learning (Troussas et al., 2020).

Thus, the online discussion forum recognized as a means to promote students' learning (Aderibigbe et al., 2021; Bass, 2014; Head, 2014) was adopted in this study context to complement the face-to-face sessions. Literature indicates that an appropriate form of blended learning, including online discussions, can offer students and educational practitioners the opportunity to engage and co-produce knowledge (Hua and Ren, 2020; Ng and Baharom, 2018). Scholars also contend that technology and social computing software in the classroom can also enhance students' process to acquire knowledge and develop the intended skills (Alaslani and Alandejani, 2020; Magyar et al., 2020). In the same vein, others report that class and asynchronous discussions provide the opportunity for students to develop subject-based skills, collaboratively learn with their colleagues, and engage with their facilitators (Gottipati et al., 2020; Hayati et al., 2018).

However, Balakrishnan and Lay (2016) note that not all students can be presumed to find online tools beneficial due to their learning preferences and styles. Some studies also indicate that students who depend hugely on their instructors may not prefer the online platform for learning despite its popularity in higher education (Camarero et al., 2012). It is also reported in Comer and Lenaghan (2012) that online education is gaining credence, but some instructors have reservations about the approach because it lacks face-to-face interactions. Conversely,

^{*} Corresponding author.

E-mail address: saderibigbe@sharjah.ac.ae.

Weil, Silva, and Ward (2014) contend that even though traditional face-to-face has long been used in education, the strategy has been criticized for inconsistent students' attendance and engagement. It is against this backdrop that scholars argued that more studies are needed to explore students' learning in online learning platforms (Martinho et al., 2018). More importantly, it is essential to examine the extent to which online learning promotes quality learning conversation and deep learning, with students being able to develop knowledge for understanding and addressing social issues. Not surprisingly, Gottipati et al. (2020) contend that instructors can gain insight into their students' academic behaviors and make decisions to strengthen their course delivery quality by analyzing class discussions.

Therefore, this study aimed to explore the extent to which students' posts in online discussions are guided by the deep or surface learning approach to determine the value of their contributions. As Gottipati et al. (2020) argued, educators, need to analyze the process used in leading students' learning to determine what is working and where modifications are necessary. Similarly, Hayati et al. (2018) reported that students' contributions in online discussions offer insight into their intellectual thinking and capacities related to the subject explored. Having such data would offer insight into the different quality levels of students' learning in online discussions and provide information on strategies to stimulate quality learning engagement on the platform in line with the deep learning approach. The findings will also complement the extant literature on measures for strengthening the teaching and learning process using a digital platform such as the online discussion forum. In collecting and analyzing data for this study, the research question below was proposed:

- To what extent was the quality of students' learning conversations influenced by the deep learning approach?

In the next section, the theoretical framework adopted is discussed, followed by the methods section. The last three areas focused on the findings, discussion, and conclusion.

2. Theoretical framework

In the literature, learning theories such as behaviorism, humanism, cognitivism, and constructivism are discussed as the philosophical lenses through which teaching and learning are planned and facilitated (Balakrishnan and Lay, 2016; Taber, 2011). This study draws on the constructivist learning theory, which provides active, reflection, collaborative, self-directed, equitable participation, and experiential learning for students (Aderibigbe et al., 2014). As a learning theory, constructivism sees learning as a dynamic process characterized by knowledge construction and personal interpretation of one's experiential world (Taber, 2011), and reflection (Vygotsky, 1978). It is a learner-centered approach where teachers' input and guidance for learning activities are not rigidly predetermined but rather influenced flexibly by learners' needs and learning materials (Taber, 2011).

As argued, it allows learners to build on their prior knowledge and experiences while learning. However, students learn better when given adequate support from others, including their colleagues and instructors, when necessary (Vygotsky, 1978). Not surprisingly, Taber (2011) contends that it acknowledges the need for teachers' support as essential while students are provided with time, space, and relevant experiences for optimum learning. In their study, Escobar Fandino and Sliva Velandia (2020) also argue that tutors need to be friendly and willing to provide quality feedback to motivate students. Similarly, Balakrishnan and Lay (2016) report that constructivism features a situation where the necessary resources are provided for students to learn, understand, and solve problems while collaborating with colleagues.

Camarero et al. (2012) argue that collaborative learning is grounded in the philosophy that students are not passive and dogmatic, but they learn from active intellectual conversations and group activities. This is

rooted in the constructivist learning theory. It provides students opportunities to seek and co-construct knowledge through collaboration with colleagues with instructors playing the facilitators' roles. Besides, collaborative learning with flexible and open learning space provides support networks and a more in-depth understanding for students, unlike other superficial approaches promoting memorization (Camarero et al., 2012; Yun et al., 2019). Like many other scholars, Camarero et al. (2012) suggested using an online discussion platform as a tool for strengthening collaboration among students.

Adopting the constructivist stance in this study aligns with the community of inquiry (COI) model for promoting students' collaborative learning in online education context. As Garrison et al. (2000) proposed, online learning happens within a COI with three over-lapping components for students' meaningful and collaborative learning experiences. Table 1 shows COI elements proposed by Garrison et al. (2000), including examples of categories and indicators.

The model of this Community of Inquiry assumes that learning occurs within the Community through the interaction of three core elements shown in Table 1. In ensuring cognitive presence to promote students' deep and meaningful learning this study, they were given time to critically analyze questions and reflect on their reading and personal experiences. Doing this stimulated their curiosity, sense of creativity, and application of novel ideas to addressing issues. Consequently, this process triggers their interest in exploring, integrating, and excitement to share their thoughts. With the feelings of interest and knowledge of cases under exploration, students transition into the social presence mode, willing to learn with colleagues as a cohesive team and express themselves freely. Doing this allowed them to tap into their emotions on how they feel about concepts explored while making connections to their experience and collaborating with colleagues with shared interests. In maintaining teaching presence, online discussion tasks are assigned to engage and enhance students' learning in an asynchronous mode. Rules of engagement were also agreed with students' input ensuring that students feel safe to share their thoughts freely without any fear or intimidation. Feedback is also given to foster students' understanding of concepts being explored. Drawing on the theorization of critical constructivism (Aderibigbe et al., 2014) and COI (Garrison et al., 2000), the framework shown in Figure 1 was developed to guide students' engagement in this study.

Using the framework above offered the opportunity to reflect, engage, and collaborate in a safe and non-threatening space. As the literature indicates, among significant engagement factors in online learning are the time assigned for interaction, the professor's role, and approaches for fostering engagement. (Mena-Guacas & Velandia, 2020). Regular and constructive feedback was also provided to the students as scholars argued that they learn better when presented with additional support when necessary by their facilitators (Aderibigbe, 2020; Balakrishnan and Lay, 2016; Taber, 2011; Vygotsky, 1978).

However, providing resources and support does not guarantee the quality of learning engagement and conversations. In line with this thought, Rutledge and Lampley (2017) contend that changing pedagogical approaches and employing new tools may not automatically translate into effective teaching and learning. As such, exploring the extent to which students' engagement aligns with the deep learning approach, which foster thorough reflection and critical analysis of issues became imperative. Thus, this study was conducted to determine the quality and value of students' learning engagement through online discussions in GNED courses.

3. Method

3.1. Context of the study

This study was conducted in GNED social science courses, which ran for 14 weeks in a Canadian public university. During the period, five online discussions were held on the Blackboard Learning Management

Table 1. Elements of community of inquiry (Garrison et al., 2000).

| Elements | Categories | Indicators (examples only) |
|--------------------|--|--|
| Cognitive Presence | Triggering Event Exploration Integration Resolution | Sense of puzzlement Information exchange Connecting ideas Apply new ideas |
| Social Presence | Emotional Expression Open Communication Group Cohesion | Emotions Risk-free expression Encouraging collaboration |
| Teaching Presence | Instructional Management Building Understanding Direct Instruction | Defining and initiating discussion topics Sharing personal meaning Focusing discussion |

System (LMS). Students were given one week to participate in each of the discussions, with five four marks assigned to each forum. Students were advised to post their initial thoughts in response to questions in 200–300 words and make comments on at least two colleagues' posts. Students also completed a reflective assignment, providing them the opportunity to reflect on and recall critical lessons learned through online discussions. The exercise also fostered meaningful learning experiences for the students as it offered them the chance to link the online discussions to other learning resources and their lived experiences.

3.2. Participants

A total of 67 students registered for the courses, and they were all invited to participate in the study. However, 40 of the students accounting for 60%, agreed to participate, therefore serving as participants in the study.

3.3. Data collection procedures

Students' learning engagement and posts in the courses through the online discussion form were grouped into two to collect data for the study. The first covers the contributions of those who did not consent to participating in the course while the second group focuses on participations of the students who agreed to participating in the study. Thus, information related to students' posts and learning engagement through

online discussions were retrieved from LMS used to manage and facilitate the courses.

3.4. Data analysis

The number and quality of posts were analyzed using simple descriptive statistics and content analysis. Specifically, to examine the quality of students' posts in the online discussions, their contributions were grouped into learning informed by deep and surface learning approaches based on their characteristics. In [Institute for Advancement of University Learning at Oxford University \(nd\)](#), it is explained that students' learning approach could be grounded in either understanding or reproducing. The institute stressed that students whose learning is focused on understanding engage in deep learning while those seeking to reproduce ideas engage in surface learning. [Table 2](#) below summarizes the features of deep and surface learning approaches.

So, for students' engagement and learning through online discussion in the courses to be deemed of high quality, their contributions must reflect the deep learning approach's characteristics. Where one or two of the traits are missing, such posts are in line with the surface learning approach.

3.5. Credibility and ethical consideration

The entire research process in this study was guided by engagement with colleagues in a research group at the University, where the research was conducted. Feedback from colleagues was used to make modifications where necessary, including developing research instruments, data collection, and analysis approaches. The study was also done with the University research office's permission under the HREB ID: 1001759. Students' participation in the study was voluntary, their confidentiality was guaranteed and consent form clarifying their roles was obtained from them. Lastly, students' data was retrieved after their final grades are released, and the grade appeal period has lapsed.

4. Findings

As mentioned, the extent to which students' learning and posts were guided in deep or surface learning approach, their posts were analyzed. The [Table 2](#) below shows the distribution of students' posts with deep and surface learning approaches.

[Table 3](#) shows that most of the students demonstrated deep learning in the courses through their activities and engagements in the online discussions. A few of them appeared to have used the surface learning approach based on their contributions in the online discussions, while some were unable to participate in the initial posts. In determining the extent to which the online discussions helped the students to learn, the final reflective assignment was graded and analyzed, as shown in [Table 4](#).

As [Table 4](#) shows, most students got good grades, while a good number got excellent in their assignments. One student's work was adjudged fair, while none was considered unsatisfactory. By implication, it could be deduced that students could learn to a great extent through



Figure 1. Framework for students' online discussion and engagement in GNED courses.

Table 2. Characteristics of deep and surface learning approaches.

| Approach | Orientation | Characteristics |
|------------------|-------------------------|--|
| Deep Approach | Knowledge transforming | <ul style="list-style-type: none"> • An intention to understand material for oneself • Vigorous and critical interaction with knowledge content • Relating ideas to one's previous knowledge and experience • Discovering and using organizing principles to integrate ideas • Relating evidence to conclusions • Examining the logic of arguments |
| Surface Approach | Information reproducing | <ul style="list-style-type: none"> • An intention simply to reproduce parts of the content • Ideas and information accepted passively • Concentrating only on what is required for assessment • Not reflecting on purpose or strategies • Memorising facts and procedures routinely • Failing to distinguish guiding principles or patterns |

Source: Institute for the Advancement of University Learning at Oxford University (nd, p.2).

their online discussion forum engagements. Even so, efforts need to be geared towards ensuring that everyone participates in online discussions using the deep learning approach. Examples of students' posts grounded in deep and surface learning approaches are presented below.

Posts guided by deep learning approach

As explained earlier, students were given guidelines on how to respond and engage with colleagues in each of the online discussions. Table 3 reveals that many of the students were able to demonstrate deep learning in their posts, and two of such posts are presented below as examples:

I believe that with globalization (encompassing the economic, political and social aspects) gender relations can only stand to gain. In today's society where information is shared so quickly and governments have interactions with each other, gender aspects benefit. For example, if we look at the economic side of globalization we can see the clear difference in how men and women are paid. Men tend to be paid more than women for the same exact position and this is a problem across most countries. I also looked at a study done by [businessinsider.com](http://www.businessinsider.com/countries-with-the-biggest-gender-pay-gap-2016-3) and they took a look at report from the World Bank and it noted that between 2011 and 2014 women earned \$76 for every \$100 that men were paid (<http://www.businessinsider.com/countries-with-the-biggest-gender-pay-gap-2016-3>). Being able to see these stats and having a conversation about them can lead to better gender relations. Changes will never be immediate because issues such as these are deeply rooted within our societies but the conversations become steps towards a better future where all can be treated fairly. I also believe that economically these inequalities have a big effect on our daily lives. I think about the fact that in some way, shape or form we have women in our lives and how much they earn greatly matters especially when it comes to family income. It affects our daily lives and the various choices we can or cannot afford due to the income earned. – Participant 7

In the post above, the student demonstrated the willingness to learn from the course materials and other relevant resources through critical analysis of the issue discussed. Ideas were logically presented, while connections between the concept discussed and real-life experiences were also made. As shown in the post below, the student also demonstrated the deep learning approach features.

Table 3. Students level of learning.

| Level of Learning | No of Initial Students' Posts | Percentage |
|-------------------|-------------------------------|------------|
| Deep | 165 | 82.5 |
| Surface | 22 | 11 |
| Absent | 13 | 6.5 |
| Total | 200 | 100 |

Economic globalization affects gender relations through the employment opportunities men and women are able to attain. Many people from developing countries move to richer developed countries for work usually through providing services and cheap labour to earn a living, which ultimately widens the gap of rich and poor. Having women contribute to the work force in first world countries increases job opportunities for foreign women to take on the caretaker position in the home. Foreign women are able to decrease poverty for their families back home in developing countries. Social globalization affects gender relations by reshaping traditional gender roles in family's and society. Women are now working in the same industries as men and are starting to get paid more. We are shifting as a society to move from the men being the sole breadwinners in a family to both partners contributing to the household equally. With the Internet and social media, we are now able to educate and address gender inequalities that still exist in developing countries such as the violent crimes against woman. Political globalization affects gender relations through the laws, policies and legislations created for their citizens. The Canadian Government is changing one of its employment standards; they created a program this year to eliminate gender wage discrimination in Canada. The government also has policies in place to support gender equality and laws that oppose gender discrimination. There are also countless humanitarian organizations and social movements that continue to challenge the political influences on globalization. For myself, the social shift surrounding gender roles and relations has normalized my daily life of being a single mother, working part time and being a full time nursing student. 50 years ago a single mother was unheard of and was seen as taboo, now with increasing divorce rates and more woman becoming independent and career driven it is not uncommon for a woman to have a job and raise her children alone in today's society in both a developed and developing country. – Participant 19

Given their features and adherence to the guidelines provided, the two posts above were deemed grounded in the deep learning approach. From the posts, students could develop a better understanding of the concepts discussed through critical analysis of the course resources and active engagements in the online discussions. Even so, not all the students were able to demonstrate that the deep learning approach influenced their learning through online discussions. Thus, examples of engagement grounded in the surface learning approach are presented below.

Table 4. Students' grades in final reflective assignment based on learning in online discussions.

| Grade Classification | No of Students | Percentage |
|-------------------------------|----------------|------------|
| Excellent (18–20) | 14 | 35 |
| Good (15–17) | 25 | 62.5 |
| Fair/Satisfactory (12–14) | 1 | 2.6 |
| Unsatisfactory (Less than 12) | 0 | 0 |
| Total | 40 | 100 |

Posts guided by surface learning approach

As Table 3 shows, a few of the students' posts were grounded in the surface learning orientation, and two examples are presented as follows:

Gender equality is affected by globalization because of the awareness people gain from media and from each other. Some undeveloped countries have huge gender inequalities that exist today. Many women are expected to stay at home to look after their children and aren't given the right to a good education and aren't given the opportunities to pursue goals that they aspire for based on their skills. Through globalization women of more developed countries who experience the rights as men are able to educate themselves on the inequalities that exist around the world and are able to lend a hand and also speak up for those women around the world. Women can advocate for each other and help women on the other side of the world find a voice to achieve gender equality. Globalization helps our world achieve gender equality through awareness and empowerment given to all women. – Participant 5

In the post above, the participant demonstrated a surface level understanding of the issue explored in that thorough and critical analyses of the course resources were not made. More importantly, personal experiences related to the concept discussed were not shared as requested. Similarly, Participant 15 was unable to connect the ideas presented and their own experiences even though some examples related to real-life scenarios were provided.

Women's right is a topic that has gone up and down, left and right, and diagonal throughout the centuries. From women barely being seen as a person in ancient times, to being pretty much devalued in the early 20th century, to now where women are as equal as men, almost. Women get paid an average of 81 cents for a man's \$1, for the same amount of work and job title. Not only that, women that would like to do a job that generally men do more are looked down upon, as they are 'trying to do a man's job'. However, globalization has allowed women to overcome these challenges, starting with Hilary Clinton potentially being the U.S. A's first female president, whereas 60 years ago people would've thought that's a joke. Also, women are now not only able to get the same education as men; they are also able to pass on their knowledge by teaching others in schools. Globalization has given the world the ability to make donations towards giving women that ability to go to school in third world countries, as well as find jobs in places that women aren't as valued as they are in the rest of the world. – Participant 15

These posts echoed the sentiment that students were able to engage and learn through the online discussions in this study. As shown above, even the posts deemed to have been guided by the surface level indicate that students could demonstrate a good knowledge of the issues explored.

5. Discussion

The use of online discussions in this context was grounded in the constructivist theory, which offers students the opportunities to reflect, explore, and engage with their colleagues and instructors (Aderibigbe et al., 2014; Taber, 2011; Vygotsky, 1978). In line with the theory, students were given time to engage and participate in in-depth learning conversations with their colleagues through the online discussion forum. From the findings, most of the students did not participate haphazardly in the discussions, but their posts' depths and quality were commendable and consistent with the guidelines given. As Table 2 shows, most of the students (165 out of 200 posts) demonstrated learning informed by deep learning, and this may have impacted the quality of their reflective assignments as many of them did well in the task. Not surprisingly, 14 participants' posts were adjudged excellent, while 25 participants' posts were considered good.

From the exemplary posts, many students critically explored the concepts discussed to understand course materials, presented arguments logically, and related the ideas to their personal experiences in harmony with the given guidelines. Given the creative ideas shared and the manners in which knowledge was co-constructed through thoughtful exploration and integration of points, it is evident that students demonstrated cognitive presence (Garrison et al., 2000) in the study. Contrary to the report that students and instructors are skeptical about online discussions' values (Balakrishnan and Lay, 2016; Comer and Lenaghan, 2012), the study reveals that online discussions can foster students' deep learning in GNED classes. Instead, the findings reinforce the previous studies that online discussions promote students' learning and critical thinking skills (Magyar et al., 2020; Ng and Baharom, 2018). It is therefore clear that when provided with clear guidelines and enough time to engage, instructors can foster students' deep learning and engagement with one another through online discussions.

It is also worth mentioning that a few students' posts were deemed to have been guided by the surface learning approach. As analyzed, 22 of the 200 students' contributions reflect a passive acceptance of ideas and concentration on the minimum requirement for assessment without vigorous engagement with course materials or personal experiences. However, only one post was deemed unsatisfactory from the 40 participants' posts. As such, a reasonable degree of learning was demonstrated by the students through their posts as they shared information and connected ideas with those of colleagues (Garrison et al., 2000). The findings echo the view that the online discussion forum can support traditional teaching to improve students' engagement, participation, and learning in GNED courses (Bass, 2014; Head, 2014; Hua and Ren, 2020). As such, students should be encouraged to see value in online discussions as a complementary learning approach, irrespective of their sentiment or preference for the face-to-face strategy. More importantly, the findings re-echo the previous research that GNED courses help students develop and strengthen their critical thinking, social and analytical skills (Csomay et al., 2015; Furman, 2013). As such, instructors need to support and enhance students' learning using different pedagogical strategies in their classes, including the online discussion forum for promoting students' learning community.

6. Conclusion, implications and future studies

This study findings indicate that students' learning, participation, and contributions in online discussions were in-depth and guided by thoughtful learning principles, described as the deep learning approach. Drawing on these results, it fair to conclude that the online discussion forum can facilitate and promote students' deep learning in GNED courses. Thus, instructors and students skeptical and doubting its value may want to have a rethink about the platform and consider it a tool for promoting meaningful and deep learning.

The study has implications for instructors and students being the major stakeholders in the teaching and learning process. For instructors, they need to provide students with clear guidelines about online discussion activities and expectations. Instructors should also give students at least a reflective assignment to recall key points and lessons learned in online discussions to enhance students' learning experiences. On their part, students should show more commitment to the learning process through the platform and seek assistance from their colleagues or instructors when necessary.

It is essential to highlight that generalization from the study is impossible due to the participants' sample size and the unique study context as the limitations to this research. Future studies may consider more considerably large sample size and multiple courses as a study context. Using a plethora of research methods for collecting data, including longitudinal approach, focus group discussions, or interviews for complementing quantitative data, could also be considered.

Declarations

Author contribution statement

Semiya Aderibigbe: Conceived and designed the experiments; Performed the experiments; Analyzed and interpreted the data; Contributed reagents, materials, analysis tools or data; Wrote the paper.

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Data will be made available on request.

Declaration of interests statement

The authors declare no conflict of interest.

Additional information

No additional information is available for this paper.

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