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Student teachers' and tutors' perceptions of the use of online resources for promoting critical thinking

Alcuin Mwalongo
Dar es Salaam University College of Education, Tanzania

ABSTRACT

The study examined student teachers' and tutors' perceptions of the use of online resources for promoting critical thinking in three campuses of the University of Dar es Salaam, Tanzania. A sample of 69 participants was used. The study employed a mixed methods research approach. Data were collected through a survey, focus group discussions, interviews, and documentary review. Quantitative and qualitative data were analysed through SPSS 25 and MAXQDA 18 respectively. The findings suggest that the use of online resources is likely to promote critical thinking, especially if online resources are up-to-date, authentic, use a simple and clear language, and if a variety of them are used. The study revealed that there were no statistically significant gender differences in perceptions of the use of online resources for promoting critical thinking amongst student teachers. Implications related to key findings and areas for further research are discussed.

Keywords*: critical thinking, gender, Moodle, online resources, student teachers, tutors*

INTRODUCTION

In online learning and teaching, many learning tasks on various learning management systems (LMS) tend to be accompanied by online resources. These online resources can be presented as texts, charts, graphs, maps, photos, animations, audios, or videos. Resources are fundamental for online teaching and learning. When these resources are used appropriately, among other things, they have the potential for promoting collaboration (Alshahrani et al. 2017), critical inquiry (Garrison et al. 2000), research skills (Chua & Bernado 2011), holistic learning (Tsang 2008), and transfer of learning (Ciornei & Dina 2015; Seidel et al. 2013). Also, resources can engage and motivate learners during the teaching-learning process (Cinganotto & Cuccurullo 2015).

Critical inquiry, research skills, and transfer of learning are important for promoting critical thinking. When student teachers have a good mastery of these skills, they are likely to be critical thinkers who can analyse, evaluate, synthesise, draw conclusions, solve problems, and make sound decisions about issues they encounter. Similarly, when students are exposed to a variety of resources, they can become inquisitive and open-minded. In terms of holistic learning, (Tsang 2008) affirms that the use of a variety of resources such as hyperlinks, audio and video clips, interactive activities, and exercises tend to increase interaction amongst learners and the content, and engages learners' psychomotor, cognitive and affective domains.

Online resources, especially those that are accompanied by learning tasks can be used for self-evaluation (Bälter et al. 2013; Parker & Chao 2007). Given the resources, learners can gauge their strengths and weaknesses about a given topic. The evaluation can focus on reviewing the coverage, depth and accuracy of information. From self-evaluation, learners may become aware about different issues, they thus get the opportunity to make improvement if needed.

Promoting critical thinking is considered to be amongst the goals of education systems in the world (Gelder 2015; Manalo et al. 2015). Also, critical thinking is regarded as one of the necessary skills

for the 21st century (Hess & Ludwig 2017; Lee et al. 2015). Critical thinking helps people make sound decisions, solve problems, work with others, excel in workplaces (Davies 2015; Gambrill & Gibbs 2017; Halpern 2014; Hess & Ludwig 2017), and assess the soundness of knowledge claims and arguments (Manalo et al. 2015).

In many cases, there are readily available online resources. Such resources may not necessarily be relevant to student teachers and tutors in meeting demands of a given subject matter. Resources that focus on a particular subject matter are important for promoting critical thinking because to learn how to think is domain specific and context dependent (Garrison et al. 2000). In addition, MacWalter et al. (2016) argue that meaningful learning is likely to occur when learners are involved in choosing educational resources they want to use. Likewise, emerging technologies such as Web 2.0 and 3.0 tend to focus more on user generated content than on user downloaded content (Cinganotto & Cuccurullo 2015). Thus, this study examined student teachers' and tutors' perceptions of the use of online resources for promoting critical thinking.

In the absence of these resources, online teaching and learning, and the promotion of critical thinking may be compromised. Given the aforementioned pedagogical importance of using online resources and promoting critical thinking, findings from this study may highlight how online resources contributed by student teachers and tutors can promote critical thinking.

Two research questions guided the study.

1. What are student teachers' and tutors' perceptions of the use of online resources for promoting critical thinking?
2. Are there gender differences in perceptions of the use of online resources for promoting critical thinking amongst student teachers?

CRITICAL THINKING AND GENDER IN ONLINE LEARNING

This section reviews literature related to critical thinking and gender differences in online learning environments.

Critical Thinking

Ennis (2015) defines critical thinking as reasonable reflective thinking focused on deciding what to believe or do (p. 32). Similarly, critical thinking is purposeful, reasoned, and goal directed (Halpern 2014). These views suggest that critical thinking constitutes three components: a) critical thinking skills, b) critical thinking dispositions, and c) knowledge. Critical thinking skills are related to cognitive abilities that help a person engage in tackling a thinking task. Critical thinking skills consist of processes such as analysis, evaluation, explanation, inference, self-regulation, reflective judgment, problem solving, and decision making (Dwyer et al. 2014; Facione 2013; Halpern 2014; Serrat 2017).

The second component of critical thinking is critical thinking dispositions. Critical thinking dispositions are defined as consistent internal motivations to use critical thinking skills to decide what to believe and what to do (Facione 2000, p. 73). This view suggests that when people engage in critical thinking tasks, they have a purpose, they are self-motivated and are self-regulated. Motivations, willingness and values are elements of critical thinking dispositions.

According to the Delphi Report, seven critical thinking dispositions were outlined as key to critical thinking. These dispositions are analyticity, truth-seeking, systematicity, maturity of judgment, open-mindedness, inquisitiveness, and critical thinking self-confidence (Facione 1990). All these

dispositions are drivers for individuals to engage in critical thinking and tend to guide their behaviour (Hamby 2015; Serrat 2017).

The third component of critical thinking is knowledge. Knowledge may be related to general information, basic facts, specific content-based knowledge, and intellectual development and knowledge gained from life and work experiences (Thomas & Lok 2015). When people think critically, they can gain and create knowledge, and they may be informed about what to believe or what to do (Halpern 2014; Hunter 2014). In many cases, we tend to think about something. Something we think about involves use of knowledge.

Based on this review, in this study, critical thinking refers to critical thinking skills, dispositions, and knowledge related to analysis, evaluation, inference, and problem solving (Dwyer et al. 2014; Facione 2013; Halpern 2014; Serrat 2017).

Gender Differences in Online Learning

Several studies indicate gender differences in online learning environments (Al-Azawei & Lundqvist 2015; González-Gómez et al. 2012; Huang et al. 2013; Mwalongo 2018). In a study by González-Gómez et al. (2012) on gender differences in e-learning satisfaction, female students were more satisfied in using self-evaluation feedback than male students. These findings may suggest that when using online resources, tutors need to consider a variety of ways of giving online feedback such as peer feedback, self-evaluation, or tutor feedback as may be determined by the context.

Mwalongo (2018) reported that more female students perceived to be more open-minded and inquisitive than male students. Tendencies related to open-mindedness and inquisitiveness are important not only for online learning, but also for learning in general. In many cases, online learning needs collaboration. To benefit more from online collaboration, open-mindedness is essential. Similarly, since online learning tends to involve less tutor support, intellectual curiosity is likely to motivate, sustain and engage learners in online tasks.

Huang et al. (2013) revealed that male students were more confident in using online tools than female students. These findings may imply that tutors need to find ways of encouraging female student teachers to be less anxious when using these online tools.

Finally, gender differences may exist in terms of the mode of presentation of online resources. Al-Azawei and Lundqvist (2015) found that female students tended to like more verbal presentation than visual presentation. On the contrary, other studies have revealed that females prefer written communication to verbal communication (Caspi et al. 2008; Kimbrough et al. 2013). For student teachers to benefit from online learning, tutors need to consider the manner in which online tasks and resources are presented in order to accommodate learning styles of female and male student teachers.

In the teaching-learning context, student teachers and tutors collaborate and engage in thinking. In examining the potential of online resources for promoting critical thinking, there is need to consider the perceptions of both student teachers and tutors because resources are contributed by both. In the study by Alshahrani et al. (2017) that examined the impact of students' use of online resources on the student-tutor relationship, they suggest for further research that focuses on both students' and tutors' perspectives in order to understand how online learning resources may influence student-tutor relationship. This study, partly responds to this suggestion by including tutors as part of the sample. Additionally, since online learning involves both male and female students who happen to learn slightly differently in online environments, examining gender differences in the use of online resources is also important. Understanding these gender differences may help tutors

design online tasks and select resources that are suitable to both female and male student teachers.

METHODOLOGY

The study used a mixed methods research approach. This is an approach that integrates both qualitative and quantitative approaches. The rationale for using this approach was for triangulation and complementarity. Triangulation is a way of validating results from different multiple investigators, methods, data sources, and or theories (Clark & Creswell 2015; Creswell & Clark 2018; Creswell & Creswell 2018; Johnson & Christensen 2017). Complementarity is meant to elaborate, enhance, illustrate and clarify results from one method with the results from the other method (Johnson & Christensen 2017).

Research Design and Sampling

The study used two designs: convergent mixed methods design and sequential explanatory mixed methods design (Clark & Creswell 2015; Creswell 2012; Creswell & Clark 2018). In the former design, both qualitative and quantitative data were collected concurrently using a questionnaire. The two datasets were analysed separately and data were merged to understand the research problem. In sequential explanatory mixed methods design, the collection and analysis of quantitative data were carried out during the first phase, while the collection and analysis of qualitative data were conducted during the second phase through interviews and focus group discussions to elaborate on the quantitative results.

The study used purposive sampling. Purposive sampling was used because the participants were involved in an undergraduate course related to curriculum development. Likewise, they used Moodle for teaching-learning purposes. Because of these similar characteristics, they could provide rich data to address the research problem (Patten & Newhart 2018). Student teachers and tutors were selected from three campuses of the University of Dar es Salaam in Tanzania (Dar es Salaam University College of Education, Mkwawa University College of Education and Mwalimu Julius Nyerere Mlimani Campus). Herein and thereafter, student teachers refer to students involved in an undergraduate teacher education programme, while tutors refer to facilitators of learning for an undergraduate teacher education programme. The study used a total sample of 69 participants (54 student teachers & 15 tutors). For student teachers, 16 (29.6%) were females and 34 (63.0%) males, while 4 (7.4 %) did not indicate their gender. The student teachers were in their second year. For most of the student teachers, it was their first time to take an online course, though they had been using, Academic Registration Information System (ARIS), an online academic registration system for courses and a platform for accessing their examination results. Of the 15 tutors, two were females and 13 were males.

Methods of Data Collection

Data were collected using a survey, focus group discussions, interviews, and documentary review. The survey used a questionnaire with statements that were rated using a Likert scale (Strongly Disagree, Disagree, Agree and Strongly Agree). Each statement was followed by a blank space for giving reasons for the choices made. In this case, the instrument was able to generate both quantitative and qualitative data. The use of a four-point scale was intended to avoid the neutral response that is likely to bring inconsistent and uninterpretable data (McCoach et al. 2013) because there is evidence that many respondents tend to take the middle options (Cohen et al. 2011, 2018). Furthermore, since the rating was intended for getting participants' perceptions related to either agreement or disagreement of the use of online resources for promoting critical thinking, the use

of a neutral response could prevent the researcher from discriminating these responses (Johnson & Morgan 2016).

Seventy-six (76) questionnaires were administered to student teachers on a face-to-face mode. This was intended to maximise response rate. However, 22 questionnaires were not returned. Tutors involved in teaching the selected programme were 26. Out of 26 tutors, 15 of them responded to the online survey that was administered through SurveyMonkey. The online survey seemed convenient because tutors from the three campuses had their mailing list. The link to the survey was sent through this mailing list.

Six tutors were interviewed on a one-to-one basis because it was difficult to get most of them at the same time. The focus of the interview was on how they used the online resources with student teachers to promote critical thinking in terms of skills related to analysis, evaluation, inference and problem solving.

Eight student teachers were involved in two separate focus group discussions. Each session had at least four student teachers. The focus group discussion was possible because student teachers were available at the respective campuses and they were enrolled in a similar course. The questions focused on how they used online resources to promote skills related to analysis, evaluation, inference and problem solving. The average duration of each session was about 60 minutes.

In addition to the survey, one-to-one interviews and focus group discussions, several documents used by student teachers and tutors were reviewed. These documents were the course curriculum, and learning and assessment tasks in the learning management system, Moodle. The focus of the review on these documents was to ascertain the extent to which critical thinking was integrated in the course.

Data Analysis

Quantitative and qualitative data were generated. Quantitative data from the survey (rating) were analysed through a statistical package for social sciences (SPSS) version 25. Both descriptive and inferential statistics were presented. Qualitative data from open-ended responses from the survey, interviews and focus group discussions were analysed through MAXQDA 18. The results were categorised into themes according to the research questions.

Reliability of the Research Instrument

The internal consistency reliability of the questionnaire was calculated through Cronbach's alpha coefficient (α). The generated alpha value was 0.802. An instrument with the alpha value greater than or equal to 0.700 is considered to be reliable (Johnson & Christensen 2017).

FINDINGS

The findings are related to critical thinking skills of analysis, evaluation, inference, problem solving and open-mindedness. Additionally, knowledge creation and the use of simple and clear language can promote critical thinking. In reporting the results, both quantitative and qualitative results from the questionnaire, interviews and focus group discussions have been merged. To justify claims being made, only representative quotations have been used.

Analysis

Both student teachers and tutors perceived that teaching-learning resources posted in Moodle promoted critical thinking skills related to analysis. For example, about 80 percent of student teachers believed that resources posted in Moodle helped them analyse various issues discussed during the course. Likewise, tutors indicated that when they posted resources in Moodle, they ensured that the resources helped student teachers to be analytical. The following representative quotes illustrate this view:

> *Not every given resource is complete in itself. You need to read it and go beyond that. (FGD, Student Teacher 08)*
>
> *Students will only be able to draw meaningful conclusions if they analytically read the notes, articles etc. (Survey, Tutor 11)*

Evaluation

Tutors reported that when they posted resources in Moodle, they made sure that the resources helped student teachers evaluate different issues related to the course. Likewise, about 71 percent of the student teachers felt that they were able to evaluate the usefulness of online resources for achieving the objectives of the course. Among other things, their objectives were met because through sharing the resources they were challenged by colleagues, they corrected their previous ideas, and they could make value judgement about colleagues' comments.

> *Makes what to plan, correct my previous ideas and go further. (Survey, Student Teacher 6)*
>
> *Every time one comments, I can sense from the way one packs his words and see whether the comments are good or bad. (Survey, Student Teacher 35)*
>
> *By using Moodle, it is easy to comment, judge and provide information needed to argue or support the motion. (Survey, Student Teacher 44)*

Inference

Student teachers and tutors felt that resources posted in Moodle promoted critical thinking skills related to inference. For instance, about 76 percent of the student teachers indicated that online resources helped them make inferences about issues related to the course. Also, tutors reported that when they posted resources in Moodle, they made sure that such resources helped student teachers draw conclusions about issues being discussed. Critical thinking skills related to inference could be promoted especially when a variety of resources were used. Such resources could widen student teachers' knowledge, expose them to different opinions and make them use multiple sensory organs.

> *We need a variety of resources because when you compare resources from different writers you can expand your ideas. (FGD, Student Teacher 3)*
>
> *… it [Moodle] helps them to share ideas and reach consensus and I normally synthesize their ideas at the end so that they can draw conclusion. (Survey, Tutor 12)*
>
> *The content has to be interactive enough to engage multiple sensory organs. So, it should not only be text, it should include other formats, tables, drawings, diagrams, illustrations ... (Interview, Tutor 5)*

Problem Solving

Student teachers and tutors believed that online resources promoted problem-solving skills. For instance, about 82 percent of student teachers felt that such resources helped them solve problems related to the course. Among other things, this could be achieved especially when resources were authentic. The use of authentic resources, other than increasing student teachers' performance, is likely to help student teachers transfer what they learn in class to real life contexts, as illustrated below.

> *The online resources always relate to the course, thus help me to solve problems related to the course. (Survey, Student Teacher 30)*
>
> *That is the focus that, it helps student solve problems related to what they learn. (Survey, Tutor 6)*
>
> *Learning is not for getting grades only, but even general life experience. (Survey, Student Teacher 23)*

Knowledge Creation

The use of up-to-date resources and the tendency of being open-minded had the potential for promoting critical thinking. Student teachers felt that the use of up-to-date resources could promote critical thinking because student teachers were exposed to new ideas and different points of view. In this case, new knowledge could be created.

> *When the lecturer [tutor] puts resources in Moodle, should make sure that they are up-to-date. They should be reviewed over time … We know that knowledge is not static. (FGD, Student Teacher 4)*
>
> *Learning through mistakes helps me to search for new ideas and knowledge. (Survey, Student Teacher 53)*

Open-mindedness

LMS facilitated interaction between student teachers and tutors when using resources. It is through such interaction that tutors felt that they learnt a lot from student teachers, became open-minded and liberal. This view is represented by some of the following quotes:

> *The ideas I hold may not be based on dependable sources. It is always good to be open-minded and also let students teach you something probably you never knew. (Survey, Tutor 11)*
>
> *I am liberal and ready to take new ideas, and that is why I took my materials in Moodle - open source, for everyone to see, read and challenge with evidence… (Survey, Tutor 14)*

Most of the student teachers (77%) felt that through interaction with their colleagues, they got the opportunity to learn from each other and appreciate colleagues' ideas.

> *Because everyone comes with his/her views, I learn a lot from them [colleagues]. (Survey, Student Teacher 8)*
>
> *Other people's ideas are good and constructive. (Survey, Student Teacher 31)*

Use of Simple and Clear Language

Critical thinking skills related to analysis, evaluation, inference and problem-solving could be promoted when language used in tasks related to resources is simple and clear. Our thinking is made explicit through language. Language becomes a tool for thinking. In line with this argument, both tutors and student teachers insisted that the use of simple and clear language is likely to promote critical thinking because learners can easily understand the given tasks and can become self-regulated to engage in those tasks.

> *Some articles are good and easy to read. Some are too philosophical; hence, it may be difficult to understand them. (Interview, Tutor 1)*
>
> *The language has to be simple to the ear of the student as if it is spoken about something. (Interview, Tutor 5)*
>
> *If the assignment itself is not clearly understood, you may open it, but out of confusion you may decide to do some other things instead. (Interview, Student Teacher 8)*
>
> *… the resources are very useful for higher levels. The system [Moodle] demands a person who is skilled in computers, conversant with the language, conversant with the system itself. (Interview, Student Teacher 2)*

Evidence of Critical Thinking from Resources Posted in Moodle

The following are some of the tasks related to online resources. These tasks have evidence of promoting critical thinking.

> **Extract 1**
> Read the document "Perspectives of participation in decentralized public schools" and analyze what kind of ideological perspectives the document advocates.
> Expected Product: A bullet-point list with the arguments given to advocate for decentralization and a short note (about half a page) with your personal opinion about the ideological perspectives implied in the arguments.

> **Extract 2**
> Read the document "Discussion Paper on Inclusive Education and Inclusive Curriculum", by Irmeli Halinen and Hannu Savolainen – IBE.
> Produce a personal definition of "inclusive education" suitable to your particular context. Imagine possible criticism that your definition could arise among different groups of stakeholders and upload your comments to the forum.

The two extracts, among other things, have the potential for promoting critical thinking skills related to analysis, evaluation and creation, and thinking dispositions such as open-mindedness, analyticity, and inquisitiveness. For Extract 2, since the responses to the tasks are posted on the discussion forum, student teachers and the tutor can get the opprtunity to collaborate.

GENDER DIFFERENCES IN THE USE OF ONLINE RESOURCES

Using descriptive statistics, some differences in perceptions in the use of online resources for promoting critical thinking between female and male student teachers could be observed. To

establish whether the difference was statistically significant, the Mann-Whitney U-test was used. This statistical test was preferred because it is able to assess the mean ranks of the two groups and that the two groups were independent from each other (Dancey & Reidy 2017; Howitt & Cramer 2017). The Mann-Whitney U-test revealed that there were no statistically significant differences between female and male student teachers in the perceptions of the use of online resources for promoting critical thinking, U (15, 31) = 164.5, two-tailed p = 0.05. The mean values for female and male student teachers were 19.0 and 25.0 respectively.

DISCUSSION OF THE RESULTS

The study aimed at examining student teachers' and tutors' perceptions of the use of online resources for promoting critical thinking. In summary, the findings suggest that the use of authentic and up-to-date online resources, the interaction amongst student teachers and with the tutors, and the use of simple and clear language had the potential for promoting critical thinking.

Using Authentic Learning Tasks and Resources

Learning may become meaningful when knowledge gained is applied in real-life contexts. The findings from the current study suggest that student teachers and tutors perceived that the use of authentic resources and tasks could promote critical thinking. The use of authentic tasks, among other things, can motivate students to learn in rich, relevant and real-life situations; consequently, this can encourage knowledge construction and meaningful learning (Herrington & Herrington 2006; Herrington et al. 2006). Since authentic tasks are related to real-world contexts, they are likely to help student teachers solve real life problems. This can be achieved when there is meaningful transfer of learning. Through transfer of learning, learners get the opportunity to connect theories they learn in class to their applications in real-life situations. These findings are similar to those of Sansone et al. (2011), who confirm that students tend to be active in online lessons particularly when the learning tasks they are engaged in clearly indicate how the skills gained in the classroom could be applied in real life situations.

Authentic learning can be promoted through participation in community work. Community work is likely to expose learners to tasks that are carried out in the community. This has the chance of making learners more functional in their respective communities. López et al. (2012) argue that learning through intent community participation, motivates learners to be eager to contribute, belong, and fulfil responsibilities that are valued in their respective families and communities.

Similarly, the use of authentic and a variety of resources and tasks need to be related to authentic assessment. Authentic assessment can help learners see the relevance of assessment to their future careers (Kek & Huijser 2016). In this way, assessment should be structured in such a manner that it links classroom theories to realities outside the classroom.

The Role of Interaction

In the context of teaching and learning, interaction is vital, among other things, it facilitates sharing of ideas. In this study, sharing of resources increased interaction between student teachers and the resources, amongst student teachers, and student teachers and the tutors. As student teachers interact amongst themselves and with the tutors, they share ideas and can learn from each other. Sharing ideas can make them open-minded because they get the opportunity to review their beliefs, they can discard old ideas and beliefs they hold, if need be they can correct them, and they can discover new practicable ideas. Other than learning from each other, they get the opportunity to acknowledge and appreciate colleagues' ideas, and in some cases, even accommodate different points of view. Tutors perceived that they became open-minded, consequently, they could learn

from their pedagogical practices, from student teachers, and became liberal. When tutors have such feelings, they are likely to adjust their pedagogical practices to accommodate student teachers' needs.

When using online resources imbedded in the discussion forums, moderation of the forums was seen as vital. Proper moderation of these online tasks has the potential for maximizing interaction in online environments. Through moderation, student teachers could be focused on task. Similarly, moderation could help to clear some of the alternative conceptions that student teachers have. In this case, the tutor's role should be to support, motivate, encourage learners to participate and socialise in the online community, and to give feedback (Vieira et al. 2016). These findings imply that knowledge is socially constructed as student teachers interact with each other, with the resources, and with the tutors.

Using Up-to-Date Resources

Knowledge is dynamic; it is created and may change over time. For that matter, acclaimed truth of today may be falsified tomorrow. The findings from this study suggest that the use of up-to-date resources, especially scholarly articles, can give student teachers and tutors the opportunity to critique current knowledge and create new knowledge. Student teachers and tutors are likely to construct new knowledge, among other things, when they are actively and collaboratively engaged in critical thinking tasks. When they collaboratively engage in critical thinking tasks, they are likely to interthink (Mercer & Littleton 2007). Such tasks can make student teachers more independent thinkers, decision makers, and creators of knowledge. In addition, the use of up-to-date resources such as relevant research articles may inform student teachers on what is new in the fields of their specialisation. These findings seem to demystify the traditional view of teaching and learning, where teachers have been viewed as sources and creators of knowledge.

The views of student teachers and tutors on the use of scholarly articles corroborate a study by Chua and Bernado (2011) that revealed that using scholarly articles in online courses promoted high quality online teaching because student teachers had the opportunity to learn past theories and their current applications, and helped them focus on their future work. The use of scholarly articles can give learners the opportunity to engage in another research task to solve a given problem.

Using Clear and Simple Language

The findings suggest that other than being a tool for communication, language is also a tool for thinking. We think through language and we express our thoughts through language. Tutors believed that tasks may not be understood by student teachers due to the level of the language used. The use of unclear and complex language, may limit student teachers to do given tasks smoothly; if done, they may be done incorrectly. However, if the purpose is to test how learners understand the complexity of language, then such level of language used needs to be adjusted accordingly. The use of simple and clear language is very important in the context of Tanzania because English, a third language to most of the student teachers, is used as a medium of instruction. Chances of misunderstanding are likely to be high if less care is taken on clarity and simplicity of the language being used.

These findings support previous studies where language is seen as a tool that helps people think and develop socially shared meanings (Kumpulainen & Wray 2004; Mercer & Littleton 2007). It is through language, where learners get the opportunity to co-reason and interthink (Mercer 2002; Mercer & Littleton 2007). From this view, clear language use has the chance of promoting clear thinking. In the teaching-learning context, the role of the tutor, among other things, is to model clear, simple and proper language use.

Gender Differences in the Use of Online Resources

There were no statistically significant differences by gender in the perceptions of the use of online resources for promoting critical thinking. These findings can suggest that how female student teachers perceive about the use of online resources for promoting critical thinking is similar to the way male student teachers perceive. The findings corroborate previous studies. In a study by Cavanaugh and Liu (2013), there was no gender difference in performance in online learning.

In terms of the usefulness of Moodle for improving student teachers' learning, male student teachers perceived that Moodle was more useful than was the case with female student teachers. This is contrary to a study amongst university students in Portugal on the use of communication technologies, where female students considered LMS to be more useful than male students (Morais & Ramos 2016). The difference in perceptions between female and male student teachers in the current study may be attributed to the challenges encountered when using Moodle. More female student teachers indicated to have faced some challenges when using Moodle than male student teachers. Such challenges could have limited female student teachers to see the usefulness of Moodle as a learning tool.

PEDAGOGICAL IMPLICATIONS

This section discusses implications of the findings for pedagogical purposes. Tutors need to use a variety of authentic resources that consider multiple sensory organs of the learners. Such resources are likely to benefit student teachers. Similarly, these resources are likely to engage and motivate student teachers. The use of a variety of resources also can expose learners to different points of view. In such circumstances, learners can become open-minded and motivated to learn. Motivation and self-regulation, among other things, are important for successful online learning.

Learning becomes useful when what is learnt in the classroom can be applied in real-life contexts. To facilitate meaningful transfer of learning, when teaching, tutors need to use authentic resources that are accompanied with critical thinking tasks. During the teaching-learning process, tutors need to design learning tasks and use resources that are related to real-life situations. These tasks can be in the form of debates, projects, research work or participation in community work. The use of simulation and virtual environments can have a similar effect. Other authentic tasks can include role-playing, scenario-based activities, illustrative case studies, or through participation in virtual communities of practice (Farley, 2016). These tasks can promote critical thinking because they encourage learners not only to reflect about what they learn, but also to collaborate and apply what they learn in their immediate environment.

During teaching, tutors need to use up-to-date resources such as scholarly articles because they can help learners create new knowledge. Other than scholarly articles, tutors can use fieldwork that may involve the collection, analysis, interpretation, and presentation of data. Through the tasks that involve use of scholarly articles or research work, learners can review past knowledge, identify gaps, devise new ways to solve problems, and create new knowledge. Additionally, the use of resources such as scholarly articles can expose learners to new ideas and different opinions. Exposure to different opinions is likely to make learners more open-minded, inquisitive and co-creators of knowledge.

Interaction between student teachers and resources, and with the tutors is significant for promoting critical thinking. Based on the findings from this study, during teaching, tutors need to design tasks that can facilitate interaction with the student teachers. As tutors interact with student teachers,

they learn from each other, they appreciate ideas from other people, and consequently may change their beliefs for better.

Language being a tool for communication and thinking, tutors need to use comprehensible language. Through language, learners interthink and co-reason. This could imply that the use of complex language may limit learners to think clearly and think together.

CONCLUSION

The study aimed at examining student teachers' and tutors' perceptions of the use of online resources posted in Moodle for promoting critical thinking. The findings from this study suggest that the type of resources and how they are used can promote critical thinking. Since resources are fundamental during the teaching-learning process, greater attention needs to be paid to the use of the resources for promoting critical thinking. The way female student teachers use online resources is similar to how male student teachers use them. These findings can give some insights on how tutors can use online resources and the accompanied tasks for promoting critical thinking. Promotion of critical thinking is likely to help learners function well in their respective communities.

Further research can use larger samples from different cultural settings. This can help not only in getting a more general picture about the issues, but also in getting perceptions of learners from different cultural contexts about the use of online resources for promoting critical thinking.

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