Christine Wulandari Suryaningrum, dkk

# HOW TO CREATE HIGH QUALITY TEACHING AND LEARNING IN THE DIGITAL ERA:

## TEACHERS, STUDENTS AND PARENTS' PERSPECTIVES

# HOW TO CREATE HIGH QUALITY TEACHING AND LEARNING IN THE DIGITAL ERA: Teachers, Students and Parents' Perspectives

**Christine Wulandari Suryaningrum, *dkk***

UM JEMBER PRESS

**HOW TO CREATE HIGH QUALITY TEACHING AND LEARNING IN THE DIGITAL ERA:**
**Teachers, Students and Parents' Perspectives**

ISBN: 978-623-96253-6-8



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Cetakan I, November 2022

# PREFACE

This edited volume brings together a collection of works by authors in the field of education. All the works included in this volume—I believe—touch on very important issues in the practice of teaching and learning. Depending on the authors' research interest and/or expertise, the issue raised in their works ranges from language teaching (Amilia & Astutik; Nuraini; Werdiningsih), mathematics education (Agustina), teacher professionalism/TPACK (Usman), early childhood education (Khoiriyah & Devanti), parental involvement in education (Suryaningrum), and the use of technology in instructional contexts (Nurkamilah). What unites these seemingly diverse, unrelated works is that all of them are situated within the context of educational practices in the digital age.

Since the outbreak of the COVID-19 pandemic, there have been growing interests among educational researchers and practitioners alike in discussing how technological tools and digital resources may be utilized to optimize educational practices in general and distance education in particular. This edited volume aims to contribute to such a timely discussion. Furthermore, each work included in this volume has specific purposes in mind in that it aims to discuss how educational practices that take place in certain instructional contexts influence students' cognition (Agustina; Nurkamilah), learning strategies (Khoiriyah & Devanti), literacy or foreign language skills (Amilia & Astutik; Nuraini; Werdiningsih), teacher professionalism (Usman), and parental involvement in education (Suryaningrum). Although some other works appear to have no direct relevance to the issue of educational practice in the digital age, they may still be considered relevant insofar that they provide insights into best practices that may be directly or indirectly applicable (with teacher's creativity) to instructional activities involving the use of technological tools and/or digital resources.

Upon reading the title of the works included in this volume, readers may immediately be aware that some of the works make a specific reference to the outbreak of the Covid-19 pandemic (e.g., Khoiriyah & Devanti; Suryaningrum). This is quite understandable given that the Covid-19 pandemic has not only disrupted virtually all aspects of social life but also has altered educational systems around the globe. That is, during the period of the Covid-19 pandemic, schools were forced to temporarily shut down and all educational activities were forced to migrate to online platforms by exerting technological tools and online digital resources. Hence, if there was ever a time to discuss how technological tools and digital resources may be utilized to optimize educational practices in general and distance education in particular, the time is indubitably now.

I hope that all the works included in this volume prove useful for those involved in educational practices, be they pre-service or in-service teachers.

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# Chapter IV

## Investigating Critical Thinking in Asynchronous Discussion Forums

**N**urkamilah

### A. Introduction

Research in online interactions still needs to be done to determine cognitive processes that arise, both in the process of understanding construction, language construction and critical thinking skills. Basically, Darabi, et al. (2011) found a cognitive process in four different asynchronous discussion strategies, structured, scaffolded, debate, and role play. This cognitive process is indicated by the four cognitive phases of Park (2009) namely triggering events, exploration, integration, and resolution. The four asynchronous discussion strategies presented show different results on cognitive processes. In a structured strategy, triggering events are high, but low resolution. In the scaffolded, high-resolution, debate and role-playing strategies, the cognitive phase is dominated by exploration and integration. This implies that to be involved cognitively, students need to take the right perspective according to the scenario or discussion context so that it can trigger critical thinking competencies. In other words, there must be a student's self-awareness effort to understand the context of the discussion in order to generate effective cognitive processes.

Asynchronous discussion forum (ADF) is quite common in learning nowadays as online learning environment has been introduced from the primary level of education to higher education. The use of this type of online learning feature in higher education has grown dramatically in the past few decades (Al-Husban, 2020), because some studies have proven its being an effective alternative media to help students construct their understanding from the conventional class forms that have a more flexible nature which allows them to

learn according to their own pace (Gerosa, Filippo, Pimentel, Fuks, & Lucena, 2010; Loncar, Barrett, & Liu, 2014). Richardson and Ice (2010) added that the discussion forum is an extension of traditional learning that promotes dialogue, knowledge construction, and critical thinking. Such notion somehow has brought the concern how such feature could enhance student's critical thinking.

There is limited studies that examine critical thinking in the interactions that occur in asynchronous discussions. To find out the existence of a critical thinking process, it is necessary to have an appropriate measuring instrument that can prove the process. One review study (Hall R. A., 2015) emphasizes that even though the discussion media has now switched to online, the critical thinking process is still considered important. She revealed that one of the weaknesses of online discussion that many find is the ability to think at a higher level. That most of the research states that online learning has the potential to develop and improve critical thinking and deep learning skills. More recently, a case study investigating critical thinking indicators of postings on asynchronous discussion forum revealed that some indicators have emerged and unveiled that the participants have acquired essential critical thinking skills (Al-Husban, 2020). The study, however, noted that the students still needed to focus on achieving higher order thinking skills.

To create a critical thinking process, it takes more than a 'question' but a 'problem' that can be seen contextually (Darabi, Arrastia, Nelson, Cornille, & Liang, 2011). The critical thinking process must be able to become a medium of connecting between formally obtained material and its implementation in the real world. In other words, instructors must be able to find problems and find questioning strategies to be able to direct students to be able to see contextually at their respective experiences or environments. However, the process will be difficult to see clearly in the results, because it requires a gradual and in-depth investigation.

**Table 1.** Indicators of Bloom's Taxonomy

| Level | Description |
|---|---|
| Remembering | Recalling of specific learned content, including facts, methods, and theories. |
| Understanding | Giving his/her interpretations towards certain concepts using his/her prior knowledge without understanding full implications. |
| Applying | Making simulations or examples to a new settings of the concepts learned. |
| Analyzing | Breaking down the learned materials or concepts into smaller parts that can help clarify the concepts, relationships, comparisons, and contrasts. |
| Evaluating | Giving judgments or value of the learned material, or giving recommendations or critics of the material or topics being discussed |
| Creating | Expressing benefits or uses of the learned materials as well as providing a new arrangement, as well as poses a new solution to a problem |

*Adapted from O'Riordan, Millard, & Schulz (2020)*

This study aims to investigate the process of critical thinking as indicated by the presence of Bloom's Taxonomy cognitive processes in a threaded online discussion forum. According to Bloom, critical thinking as one of the highest cognitive levels is one of the key aspects in achieving learning autonomy. The students' posts were examined through the indicators of each of thinking level as seen in Table 1.

## B. Method

The case study aimed to investigate the process of critical thinking as indicated by the presence of Bloom's Taxonomy cognitive processes in a threaded online discussion forum. As a form of discourse analysis, the study is expected to be able to unveil how online discussion forums could increase

the collaborative interaction among learners (Heigham & Croker, 2009).

The study involved 38 higher education students of English education department who were taking a course of Information Technology for ELT Media. This course was given to the second-year students of Universitas Muhammadiyah Jember, Indonesia. The students' interaction in an asynchronous online discussion forum was investigated using the e-learning platform of the university, called estudy.unmuhjember.ac.id.

The students were divided into seven (7) smaller groups with different English mastery. Before the discussion was started, the students were given two meetings of preparation for understanding the features offered in the online platforms.

The techniques were implemented following three stages of procedure. First, all posts or comments in the Forums were gathered. Second, the posts were classified as comments which later were analysed for the presence of cognitive process. This led to the reveal of critical thiking processes. Furthermore, the data were analysed in two stages. First, the data were analysed during the process of data collection. In this stage, all posts or forums were checked for irrelevant posts or posts with very few or zero responses. Only forums which have responses from the assigned group members were analysed. Second the data analysis was done after the data collection. In this stage, three other steps were implemented, such as data reduction, data display, and conclusion drawing (Miles & Huberman, 1994). This procedure was implemented repetitively. It means that the researcher can return to previous stages when certain data needed more exploration.

## C. Result

Seven forums created by 7 groups were investigated. It was found that most groups have posted double discussion forums but only one of them had responses. Each group was given the freedom to decide the topic within the theme of the 21st century learning skills which they would like to discuss in

the forum. The seven topics of every forum can be seen in Table 2.

**Table 2** Discussion Topics

| No. | Group | Topic | Total Responses | Total Students |
|---|---|---|---|---|
| 1 | A | Social media for learning | 19 | 5 |
| 2 | B | Website usage for one of the media information implementation | 9 | 6 |
| 3 | C | The best way to ultilize media and information literacy | 7 | 6 |
| 4 | D | Using app study for learning | 27 | 5 |
| 5 | E | Media and infromation literacy is essential for education | 7 | 5 |
| 6 | F | Using EdPuzzle to transfer the knowledge for students in online or offline class | 13 | 5 |
| 7 | G | Media and information literacy for teaching and learning purposes. | 11 | 6 |

The study obtained 7 asynchronous discussion forums as presented in Table 2. It can be seen that the number of responses varies widely because asynchronous discussions are held without any minimum and maximum limits, while the number of group members is fixed. As for the frequency of responses of each member in the discussion, each member of every group posted different amount of responses (Table 3). Apart from the frequency of responses, the researcher also knows that the length and shortness of the sentences in the responses also need to be considered. In one single comment, for example, may have 2 different types of cognitive levels, which will show different results. Each member of every group is written in code.

Tabel 3. Number of Responses Posted by Group Members

| Group | Member Codes | Number of Posts |
|---|---|---|
| A | A1 | 2 |
| | A2 | 3 |
| | A3 | 5 |
| | A4 | 1 |
| | A5 | 7 |
| B | B1 | 1 |
| | B2 | 1 |
| | B3 | 1 |
| | B4 | 1 |
| | B5 | 3 |
| | B6 | 3 |
| C | C1 | 2 |
| | C2 | 2 |
| | C3 | 1 |
| | C4 | 1 |
| | C5 | 1 |
| | C6 | 1 |
| D | D1 | 4 |
| | D2 | 4 |
| | D3 | 11 |
| | D4 | 3 |
| | D5 | 6 |
| E | E1 | 1 |
| | E2 | 1 |
| | E3 | 0 |
| | E4 | 3 |
| | E5 | 3 |
| F | F1 | 1 |
| | F2 | 4 |
| | F3 | 5 |
| | F4 | 2 |
| | F5 | 2 |
| G | G1 | 4 |
| | G2 | 1 |
| | G3 | 5 |
| | G4 | 1 |
| | G5 | 0 |
| | G6 | 1 |

Based on the descriptions in Table 3, variations in the total number of responses in each forum are caused by different numbers of responses uploaded by each member. There were 2 groups (E and G) where one member did not respond. The two students are two students who are not active in lectures so there is a possibility that the information may not be effectively conveyed to students. Therefore, it is obtained 7 group discussion forums with a total of 93 responses uploaded by 36 students.

**Levels of Student's Critical Thinking in Asynchronous Discussion**

Obtained 7 discussion forums were analyzed in this study. From each forum, students' critical thinking levels were analyzed according to their uploads or responses in asynchronous discussions based on the cognitive level of Bloom's Taxonomy. It is known that of the 93 responses made, there are 106 types of comments that are at different cognitive levels. This means, in one upload there can be more than one cognitive level. From the overall responses, all cognitive levels were found, starting from Remembering, Understanding, Applying, Analyzing, Evaluating, and Creating. Thus, it is known that the three higher order thinking skills are found, namely the skills to analyze, evaluate and create. All of these levels are found based on the descriptions in Table 3.1. The following is a snippet of each level along with an explanation.

The first level is the Remembering cognitive level. This includes low-level thinking skills. The indicator is in the student's response to mention the material they have learned. Students only repeat or rewrite the material they have read. For example, student F3 wrote in her response
"3 Reasons to use EdPuzzle in the classroom:

> Given the increasing importance of assessment in education, the quizzing feature of EdPuzzle provides teachers with the potential to create tests and assess

pupils through digital technology (e.g. iPad); helping to reduce the time devoted to marking and tracking.

Possibly EdPuzzles best feature is the fact that it enables educators to add their own voiceovers and audio notes to existing educational videos already online, this allows for lesson customisation and time saved making original video clips!

EdPuzzle has its own inbuilt LMS functions, educators can track learners progress on lessons and reset the lessons again if they aren't happy that certain students didn't fully comprehend" F3- Using Edpuzzle

This excerpt is analysed to belong to the Remembering level because the student simply copied materials related to EdPuzzle. This response or post required very limited critical thinking process, therefore may not be considered as critical thinking.

There are 18 posts (16%) in total which reflect the Remembering level. This level is considered the lowest order thinking skill since students are not required to reflect the material to his or her understanding.

The second level, namely Understanding, is characterized by an interpretation of the meaning of the knowledge being learned. In this case, students will try to explain the material again with their own understanding but do not give examples of its application, as shown in the following excerpt.

"Yes, I use the Learn English Grammar application. Because this application is perfect for studying or reviewing the grammar lessons we want to learn. This application also contains interesting questions and exercises that are easy to understand, there is also audio that helps us to better understand what is being discussed. We can also hone our pronunciation, which really helps us to learn grammar better. The explanation

> is also explained from beginning to end, maybe this is suitable for those who don't want to be complicated opening books if you want to learn, you can immediately open this application via cellphone." B6 - Website usage for one of the media information implementation

The study found 43 posts or 38 % of all posts that can be categorized into Understanding level. Students' posts mostly attempt to describe certain concept using their own understanding. Sometimes the students use examples which help them clarify what they mean.

The third cognitive level, *Applying*, is what appears a lot in the data. The indicator is in the form of the student's ability to provide responses that contain forms of real application that are relevant to the material obtained or the form of questions that seek to obtain this information. The study found 28 posts (24.7%) categorized in the Applying level. An example of students' posts that belongs to this level can be seen in the excerpt below.

> "Since all of you guys agreed, how about ya'll? maybe you have any other apps or webs that help you in learning English? or even maybe for our future teaching purposes? :D" B5 - Website usage for one of the media information implementation.

The Applying level is still considered lower order thinking skill. However, to reflect this skill, students should process the concept of the material they learn into their experiences and apply this into certain situations in their life. In teaching critical thinking, making students implement certain concept into daily life situations is a process of creating critical thinking (Darabi, Arrastia, Nelson, Cornille, & Liang, 2011). Therefore, regardless of its being lower order thinking skill, the Applying level is important in the construct of critical thinking.

The next cognitive level is Analyzing. This is one of the higher order thinking skills. It can be seen by students' efforts

to study or break down material learned to be derived into simpler concepts so that the relationship between these concepts can be seen. In this study, 11 posts (9.7%) have been found which belong to the Analyzing level. One example of the posts can be seen in the following excerpt.

> "…But another interesting thing is if you check its website--Grammarly.com, you will find some other amazing features, like a plagiarism checker, English learning materials, etc., moreover, it's easy to use for everyone. I think its overall program and developments are very great for teaching and learning (mostly learning) purposes."
>
> B5 - Website usage for one of the media information implementation

The students in the study showed the Analyzing skill by trying to look deeper into certain topic or material and breaking it down into the advantages and disadvantages, or benefits and challenges. Doing comparison and contrast can be assumed to be one way to introduce analytical thinking skills to students.

The fifth cognitive level found in this study is evaluating. In this case, it is known that students provide an assessment of the material by showing their weaknesses and strengths and what needs to be worked on. The study found 5 posts or 4.4% which satisfy the category of Evaluating level. See the following excerpt for example.

> "I agree and also dissagree with that system.
>
> [I agree because] we can control all the student activities but for dissagree there is no privacy ptotector for the student. because there is a cips in their uniform. perhaps, they go to bathroom all of their privacy can show on the teacher program.

> [I also disagree] with that system because if the student itchy,didgety,or poor setup so the electrodes don't have good contact affecting, the signal.dispite the chances for false reading teachers told us the head for have forced students to become more disciplined and this system make the parents who were unclear about where the data ended up and did not seem to care too much, and this system can not use in indonesia because the goverment must spend much money." G1 - Media and Information Literacy for Teaching and Learning Purposes

To satisfy this level, students write what they feel about certain concept, material, or topic. Then, they describe why they feel in such a way. Some posts also try to pose a question which lead to unveiling judgment or evaluation of the topic being discussed, like in the following excerpt.

> "What if the social media used by the lecturer cannot make students understand the material that has been explained? what should the lecturer do, whereas we cannot do face-to-face." D4 - Using App Study for Learning

The last level was *Creating*. At this level, students provide comments that show themselves providing an assessment and show an effort to find new findings from the assessment. However, the study found only 1 upload showing this level. The post can be seen in the following excerpt.

> ""We need more quotas to access the literature we want to access." that's true, but with the help of a quota from the government that will help us a lot. In addition, free wi-fi can be accessed in places such as restaurants and cafes." C2 - The Best Way to Utilize Media and Information Literacy

In the post, the student refers to one problem and proposes a simple solution to the problem. Although it seems

simple, it is the final stage of critical thinking, where students provide a solution to a certain problem.

Based on the data presented as obtained from the asynchronous discussion, most students still have not been able to achieve higher-order thinking skills. However, the results achieved were somehow satisfactory, considering that from those uploaded by students who were still at a low level of thinking, they had been able to understand the material correctly and were involved in the discussion. At the level of thinking, for example, most students try to find benefits from the material they learn so that it is useful for their lives, which is necessary for practicing critical thinking. The data also showed 17 posts have been categorized into the higher order thinking skills.

## D. Discussion

The study has found that the asynchronous discussion forums may promote critical thinking, if seen using the Bloom's Taxonomy approach. It is clarified in the findings that most students are struggling to achieve the higher order thinking levels. Some associated factors to this issue include students' struggles in speaking out their voices (Alagozlu, 2007), limited teacher's contribution in providing scaffolding questions (Mustika, Nurkamto, & Suparno, 2020), and not being familiar with the topic discussed (Tathahira, 2020). The first reason is commonly found in various contexts of learning. The student's struggle is related to their socio-cultural background as Indonesian students. Alagozly (2007) highlighted in his research that the Turkish EFL students did not feel comfortable to add their comments because, as he assumed, it reflects how they have been educated until university. While in this study, this may be the result of the nurture of the culture or social background of the students. As eastern people, they have been taught to respect other people's opinion. Respecting, in this case, might have been translated differently as 'accepting it at once'. Teaching critical thinking in order to help students with this socio-cultural struggle, teachers should consider giving adequate practices to make them aware of the differences.

Secondly, Mustika et al. (2020) have assessed the significance of teacher's questioning strategy in building critical thinking process in students. The study found the contributions of teacher's questioning to the student's critical thinking. In the study, teachers used questions which lead to certain cognitive levels by Bloom's Taxonomy. Other studies also emphasized the importance of teacher's questioning strategies in scaffolding students' critical thinking (Kurniawati & Fitriati, 2017; Ashadi & Lubis, 2017). In the present study, the researcher did not pose particular questions intended to help students post their comments and feedback. Instead, a specific instruction was given and preparation in prior to the activity were given. This finding, therefore, should be reflected that in the case of online learning, giving leading questions, in addition to instruction, are necessary to improve the result of student's critical thinking.

Finally, the study found that students' unfamiliarity to the topic may become the reason that they have limited insight towards the topics. Tathahira (2017) has specifically mentioned that students might struggle so hard when asked to comment on a topic which they have limited information about. However, in this study, the students have been asked to decide the topic of their own within certain boundary (that is under the 21st century learning skills theme). However, the all forums investigated still show most posts within the lower thinking levels. This could be assumed that students only read a few resources before writing their comments. This can become an important message for teachers of online learning to provide compulsory readings for students so that they can become more well-read.

## E. Conclusion

The study has found that of the 106 posts, 18 were in the remembering level, 43 were in the understanding level, 28 were in the applying level, 11 were in the analyzing level, 5 were in the evaluating level, and 1 was in the creating level. It reflects that most of the posts have not reached the higher order thinking skills, but students have been known to make attempts to get into the process of critical thinking.

There are several factors which may cause the phenomenon to occur, namely students' struggles in speaking out their voices, limited teacher's contribution in providing scaffolding questions, and not being familiar with the topic discussed. These factors are related to internal and external issues, such as students' social and cultural background, teacher's exposures to critical thinking questions and activities, as well as students' limited readings. In online learning, providing more exposures to students and motivation to learn independently could be the least teachers can do to promote critical thinking.

There are several limitations of this study, such as less controlled group of participants and not rigorous data analysis. Therefore it is expected that future studies on this topic conduct a study that include content analysis in order to see deeper into the language construction so that it can reflect students' critical thinking better.

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**Syahrul Mubaroq** was born in Lumajang 8 August 1988. He completed his Educational Technology Master's degree program at Universitas Negeri Malang (2015) and now he is a lecturer at Indonesian Language and Literature Education Universitas Muhammadiyah Jember concentrates in design, develop, manage and evaluate innovative creative learning by utilizing technological advances.

**Fitri Amilia**, is a lecturer at Indonesian Language and Literature Education Universitas Muhammadiyah Jember. She completed her Doctoral Degree at Universitas Negeri Surabaya in 2018. Her motivation is to move and learn to realize lifelong learning. Moving will not be beautiful to be done alone, let's have it together. Learning is characterized by changes in knowledge and behavior. Always progressing to be a better and better person. With this motivation, it is hoped that this piece of writing will have benefits for an interesting learning design and in line with the needs of students. Let's make progress and learn together for a wonderful Indonesia.

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**Khoiriyah** is a faculty member at the University of Muhammadiyah Jember. She was born in Semarang in 1965, completed her primary and secondary education in the city of Semarang. She obtained her academic degree in psychology from Darul Ulum University of Jombang, then Master degree in early childhood education from the State University of Jakarta. The academic background in psychology strengthened her competence in early childhood education (ECE). That's why the Faculty of Teacher Training and Education at University of Muhammadiyah Jember has trusted her to teach the ECE courses since several years ago to the present, both in the regular education program as well as in the teacher professional education program of the ECE. Her fields of study include: development of language skills in children, the basics of early childhood education, teaching for children with special needs. In addition to his main duties as a faculty member, she also often gets assignments from the Ministry of Religious Affairs to provide guidance for prospective brides and grooms in pre-marital guidance programs. In social service activities, she is also active in Aisyiyah Movement at Jember Regency until now.
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# HOW TO CREATE HIGH QUALITY TEACHING AND LEARNING IN THE DIGITAL ERA:

## TEACHERS, STUDENTS AND PARENTS' PERSPECTIVES

'How to Create High Quality Teaching and Learning in Digital Era: Teachers', Students' and Parents' Perspectives' presents a collection of works by authors in the field of education, like from the field of language teaching, mathematics education, early childhood education, TPACK, parental involvement, and the use of technology. The book was especially written during the outbreak of the COVID-19 where classes were moved to online classes. This extreme change has led to different reactions from all elements of education; students, teachers, and parents. Some common reactions observed by the works in this edited book include hesitation, skepticism, puzzlement, but some reacted positively, with excitement and enthusiasm. Indonesia has experienced a period with massive online courses and classes during the two years of pandemic. Despite the initial shock, Indonesia has proved to survive and made this a golden period in which many innovative teaching ideas were created. Indonesia has also accelerated its adaptation of technology to teaching during this time. This book is therefore presented to you to discuss how technology is integrated in education from different perspectives.

UM JEMBER PRESS

ISBN 978-623-96253-6-8