Assessment for Learning Model in Competency Assessment of 21st Century Student Assisted by Google Classroom

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Abstract. Assessment for Learning (AfL) is useful for redesigning the online learning strategies further to improve students’ abilities, especially for 21st century students' abilities. To achieve these competencies through the AfL model, assessment models are needed. This study discusses the model for AfL based on a needs analysis survey, using a questionnaire. In this study, the object of the research study was 30 students of the Physics Education Department of Universitas Sebelas Maret class of 2017, 2018, and 2019. The data on this paper were analyzed qualitatively. The results showed that most students use Google Classroom for online learning. However, giving feedback is not considered the maximum given by the lecturer. The results of interviews with 15 respondents obtained a form of learning assessment model that emphasizes the existence of feedback so that the model of AfL can be applied to achieve learning objectives and 21st century student competencies are achieved namely communicative, creativity, critical thinking, and collaborative. Thus, activists and education stakeholders get a picture of the urgency feedback in the learning process using the AfL model which is integrated into technology of Era Society 5.0 in the world of education.

Keywords: 21st Century Student Competencies, Assessment for Learning, Google Classroom

1. Introduction
The world is amid the Coronavirus Disease (COVID-19) pandemic. The COVID-19 outbreak that hit more than 200 countries in the world is a disaster for the Indonesian government. The government has issued various policies to anticipate the spread of COVID-19, such as self isolation, social and physical distancing to large-scale social restrictions. This condition requires citizens to stay at home, work from home (WFH), and also learn from home (LFH). Based on Circular Number 2 of 2020 from the Indonesian Ministry of Education and Culture on Prevention and Handling of COVID-19 and Circular Number 3 of 2020 on Prevention of COVID-19 in the Education Unit, universities are required not to do face-to-face learning in the classroom. Learning must take place in a precautionary scenario that prevents physical contact between students and others [1]. This condition requires the universities to make innovations such as conducting online learning using the internet network [2].

Online learning is lectures that use the internet network with accessibility, connectivity, flexibility, and ability to produce various types of interactions of students [3]. Online learning connects students with learning resources (databases, instructors, libraries) that are physically separated or even far apart but can communicate with each other, interact, or collaborate using synchronous and asynchronous learning. Online learning makes use of telecommunications and information technology, such as the internet, CD-ROOM, and so on [4]. The use of technology has a contribution to higher education, including the achievement of distance learning goals [5]. Various media that use technology to support...
the implementation of online learning, one of those is virtual classes using Google Classroom, Edmodo, and Schoology [6].

One of the platforms used for online learning is Google Classroom. Using the Google Classroom application will make it easier to achieve learning goals. Google Classroom is an application created by Google that aims to assist lecturers and students in conducting classes and communicating with students without having to adjust class schedules. Besides, lecturers can also provide assignments and grades directly to students [7]. The use of Google Classroom can make it easier for lecturers to convey information precisely and accurately to their students [8].

Google Classroom has many features to make the learning process easier. Google Classroom features need to be used to optimize the abilities of 21st century students, called 4C (Critical Thinking, Creativity, Communicative, and Collaborative). Critical thinking is defined by the intellectual disciplinary process actively and skillfully conceptualize, apply, analyze, synthesize, and evaluate information from the observation, experience, reflection or communication [9]. Skill creativity is finding new things that were not there before, being original, and developing innovative ideas [10]. Communication skills are expressing new thoughts, knowledge, or information, both in writing and orally. Collaboration skills are skills to work effectively and show respect to diverse team members, train fluency, and a willingness to make decisions needed to achieve common goals [11]. The four competencies 21st century students can occupy in learning. Even though online learning, the competencies must still be realized as in face-to-face learning in class using an assessment model in online learning. Therefore, it is necessary to apply an Assessment for the Learning (AfL) model to measure the competence of 21st century students in the Era of Society 5.0.

Assessment is an urgent part of learning. It is a series of activities carried out by the lecturer to see the achievement of competence or student learning outcomes in the learning process [12]. Lecturers can make decisions about whether or not to pass the competency by considering the results of the assessment. One of the results of this assessment can obtain the implementation of the Assessment for Learning (AfL) model. The Assessment Reform Group (ARG) states that the Assessment for Learning (AfL) is the result of the main priority in design and practice is to develop the learning process [13]. Yuwono explains that the implementation of AfL can be a solution to improve the learning results of students [14]. The implementation of the Assessment for Learning is used as feedback to fix weaknesses in the learning process, find learning difficulties, and help students understand the proper way of learning. Good feedback contains information that can be used and utilized by students to improve their learning strategies. Sir Mike Tomlinson's research report in Jones et al [15], provides final recommendations for introducing AfL so that lecturers develop assessment skills and feedback skills by encouraging lecturers' confidence in creating an effective learning environment. Lecturers can position students as assessment centers that hopefully can improve the learning outcomes of students.

Based on this background, the authors developed the Assessment for Learning (AfL) model to assess the competence of 21st century students assisted by Google Classroom. This AfL model is not only used to evaluate students' abilities during the process and at the end of learning but must be used as feedback to improve the learning process, both by students and by lecturers.

2. Methods

The type of research used is qualitative research with descriptive research methods. Descriptive method to describe, interpret a phenomenon, including existing conditions or relationships, opinions that develop using scientific procedures to answer problems [16].

2.1. Research Method

The object of this research is using analysis of the needs of 35 students of the Physics Education Study Program, Faculty of Teacher Training and Education (FKIP), Sebelas Maret University (UNS). The respondents are twelve students of class 2017 (34.3 %), ten students of class 2018 (28.6 %), and thirteen students of class 2019 (37.1 %). Based on the needs analysis data, the researcher selected
fifteen respondents with five respondents in each batch to explore more information regarding the application of the AfL model to find assessment models to assess the competence of 21st century students.

2.2 Research Instrument
The research instrument used was a questionnaire on the initial condition of using Google Classroom and in-depth interviews with several students. The questionnaire instrument consisted of six questions.

| No | Questions                                                                 | Answers                           |
|----|---------------------------------------------------------------------------|-----------------------------------|
| 1  | Have you ever used Google Classroom?                                      | a. I have                         |
|    |                                                                          | b. I haven’t                      |
| 2  | In your opinion, is it easy or difficult to access Google Classroom?      | a. Easy                            |
|    |                                                                          | b. Difficult                      |
| 3  | Have you ever done or uploaded assignments with Google Classroom?         | a. I have                         |
|    |                                                                          | b. I haven’t                      |
| 4  | What assignments are given in Google Classroom?                           | a. Essay                          |
|    |                                                                          | b. Quiz                           |
|    |                                                                          | c. Discussion                     |
| 5  | Is giving feedback on the assignment necessary for you?                   | a. Yes, it’s necessary            |
|    |                                                                          | b. No, it’s not necessary          |
| 6  | Have lecturers ever provided feedback in Google Classroom?                | a. I have                         |
|    |                                                                          | b. I haven’t                      |

After having the result from the questionnaire on Table 1, then the researcher chooses fifteen students become interview respondents. This is a list of questions for the interview as follows:
1. Do you know the Assessment for Learning (AfL) model for learning assessment?
2. How important is feedback for your learning?
3. What is the effect of feedback on your learning both in assigning assignments and materials?
4. Do you know the competence of 21st century students?
5. Did you use google classroom during lectures? How often?
6. Do you think that the assignments given in google classroom are suitable for exploring 21st century skills?
7. Give suggestions on the AfL model for assessing student creativity in google classroom!
8. Give suggestions on the AfL model for communicative assessment of students in Google Classroom!
9. Give suggestions on the AfL model for critical thinking assessment of students in Google Classroom!
10. Give suggestions on the AfL model for student collaborative assessment in Google Classroom!

2.3 Stage of Research
According to Moleong [17], the data must be checked whether the data is valid or not using validity techniques or data validity. Sugiyono [16] defines triangulation as a data collection technique that combines data from various data collection techniques and existing data sources. Source triangulation is a triangulation technique to obtain data from different sources using the same method. It can be illustrated through the source triangulation chart as follows in Figure 1.
3. Result and Discussion

All respondents in this research need to provide feedback in the learning process, both in material and assignments. Giving feedback is considered very important to help align concepts and understand the material that has been given by the lecturer. When the even semester of the 2019/2020 academic year, 68.6% of respondents stated that they had received feedback while 31.4% of respondents stated that they never received feedback from lecturers on Google Classroom.

Based on the results of the survey on respondents, the results obtained were all respondents who had used and done assignments on Google Classroom, 94.3% said it was easy to access Google Classroom but 5.7% said it was difficult. It was found that 71.4% of the respondents got an essay assignment, 68.6% of the respondents received an assignment quiz, and 85.7% of the respondents received a discussion assignment. All respondents admitted that they needed feedback when making assignments. However, as many as 31.4% of respondents said they had not received feedback from the lecturers. From this data, the researcher conducted in-depth interviews with fifteen selected respondents for assignments and the importance of providing feedback.

3.1. The Function of Giving Feedback in Learning Process

Giving feedback is very important as a measure of learning that has been conveyed by lecturers so that there is clarity and direction in the learning process. Through that feedback, students will find out mistakes in understanding the learning process. Feedback is a form of appreciation for students. Students become motivated and build self-confidence so that they become enthusiastic in participating in learning. Besides, feedback can correct any misunderstandings or misconceptions that arise. Providing feedback has an impact on the learning process.

The best feedback is interactive feedback, namely giving feedback verbally (speaking directly), that it is clear where the weaknesses are, and how to use them to prepare further study plans. However, verbal feedback tends to be classical. Butler and Winne also stated that external feedback (teachers and peers) and internal feedback (self-evaluation) affect learning, decide tactics and strategies for achieving them, and how to control their implementation [18]. Giving feedback from lecturers is not an absolute thing. Lecturers cannot force students to focus or have to learn something but can provide feedback to students as a follow-up to the learning process. In addition, feedback between peers can reinforce understanding of the material so that it can achieve learning goals.

3.2. The Effect of Giving Feedback in Learning Process

Based on the results of the interview, the effects of giving feedback in learning process that were felt by respondents included:
1. Measuring student abilities
2. Knowing the improvements that must be made
3. Deepen understanding of the material
4. Make the learning process meaningful
5. Straighten the concept so that there are no misconceptions
6. Encourage student activity and performance
7. Foster motivation and enthusiasm for learning

From this influence, it can be concluded that feedback is needed in the learning process in order to achieve learning goals and make learning more meaningful.

3.3. The Preparation Before Implementing the Assessment for Learning Model

Before implementing the AfL model, we must be prepared. Jones et al [15] provide several suggestions for lecturers to encourage the success of the assessment, among others: 1) how to plan learning, 2) how to achieve course objectives, 3) how to communicate assessment standards, 4) how to create an effective learning environment, 5) how to create a learning ethos using assessment for learning in institutions or universities.

Another preparation that can be prepared is to create positive interactions between lecturers and students. There are five principles of creating positive interactions, namely students must: 1) what will be studied and why should it be studied, 2) receive feedback regarding the quality of the assignment or test done; 3) receive advice on how to make learning improvements; 4) actively involved in deciding what to do next; and 5) be aware of who can help in learning. The application of the AfL model must, of course, be designed by formulating strategies ranging from teaching techniques, the form of assignments, to assessments that will be used in learning. These three things should be prepared to explore the learning achievements and improvements that should be made.

3.4. The Forms of Assessment for Learning Assisted by Google Classroom

The following are forms of assessment with the AfL model assisted by Google Classroom to explore the competencies of 21st century students as follows:

1) Creativity

In reviewing the creativity assessment in physics subjects, it can be done by applying the Google Classroom assisted AfL model. Creativity assessment can be done by providing the following forms of assignment:

a) Giving Problems

The AfL model can be developed in achieving the competence of 21st century students by giving assignments in the form of problems that must be resolved. Giving problems can explore the creativity competence of students, because by being given a task and being required to solve a problem also requires creative thinking. Creativity can be represented in various forms, such as creativity in determining problem-solving strategies, in determining solutions to open-ended problems, in making problem posing, and so on [19].

When using Google Classroom, the lecturer can provide a problem that must be solved by students. Students can find solutions to problems with their creative thinking and then submit it to the forum for discussion together. Lecturers can observe how problem-solving strategies are from students' creative thinking patterns.

b) Making a paper

Assignments in the form of writing works are also included in the competence of 21st century students, namely creativity. In writing, both essays, papers, articles, and so on, students are required to develop creative thinking patterns. With the creativity possessed by students, they will be able to create a well-written work. Writing an essay as a creative product becomes a means for humans to embody various thoughts, experiences, discoveries, and so on [20].

The results of his research found that the implications of writing assignments are not only in the cognitive domains but also in the affective and psychomotor domains. Through the
assignment feature in Google Classroom, students can create papers that are attached when uploading assignments. Lecturers can see the creativity of students in terms of essay content and the grammar of writing used. In writing, lecturers can provide an assessment that is oriented towards the originality of ideas or ideas, the level of innovation, and creativity of an idea in written works made by students. Thus, students will innovate with the creativity they have to produce a written product which is the result of the learning process.

c) Concept Map Creation
Making a concept map is an AfL model assignment that can be developed to explore student competencies, namely creativity competence. In making concept maps, students can make attractive designs and will require creative thinking. The use of concept maps can increase creativity in emerging new ideas, solving problems, imaginative attitudes, and increasing productivity [21].

The design of the assignment in making concept maps can be in the form of instructions given by the lecturer to be creative in making concept maps made by students. Students can use software assistance in making concept maps to make it easier to create content and display concept maps that will be made proportionally. The concept map that has been created is then uploaded to the classroom in Google Classroom. Furthermore, the lecturer will assess the results of the concept map made by students including the originality of the work, the content of the material, and the display of the concept map from the results of student creativity. Lecturers can provide corrective input if there is content that is not suitable for the Google Classroom assignment feature.

d) Project Creation
Project creation can be in the form of making videos, modules or teaching materials that can be developed to explore 21st century student competencies, namely creativity competence. In making videos, modules, and teaching materials, creative thinking is needed. Creative thinking is a pattern of thinking that is based on a way that encourages students to produce creative products [26].

In a project assignment, students are required to be creative to produce a creative product in the form of a video or learning module. Furthermore, the lecturer gives assessment points for each work to be made so that students pay attention to these points in the making process such as video quality, content, layout, and so on. Submissions will be uploaded in Google Classroom with the "Attach" or "Embed" features already available.

e) Making a poster
Making a poster requires creativity to produce a product that has aesthetic value. In making posters, students need to pay attention to several things such as a) determining objects, b) formulating messages, c) formulating short, concise, and clear sentences, and d) using suggestive sentences. These things cannot be separated from the creativity of students in expressing their creative ideas [27].

In the poster assessment, the lecturer will evaluate several aspects, namely aesthetic aspects, content aspects, and language aspects. Posters are uploaded through the attach feature of a photo file in .jpg or .png format in Google Classroom. The lecturer will provide input on the poster that has been made on the return feature with some notes in the form of feedback.

2) Communicative
In reviewing the communicative assessment in physics subjects, it can be done by applying the Google Classroom assisted AfL model. The communicative assessment can be done by providing the following forms of assignment:

a) Class Discussion
Class discussion assignments are one of the AfL models. With class discussions, students will have communicative competencies where students are more active in providing information and developing a sense of curiosity. Class discussion is needed to find out how far students
understand the material and also to find out how active students are in participating in class discussions. The more active and critical students are, the better the class discussion will be.

Discussion techniques carried out by students in which they act as listeners and presenters of material can motivate students to be actively involved in learning through communication on the basis of their own initiative [20]. Even so, lecturers must still provide a conducive climate so that students still have confidence in expressing their opinions.

b) Project Assignment
Project-based assignments are a strategy that lecturers can use to improve students' thinking, communication, collaborative, and creativity skills [22]. Based on this preliminary research, project assignments can develop students' abilities in arguing and exchanging ideas or ideas in the process so that communication between students is created. That way project assignments are included in the AfL model to develop communicative competences.

c) Questioning
During the lecture process, the lecturer needs to give questions regarding the lecture material to students. These questions will encourage students to be active in answering and discussing answers to questions that are being asked by the lecturer. Questions can be arranged in stages by the lecturer to explore a concept that will be studied in learning. Also, through asking questions, students' curiosity and communicative character will develop in solving the questions at hand [23]. Giving questions is an AfL model assignment that can develop 21st century student competencies, namely communicative competence.

d) Online debate model
Giving debate assignments online will arouse the enthusiasm of students in arguing related problems given by the lecturer. Through the debate method, students are encouraged to express their opinions through a debate between discussion groups that are put together in a class discussion. The debate method is used to determine whether or not a certain opinion is supported by a party called a supporter (affirmative), and rejected or denied by another party called a denial (negative) [24]. Through online debates via written text on Google Classroom, it will liven up the atmosphere and make students more active in attending learning. Students will be motivated to participate in issuing their opinions. This online debate assignment is an AfL model that develops communicative competence.

3) Critical Thinking
In reviewing the critical thinking in physics subject, it can be done by applying the Google Classroom assisted AfL model, there are:

a) Giving Quizzes
Giving quiz assignments is one of the AfL models to improve the competence of 21st century students, namely critical thinking competence. Quizzes given to Google Classroom can be in the form of questions that lead students to answer critically to solving the questions given. At the end of the lecture session, the lecturer can provide the correct answer key and the score obtained after the student takes the quiz. Lecturers can also provide comments on the answers given so that communication is established between students and lecturers and hone students' critical thinking skills.

b) Giving High Order Thinking Skills (HOTS) Questions
HOTS (High Order Thinking Skills) or high-order thinking skills are grouped into four categories, namely 1) making decisions, 2) problem solving, 3) creative thinking, and 4) critical thinking [25]. Critical thinking can be explored by giving questions that are equivalent to HOTS questions. The HOTS problem is an important aspect of learning science in solving real problems. Not only remembering or counting, but students are required to provide solutions to existing problems with their critical thinking power.

In helping students improve their critical thinking skills, it is necessary to practice HOTS questions. Thus, in the process of lecturing in class on Google Classroom such as during quizzes, mid-semester examinations, or final semester exams, lecturers can provide questions
or exercises that contain HOTS. At the end of the lecture, the lecturer should give a discussion about HOTS questions so that students can gain insight and how to think.

c) Discussion of Problems
A discussion of the problem is an assignment that develops critical thinking competencies. By discussing the problem, students will be more active in solving a problem. Students can also exchange ideas and submit arguments directly in the comments column in Google Classroom.

d) Making Paper
Writing a paper is also included in critical thinking competency assessment. Writing a paper requires critical thinking because writing a paper requires critical thinking in observing a phenomenon or problem rather than finding a solution and pouring it out in the form of a paper. Thus, giving the assignment of making papers can improve the competence of 21st century students in critical thinking.

4) Collaborative
In reviewing the collaboration in physics subject, it can be done by applying the Google Classroom assisted AfL model, there are:

a) Discussion
Discussion is included in the competence of 21st century students, namely collaborative competence. In discussions, students can provide questions, input, and feedback. The feedback provided is a collaborative between students' mindsets so that students can find the best solution or answer from the results of the discussions that are conducted. During the discussion, the lecturer can provide input or alignment of the material if several things need to be clarified or corrected. Thus, student collaboration with other students and lecturers can be applied to online learning based on Google Classroom.

b) Group Assignments in the form of Projects
Group assignments are included in the AfL model to develop collaborative competencies. Through group assignments, group members will work together and collaborate to find solutions to problems given by the lecturer. The form of collecting project assignments can be in the form of writing, pictures, or videos that are arranged in groups by several students and then displayed in the classroom during a discussion at Google Classroom.

c) Group Presentations
The group presentation is an AfL model for developing collaborative competencies. In the presentation, students will collaborate to explain the material assigned by the lecturer. Online presentations can be done by assigning video presentations and uploading them to Google Drive. Then the video link is shared with the class in Google Classroom. When learning begins, students can start displaying their presentation videos, and other students can observe and provide input to students who are performing. At the end of the presentation session, lecturers need to provide reviews and suggestions regarding the appearance and material displayed by students who have made presentations.

4. Conclusion
The Assessment for Learning (AfL) model can provide an overview of the learning process in physics subjects that takes place in class, including in online classes. Through the features provided by Google Classroom, lecturers can provide an assessment model, both when providing material, discussions, and assignments according to the expected competencies. The AfL model forms assisted by Google Classroom in exploring the competencies of 21st century students including communicative, creativity, critical and collaborative thinking, which can be adjusted with the available features. If the four competencies are already owned by students, especially prospective educator students, the AfL model can be applied as an assessment of classroom learning so that students also have 21st century competence.
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