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Problem-Based Learning with Argumentation Feat Flipped Learning (PBLA-FL) as Hyphotetical Model in Covid-19

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Abstract. Covid-19 pandemic made people change many things including in the learning process at school. If before the school pandemic was based on face-to-face (offline), then when the pandemic was forced learning could not be face-to-face, but still had to do learning for the future. Therefore, learning is directed online. This short article aims to explain the application of problem-based learning with argumentation feat flipped learning (PBLA-FL) as a hypothetical model in the middle of Covid-19. By using this learning, it is expected to obtain several diverse benefits from 21st century skills such as critical thinking and problem solving skills, creative thinking and innovation skills, collaboration skills, communication skills and information technology skills. In addition, the PBLA-FL learning model is expected to be able to foster a sense of responsibility, and support government programs in relation to free of learning.

Key words: 21st century skills, covid-19, PBLA-FL

Introduction

Corona Virus Disease 2019 (Covid-19) which has become a pandemic around the world has claimed many lives and also affected many sectors throughout the world. Indonesia also felt the severity of the impact of Covid-19 so that the government through the National Disaster Management Agency set it as a certain state of emergency disaster disease outbreaks due to Covid-19. This emergency condition will certainly affect all areas of life, including education, so it must be responded quickly to ensure the sustainability of education services that are well maintained.

If before the Covid-19 pandemic people were forced to live in fast-paced situations, relentless work, and target chases, then during the Covid-19 pandemic humans were forced to 'stop' from their routine. While the necessities of life, including the education of the next generation must not stop. So it needs to change how to educate future generations. The transition is first, changing the way millions are educated; second, innovative education technologies that can offer much-needed innovation; third, the digital divide is changing the educational strategies and expanding the divide (Tam & El Azar, 2020).

The opinion of Tam and El Azar (2020) above is very logical, considering that currently learning experiences a massive migration due to Covid-19, while accelerating the acceleration of educational transformation. In a very short time the whole world changed conventional face-to-face learning patterns in schools to distance learning (DL) which relied heavily on technology.

The Ministry of Education and Culture in Indonesia responds to the learning policy from home, through online learning and the elimination of the National Examination for this year. Circular of the Ministry of Education and Culture No. 4 of 2020 regarding Implementation of Education in Emergencies Covid-19 contains three policy points related to online learning, first, online / distance learning to provide a meaningful learning experience, without the burden of demands to complete all curriculum achievements to increase in class or graduation. Second, it can be focused on developing life skills, including the Covid-19 pandemic. Third, learning activities and assignments can vary between students, according to their interests and conditions, including considering the gap of access / learning facilities at home.

On this basis, distance learning is carried out online. This was chosen because online learning is the safest way to break the spread of epidemics due to Covid-19, besides social distancing / physical distancing. This strategy is also aimed at reducing the spread rate of Covid-19 in the population. The right of students to obtain education therefore remains a priority without disregarding mental health and safety.

The 2013 curriculum targets the achievement of 21st century skills that integrate knowledge, skills and attitudes, as well as mastery of Information and Communication Technology (ICT). Learning activities are expected to be able to increase skills of critical thnking and problem solving, skills of creativity and innovation, skills of communication, and skills of colaboration. In normal situations, where there is no Covid-19 pandemic situation, pursuing learning targets as targeted in the 2013 curriculum is not easy. There are several prerequisites that must be met, including at least the school has been accredited B, the availability of supporting facilities such as the 2013 curriculum book, and more importantly is the readiness of the principal and teachers to implement the 2013 curriculum.

However, the Covid-19 outbreaks hinder teaching and learning activities which usually take place face to face. Even so, this pandemic is able to accelerate education 4.0. The learning program is implemented remotely by using IT as an alternative to continue incorporating the learning process for future generations. Training during a pandemic season, however, does not mean sending schools home. Professor Gerhad Fortwengel from the Faculty of Applied Science and the Arts, Hanover, Germany and Senior Expert Services (SES) Germany, said that the Covid-19 outbreak was a significant trigger for education. For example, promoting the use of IT in distance learning.

Though distance learning is not easy to implement among students and is easier to do among students (Hoskins, 2013). In addition this learning must be supported by appropriate class design and delivery methods so that online learning can encourage students to reflect on their beliefs; provide a safe environment for discussing various perspectives; guide them to explore, validate and expand new perspectives; and support them develop new roles.

Lembani, et al (2019) access is the key word for optimal online learning. It is said that open distance learning increases opportunities for access to education because of the availability of online material. Nevertheless, different factors such as age, exposure to computers and the Internet, as well as digital inequalities, affect this condition greatly. Facilitating adequate access, for example, is one of the most fundamental things in supporting the smooth open distance learning. After that, the selection of learning models that can be implemented online.

PBLA feat Flipped Learning

One learning model that is hypothetically capable of providing learning solutions at the time of Covid-19 like this is problem-based learning with argumentation or commonly abbreviated as PBLA feat Flipped Learning (PBLA-FL). But before discussing PBLA-FL, it will first be discussed about PBLA.

PBLA

Problem Based Learning with Argumentation (PBLA) is a combination of problem based learning (PBL) models with Toulmin's argumentation pattern (TAP) (Akhdinirwanto, 2019). The syntax of this PBLA model is (1) identification of problem and motivation, (2) organization and investigation, (3) argumentation building, (4) argumentation sessions, and (5) evaluation-reflection.

Problem identification and motivation. In this phase 1 the teacher motivates students 'curiosity, explores students' interests this blends the past with what we can learn, tells the priorities of learning, explains the needs of learning with generates true problems. Organization

and investigation. In this phase 2 the teacher encourages students to gather information, seek explanations and solutions to build skills of critical thinking, provide handouts or worksheets, form groups of 4-5 students, conduct experiments, record data, and analyze data. Argumentation building. In this phase 3 the teacher guides the students to make an argument based on the results of data analysis. Argumentation building is TAP which has an element of claim, data, backing, support, rebuttal, and qualifier. Argumentation session. In this phase 4 the teacher provides the opportunity for students to convey their ideas / answers that have been prepared through TAP, respond to questions, submit evidence to their ideas, evaluate the benefits of exchanging ideas, and share alternative views or ideas. Reflection-evaluation. In this phase 5 the teacher provides the opportunity for students to give students feedback on the entire learning process.

The material learned is essential material that is authentic in the children's home environment. In practice, the problem to initiate learning with PBLA can be done by the teacher by displaying pictures / videos that are contextual in accordance with the conditions of their respective homes. In addition, learning at home must be adjusted to the interests and conditions of each child. So do not be generalized for all directions, must pay attention to all environmental conditions of children, including access to the internet.

Flipped Learning (FL)

One of the online learning models that is currently quite a lot of studies in educational research is flipped learning (FL). The pioneers of flipped learning are Chemistry teachers from Colorado in 2007. Chemistry students in their class often cannot take part in class because they have to take part in competitions, competitions and other similar events. To anticipate this, the two teachers developed videos to record learning, demonstrations, and slide presentations that aired. This recording is then uploaded on youtube so students can download it anytime and anywhere. Then in 2012 a non-profit organization was established under the name of Flipped Learning Network (FLN) which aims to equip educators with knowledge, skills and materials to be able to implement flipped learning (McKnight, 2013).

Herreid (2013) defines flipped learning as an activity commonly done in the classroom such as explaining the material, giving assignments, training and homework assignments to online learning. Chen et al (2014), Chen and Chen, (2015), Lai and Hwang (2016) state that flipped learning is an approach that transforms lectures in the classroom with direct collaborative activities and requires students to view subject matter outside the classroom. Johnson (2013) defines flipped learning as a learning model by minimizing the number of direct instructions but maximizing one-on-one interactions. Gaughan (2014) states that flipped learning is reverse learning, one of which is presented from home online via video so that when in class students are directly involved with the subject matter.

From the description above it can be concluded that flipped learning is an inverse learning model that was originally carried out in class to be done at home, otherwise what was originally done at home became done in class. Activities at home by students such as reading, watching videos through YouTube or WA or other social media that are independent in learning. Medium activities in class are like discussing, exchanging knowledge, solving problems with the help of other students or teachers and completing projects that are challenging. The learning structure is shown in Figure 1.

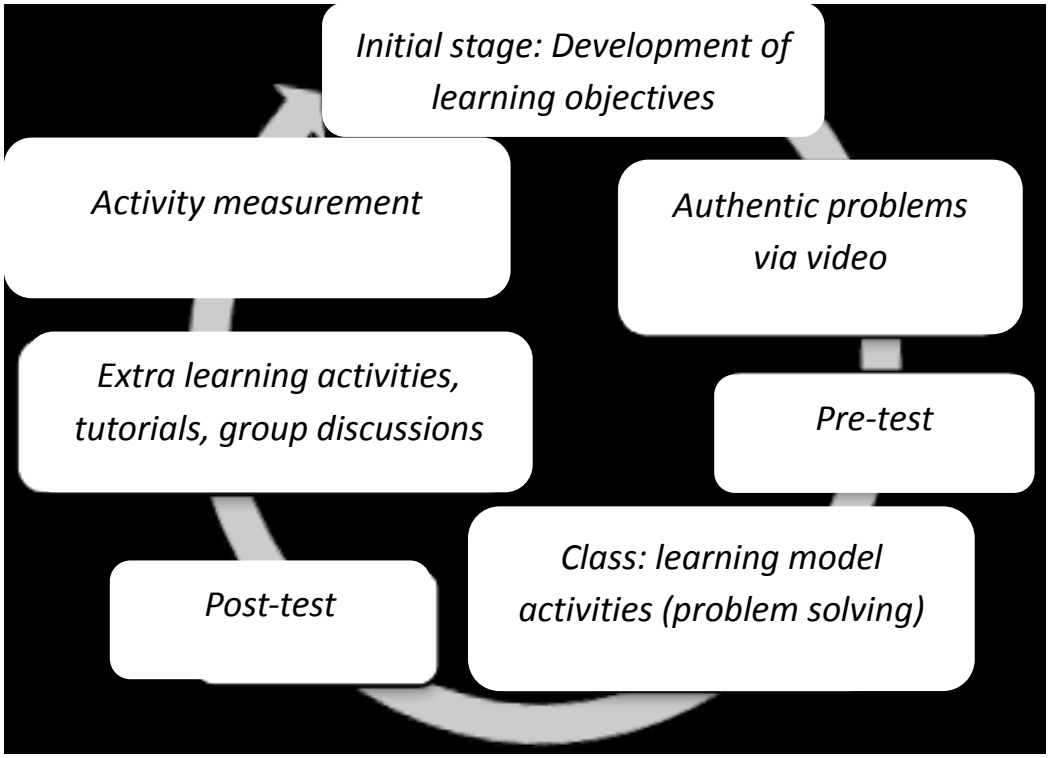

Figure 1. Structure of flipped learning

Kong (2015) states that flipped learning has three stages: preparation for pre-class learning, learning activities in the classroom, and consolidation of post-class learning (Ling Shih & Yen Tsai, 2017). Students engage in independent learning through online learning channels to prepare for Pre-Class study. Students and teachers complete participatory learning events for research tasks in class. Chen et al (2014) (Ling Shih & Yen Tsai, 2017): Estes and Ingram & Tucker (2012) state that the students and teachers review, review and present lesson simulation material. In order to enhance teaching efficiency and learning efficacy, this active learning approach is targeted (Baepler et al, 2014; Demski, 2013; Sparks, 2011). Classroom learning experiences then strengthen and expand the skills of students. During post-class learning consolidation, students review materials to enhance learning outcomes. This allows students to study outside the classroom, to practice what they learned, to collaborate with other students and obtain input from the instructor directly. Redesigning courses after rigorous testing will improve education (Tucker, 2012), help students develop active learning habits, reinforce engagement between the instructor and the student and provide students at different levels with a comfortable learning atmosphere (Bergmann & Sams 2012; Kim et al, 2014).

The subject matter to be addressed has been told in advance or students have been asked to look for problems themselves before researching, solving or addressing them online first. This pattern is referred to as flipped learning. Milman (2012) said, flipped learning is a concept of learning on the basis that what is done in the classroom on conventional learning becomes done at home, while homework on conventional learning is done in the classroom.

The flipped learning method is implemented by minimizing the amount of direct instruction by the teacher to students in teaching material maximizing the time to interact with each other in discussing related problems. Flipped learning emphasizes the use of time inside and outside the classroom so that learning is more quality so that it can improve students' understanding of the material. What distinguishes flipped learning from ordinary learning is (1) Changes in class time use; (2) Changes in the use of time outside the classroom; (3) Conducting activities that are traditionally considered homework in the classroom; (4) Conducting activities that are traditionally considered in the classroom, outside the classroom;

(5) Activities in the classroom emphasize active learning, peer learning and problem solving; (6) Pre and post class activities; and (7) The use of technology, especially video (Abeysekera & Dawson, 2015).

From a brief description of PBLA and FL, the combination of the two becomes PBLA feat FL (PBLA-FL). PBLA-FL learning is a learning model where students are given authentic problems either through observation in the neighborhood or through video shows that provide instructions for solving problems through investigation / investigation which will be discussed at the next meeting.

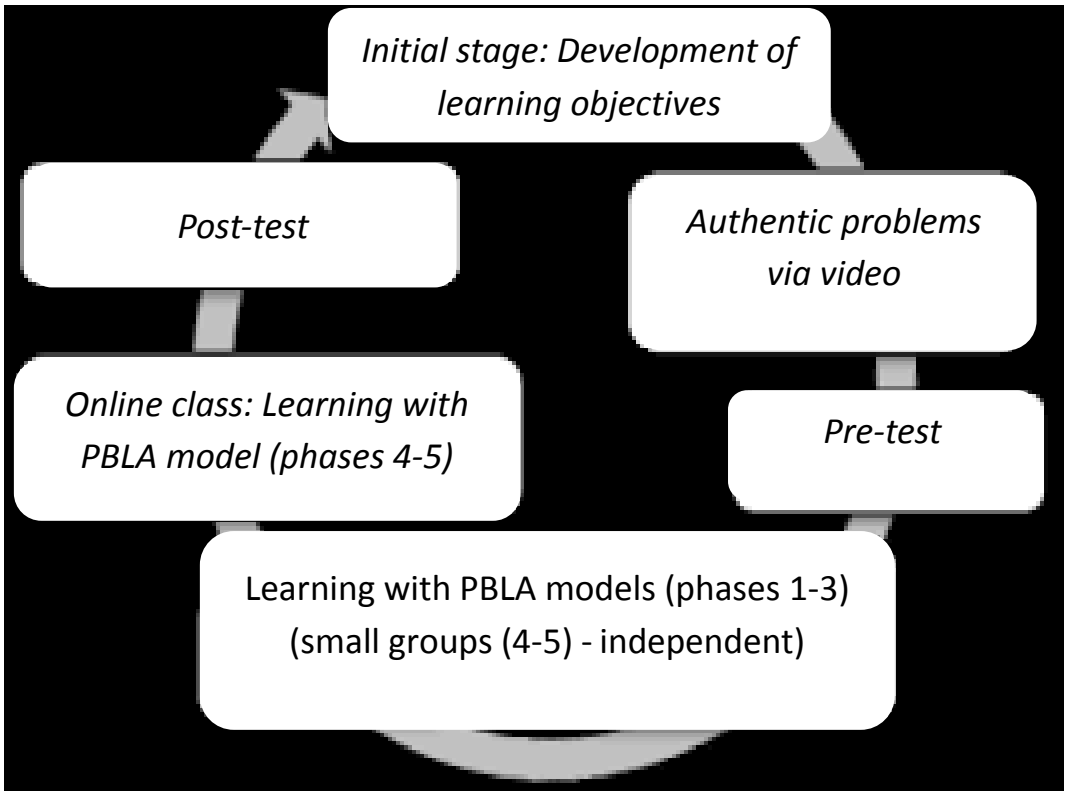

Figure 2. PBLA-FL model structure

PBLA-FL is very much in accordance with the spirit of free of learning. Free of learning is one of the initiatives of the Minister of Education and Culture that wants to create a happy learning atmosphere. The goal of free of learning is that teachers, students, and parents can get a happy atmosphere, free from various pressures. Free of learning is freedom of thought and especially the essence of freedom of thought must be in the teacher first. Without happening in the teacher, it is not possible in the student.

PBLA-FL steps as shown in Figure 2 are: (1) The teacher sets the learning objectives. (2) Students study the topic themselves, usually using video lessons created by the teacher or shared by other educators, the teacher does not have to create a self-learning video or an observation of the surrounding environment. (3) Students work on the pre-test. (4) As a group (4-5 students) try to apply knowledge by solving problems through investigation / investigation that continues to construct arguments. (5) The results of the investigation and preparation of the arguments are then discussed at the next meeting online. Besides that, students also receive feedback from the teacher. (6) Students work on post-tests.

Regarding curriculum completion, the Ministry of Education and Culture said teachers do not need to impose curriculum completion during the Covid-19 pandemic (detik.com), because it will only make students and parents / guardians burdened and depressed. Therefore, teachers are only asked to focus on adjusting learning to students' abilities and see the progress

of students after learning. However, in the future if learning continues to use online, the implementation of the PBLA-FL model will provide space for the development of 21st century skills such as critical thinking skills and problem solving, creativity and innovation skills, collaboration skills, and communication skills and information technology literacy. Critical thinking skills and problem solving skills are obtained through investigation and argumentation. Creativity and ability in creativity are achieved by the conveyance oral or written of new ideas, by openness to new and diverse viewpoints, by being able, conceptually or in action, to communicate innovative ideas; to use concepts or information for new and different circumstances in related subjects, between subjects and in contextual questions; Collaborative skills are learned through group work, sensitivity to various roles and obligations, constructive communication with others, empathy and diverse perspectives. Communications ability is obtained by being able to formulate and execute new ideas orally or in writing, accessible and sensitive to new and different viewpoints, by using concepts and information in new circumstances, both in related issues, among subjects and in contextual issues, through failure and the use of innovative ideas in conceptual and practical terms. The use of electronic tools like computers, mobile telephones, data banks and the Internet would develop information technology skills.

Besides that, PBLA-FL will also be able to grow students' responsibilities by emphasizing indicators of responsibility on participation, cooperation, respect for others, leading, and expressing opinions. Participatory learning and collaboration are obtained through investigations and discussions starting from involvement in the planning, implementation, monitoring and evaluation of programs / activities. Learning to respect others is gained when discussing group work and when discussing the delivery of group work. Leading learning and expressing opinions are obtained when leading group work and when discussing the delivery of group work.

The PBLA-FL model has several advantages and disadvantages. Strengths are: (1) Students can repeat the video so they really understand the material. (2) Students can access the video from anywhere as long as they have sufficient facilities and can even be copied via a flash drive and downloaded. (3) Efficient, because it can be done anywhere and anytime. (4) Support the spirit of freedom of learning because teachers, students, and parents can get a happy atmosphere, free from various pressures. (5) Students become independent, asking the teachers if they encounter difficulties in solving problems. (6) The teacher is more as a mediator, demonstrator, facilitator, motivator, and evaluator.

Moderate weaknesses are: 1) To watch videos, adequate facilities are needed, both computers, laptops and mobile phones. This will make it difficult for students who do not have these facilities. 2) A pretty good internet connection is required to access the video. Especially if the file is large, it will take quite a long time to open or download it. There are quite a lot of students who are catchy so they need more time to access the video. 3) Not all parents / guardians of students understand technology and are able to work on it. 4) Students have strong initial knowledge to ensure they understand the material presented in the video because students are unable to ask questions to their instructors or peers if they watch the video alone. 5) Take a long lesson for investigation (3 sessions).

The following is an example of the application of PBLA-FL through online in junior high school 7th grade semester 2 with the subject of temperature and changes as well as heat and displacement. The first move is to display photographs or videos on genuine issues, such as a husbandwife who is boiling two boat vessels with different water volumes, whereby vessel A water volume is less than vessel B volume. After some time , the water has boiled in vessel A while the water boils in vessel B. The second stage is to perform an enquiry / investigation of the problems of a teacher in groups (4-5 students). Work takes place through collecting problems, theories, variables, operational descriptions of variables, instruments and materials,

experimental design, data collection, data interpretation, and arguments compilation. The study was carried out in groups during the pandemic season of the Covid-19 pandeme through government safety procedures such as hand washing, elimination, wearing masks and wearing a face shield, if necessary. The third stage was followed up by a panel discussion between students and the teacher on the results of the study and observations on the heat learning and changes in temperature.

Conclusion

From the above measurements it can be concluded that the adoption of the PBLA-FL is expected to be able to improve learning outcomes both cognitive, skill and attitude. Cognitically the PBLA-FL is able to increase the effectiveness of learning, each group learns to design an inquiry, prepare arguments, and prepare presentations for class discussion. Students learn to solve problems and present results verbally. In terms of skills, the PBLA-FL can develop 21st century skills such as crisis and problem solving skills, creative and innovation skills, collaboration and communication, and technological literacy. From the affective side, the PBLA-FL model can develop responsibilities with indicators of participation, cooperation, respect for others, leading, and expressing opinions.

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