YouTube for Project Based Learning Publications as e-learning Solutions in the Pandemic Period: Literature Review

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ABSTRACT
Today, in pandemic situation, the learning system in schools is now being diverted through Distance Learning (PJJ). The challenge that must be resolved by educators are to present a PJJ concept that is in the line with the free learning policy. The success of education today is largely determined by the approach used, especially for chemistry subjects that have high urgency at the SMA/MA level. One approach that is considered suitable to be applied is the heutagogy approach, integrated with using social media in learning. YouTube can be used as publication media in Project Based Learning (PjBL). The form of research that used is library research and descriptive analysis methods as technique analysis. This application helps increase creativity because it starts with fundamental questions that encourage students’ curiosity. This learning concept can still be used as an alternative learning that can increase creativity when this pandemic over.

INTRODUCTION
Technological advancements in the era of the industrial revolution 4.0 present considerable challenges for Indonesia. One area that has not escaped the development of the industrial revolution 4.0 is the field of education. According to Syamsuar and Reflianto (2018), if you want to compete in this digital age, Indonesia needs to immediately improve the capabilities and skills of human resources through education that can form creative, innovative and competitive generations.

Based on PISA research conducted in 2018 from 80 countries evaluated, successively the average value of Indonesian students’ achievements in science, reading, and mathematics ranked 70, 75, and 74. Of course these results are very alarming (OECD, 2019). These results indicate that Indonesia has a pretty heavy job if PISA is still used as a standard for the government for education development. Therefore, to overcome this problem, especially
Indonesian science needs to prepare young people through education that can master 21st century skills.

According to Prihadi (2017), 21st century learning is demanded based on technology to balance the demands of the era of the industrial revolution 4.0 with the aim that students are accustomed to 21st century life skills. The skills demanded in 21st century learning are 4C (Critical Thinking, Community, Collaboration, Creativity). Therefore, students not only have the ability to memorize, but also critical thinking skills, creative thinking skills, and the ability to solve problems in daily life.

Chemistry is one of the subjects that has a high degree of urgency. Chemistry is also one of the subjects of specialization in the 2013 curriculum which must be taken in the Department of Mathematics and Natural Sciences (Rahmasari, et al., 2020). Chemistry subject is one of the many subjects that contain abstract material. Chemistry as part of science or science is obtained and developed based on experiments to find answers to the questions of what, why, and how about natural phenomena, especially those relating to the composition, structure, properties, transformation, dynamics and energetics of substances (Kemendikbud, 2016).

Chemistry subjects need to be taught for a more specific purpose which is to equip students the knowledge, understanding and a number of abilities required to enter higher education and develop science and technology. Chemistry learning can be carried out well with the presence of interesting learning interactions between teachers and students. Success in achieving learning objectives is strongly influenced by several factors. For example, teaching and learning strategies, methods and approaches to learning, as well as learning resources used both books, modules, worksheets, media, and so forth.

But lately, the world is being stirred up by a pandemic namely the coronavirus novel (CoVid-19) is no exception with Indonesia, which certainly has an impact on the world of education. The learning system in schools is now diverted through an online or online system known as Distance Learning (PJJ). This certainly provides a significant challenge for educators in providing learning that is conducive, interesting and easily understood by students.

The challenges that must be resolved by educators in providing conducive learning during this pandemic are presenting a PJJ concept that is in line with the free learning policy. Freedom of learning is a policy of freedom of thought implemented by the Minister of Education and Culture of the Republic of Indonesia, Nadiem Makarim to present learning that shapes the character of students. The concept of free learning is an effort to change the score oriented student paradigm, so that a conducive learning atmosphere is created without being burdened with the achievement of certain scores.

The success of education during this pandemic is largely determined by the approach that used by educators or teachers in delivering learning material to students. One approach that is considered very suitable to be applied is the heutagogy approach. Heutagogy (Self-Determined Learning) applies a holistic approach to develop students' abilities, by learning as an active and proactive process, and students serve as the main agents in their own learning that occur as a result of personal experience (Hiryanto, 2017).

The use of social media is a PJJ solution that can optimize the use of devices by students. According to Kamhar and Lestari (2019), YouTube is one of the social media that can be used as a learning medium that has extraordinary potential to improve the quality of
PJII. In addition, Saputra and Fatimah (2018) said that YouTube can provide freedom for students as well as teachers in expressing and collaborating in the world of education as well as providing experiences that can enhance their capabilities.

The use of YouTube for learning can be accompanied by a project-based learning model (PjBL). Project-based learning models can train the level of critical thinking skills, creative thinking skills, and the ability to solve problems in everyday life. In addition, Ruski and Yusrianto (2020) mentioned that using YouTube as a learning medium can help students to form polite language characters, express opinions well, improve analytical skills and increase motivation in the learning process. PjBL with the help of social media especially YouTube is one of the right solutions to create conducive and interesting learning in a pandemic, can also increase students' motivation towards chemistry, produce creative, innovative and competitive outputs, and be able to keep up with the times.

METHODOLOGY

The form of research used is library research, that is research through collecting data or scientific papers aimed at research objects or collection of data that are library, or studies to solve a problem that is basically based on critical assessment and depth of relevant library materials. Harahap (2014) states that the mention of library research is caused by data or materials used in research originating from libraries, whether in the form of books, encyclopedias, journals, dictionaries, magazines, documents, and so forth. Framework of thinking can see at Figure 1.

RESULT AND DISCUSSION

Design Distance Learning with a Heutagogy Approach. Distance learning is a government policy towards the implementation of learning in the pandemic until it enters the era of new normal life. Based on the circular of the Minister of Education and Culture No. 4 of 2020, one of the criteria for distance learning is to present a variety of learning activities taking into account the gap in learning facilities from home experienced by students.

Presenting more interactive distance learning is a challenge that must be solved by innovative educators. Learning approach is a solution that can be presented in distance
learning. The heutagogy or self-determining learning approach has specific characteristics that are considered to be very supportive of the implementation of distance learning including technology (Lisa and Blaschke, 2012).

Presenting more interactive learning outside the classroom using technology is one of the principles of the heutagogy approach. Boor and Grunwald (2011) reports that the use of technology in a more transformative way is one of the efforts to extend learning outside the classroom. Specifically the principle of heutagogy supports the implementation of distance learning independently.

This thinking is based on the facts in the field that students are millennials who are technology literate, especially in the use of devices. It is unfortunate if distance learning is only limited to assignments without utilizing the online platform to the fullest. Integration between distance learning, heutagogy and millennial generation will present a more interactive alternative learning.

Project Based Learning in Chemistry Learning. Chemistry is one part of science, this learning concept was developed based on experiments to find answers to problems related to substance structure, content, properties, dynamics and kinetics of substances (Kemendikbud, 2016). Starting from the opinion of Purtadi and Sari (2010) that learning chemistry can not only be interpreted as a way to provide students with understanding of the concept but how the understanding of the concept is used in the problem solving process that will be encountered in the environment. Therefore, Project Based Learning is considered as a learning model that can overcome these problems, namely by presenting learning that focuses students on project development and performance.

YouTube for Project Based Learning Publications. Interactive learning can be obtained from various things, one of which is the use of social media. Blaschke, et al., (2010) explain that students who actively use social media will have a better cognitive level than passive users. Because the use of social media can demand a variety of creativity such as content that is produced independently as a form of self-determining learning.

The development of information and communication technology provides many updates in their fields. Especially to present a distance learning based on the principle of heutagogy can be used social media in the implementation of learning. The use of social media in Project Based Learning has previously been carried out such as Facebook, Instagram and YouTube in several subjects.

The use of YouTube as a publication in chemistry is considered as a new innovation. Utilization of social media is based on the results of the We Are Social survey (2019) that social media users in Indonesia reach 150 million users. Youtube offers features that really help various aspects of the user's needs, 20 hours the duration of the video uploaded every minute which reaches 6 billion views every day (Fatty, et al., 2016). DeCesare (2014) provides an assessment that Youtube is very potential to be used for online videos. This can be seen from the category of unlimited number of viewers, the length of video uploaded, and the tools presented are very diverse also includes "Streaming video resources for teaching, learning, and research".

Reasons for choosing YouTube as a Project Based Learning publication include: (1) Can overcome the quota problem that has been a difficulty for students during the implementation of distance learning (PJII), the video uploaded to Youtube can be set to a resolution that is by choice: 360p, 720p and 1020p, (2) Uploaded videos can be seen
repeatedly without spending a lot of quota because the download feature on Youtube can help overcome this. Learners can watch other groups' videos repeatedly with one download. This can help facilitate students' understanding when opening videos without fear of running out of quota. (3) YouTube channel created can be continued for learning content with different sections so that students can be encouraged to always learn.

The PjBL Model with YouTube Publications in Chemistry Subjects. Related to the pandemic that is sweeping the world and Indonesia in particular, PJJ is considered as one of the learning solutions. This learning implementation can use the Google Meet platform and the like. How to implement the Project Based Learning learning model with YouTube publications can follow the following learning flashes: (1) Start with the essential question, this stage begins with questions that can open students' minds related to the problem that must be solved. Students are given problems through displaying pictures or videos. This stage helps the ability to think smoothly (fluency) and flexible (flexibility) when students give their ideas, (2) Make a plan to do, students are divided into groups consisting of 4-5 people. Each group can discuss by making use of the WA group while staying in the forum on Google Meet. Project design is an important step in PjBL because it makes students have a picture of the implementation of activities to be carried out. The ability to think creatively in the form of elaboration can develop when students make project designs. The ability of original thinking is seen when students think of solutions or answers to problems they must solve, (3) Create a list of programs, students make and determine the implementation schedule that consists of the time of implementation of the activity, place and division of tasks for each group member, (4) Observe a student's teamwork and the progress of the project, at this stage the teacher monitors the project work activities. The activities of each group can practice the ability to think fluently by expressing personal ideas. This stage requires supervision tools for teachers so that the level of supervision of project work is more optimal. Monitoring activities using YouTube social media. Video documentation from the beginning of project work to completion can be used for teacher supervision aids. In addition, the demand to upload videos on YouTube will help increase students' creativity in creating video editing, (5) Assess the outcome, students upload videos of project work on YouTube and provide video links in groups to the teacher so the teacher can watch first before conducting an evaluation, (6) Evaluate the experience, the teacher gives an evaluation in the form of suggestions or criticism as a reflection of the results of the project that has been done. Submitting the evaluation can be done by holding a meeting again on Google Meet or in the form of a written evaluation. This stage is the stage to find effective and efficient solutions to the initial problem. Reporting steps in the form of project work videos on YouTube: (1) Learners create a YouTube account in groups using a google account, (2) Students document all activities during project work, videos are edited according to the creativity of each group, (3) Students upload videos on the YouTube channel of each group, (4) Students send the uploaded video link to educators so they can get an evaluation.

CONCLUSION

Project based learning (PjBL) with the help of YouTube publications can increase the creativity of students in presenting videos as project work documentation. In addition, the quota problem experienced by students when the implementation of distance learning can be overcome because the video on YouTube can be set to a resolution so that it further saves quota expenditure. The concept of PjBL with YouTube publications can not only be applied during the pandemic but can also be used as an alternative learning that can increase
creativity when this pandemic over. For the future, this article is expected to be reference for experimental research in the form of the application of learning model based on project learning with YouTube as a media publication.

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