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SETS AS A VISION AND APPROACH TO LEARNING THROUGH FIELD STUDY AND SKYPE

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Abstract

The goal of Learning Basic Chemistry 1 is to help students comprehend the notion of chemistry and how it relates to circumstances, daily life, and technology. It adopts the vision and methodology of SETS. With this effort, students gain literacy in science, environment, technology, and society needed in the present and the future. In blended learning, time and location restrictions during field lectures are removed for both students and lecturers by using Skype. The development research is produced in the form of YouTube channels and vlogs, which are the current features of digital learning. Increasing students' comprehension of chemistry in SETS by exposing them to it as a science and allowing them to engage with it directly is another significant benefit of SETS learning.

Keywords*: Blended Learning, Field Study, Skype, SETS*

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INTRODUCTION

The goal of education in the new paradigm is not only to alter student behavior but also to develop professional character and mental attitudes that are geared toward a global perspective (Fink et al., 2018). Studying "learning how to learn" rather than just the subject's content is the main focus. (Kusumaningrum et al., 2021). Students are challenged to master problem-solving skills since they are directly involved in situations as stakeholders. Scientific and technical advancements are directly related to social and environmental challenges. 2016 (Skinner, 2016). Applying appropriate educational strategies, such as Education with vision and approach SETS (Science, Environment, Technology, Society), is required to achieve this (Widistuti and Purnawijaya, 2021).

The SETS vision essentially entails a technique of seeing ahead to help us realize that everything we encounter in our life involves elements of science, environment, technology, and society as a whole and interacts with one another (Binadja, 2005). Science, environment, technology, and society are the four components of SETS, an integrated learning approach.

Understanding chemical ideas, their connections, and how to use them to solve issues in daily life and technology are the main objectives of basic chemistry education, which is SETS-oriented and approach-oriented (Munzil et al., 2020); According to Ultay and Calik (2007), the curriculum for Basic Chemistry 1 should be relevant to daily life and foster interaction between students, society, and technology so that the vision and SETS approach can be used to teach students about science, technology, and the environment (Sciencetific, Technology, and Environment Literacy) (Zoller, 2013; Morrison, 2018). A human can only live and operate under certain conditions, including having the ability to make wise judgments and being in harmony with the environment (Galib, 2009).

In the field of education, time and place are no longer constraints in paradigm shifts involving learning resources. Students can speak with the instructor about the assignments at any time, and they can use various technologies to communicate with other group members (Henderson et al., 2017). Skype is a chat and video call program that permits online lectures while students are working on field projects and facilitates interaction between students and lecturers as well as between groups of students. Based on the exposure, blended learning innovations using Skype, Field Schools, and the SETS application in the material are implemented. This investigation is focused on subject, Basic Chemistry 1.

RESEARCH METHODS

The following development steps were taken: the creation of the major teaching materials, supportive resources, and open materials for the first basic chemistry session. The lecturer in this instance uses Edmodo as the LMS, where all of the course materials are posted. Developing the Skype and Edmodo apps' student interaction features Blended learning is used to deliver instruction; it consists of face-to-face meetings at the beginning, middle, and end of lectures (for impact, accompaniment, and analysis), as well as 60% field learning and active Skype interaction between lecturers and students as well as between students themselves. The

activities can provide the same level of interaction and collaboration between students and lecturers as seen during the lectures using Edmodo and the Skype app.

RESEARCH RESULTS AND DISCUSSION

This section will present the outcomes of innovation development learning for each stage that resulted in a useful innovation learning product. Online and offline learning both exist. Offline instruction using in-person and outdoor lectures. Since the teacher cannot access the UM eLearning, this assignment is being completed online through the MOOC Edmodo. Through Skype conversations between teachers and students, particularly during field lectures, online learning is synchronized.

Results of the Initial Test: Each group will hold a field study once a week as part of the learning innovation's initial deployment strategy. That is, while the other group and the lecturers are in the classroom, one group will visit the location of the home industry once every week. In order for groups not working in the industry to learn the same things as the group leading the field lecture, communication between groups holding field lectures with teachers and groups present in the class using Skype and projectors is encouraged. Groups working in the industry can then get input from lecturers and other friends to learn more about the location of the industry.

Revisions of Product: The initial plan on points a seems to make learning impossible. This is due to the fact that there is not enough time for six groups; hence, the field study must last at least six weeks. Assuming that students have no other obligations on Saturdays so that classes can be held there, once a week can be done because it can only be done on a Saturday class day.

Result of the second Test: On the same day as the class, it was held. Each group makes a simultaneous visit to the associated domestic industry and connects with the professor via the Skype video conference app. This is done so that the lecturer can guide additional investigation at the field college location and that the students can provide input from the docent.

Product improvement: The original intention of the weekly field sessions was for each group to communicate with the other groups in the class via Skype to impart the knowledge they had learned; however, this proved to be difficult. Sharing takes place in the following meeting after the field lecture in order to achieve the same objective. Each group reports on the SETS (Science, Environment, Technology, and Society) elements present in the sector while presenting industrial items, images, and films taken in the field in front of the class.

Figure 1 illustrates each stage of learning Basic Chemistry 1 in greater detail. The study started with a contract explanation and SETS learning. The planning then went on to incorporate the location and timing of the field research. Using Skype as a sinchronous technology tool, students communicate and engage with the lecturers during the field study. The poster was created by students to present the findings of the field study. More information is provided in a vlog that was released on the Pendidikan IPA YouTube's channel. Students and instructors examine and evaluate the field study for each of the outcomes.

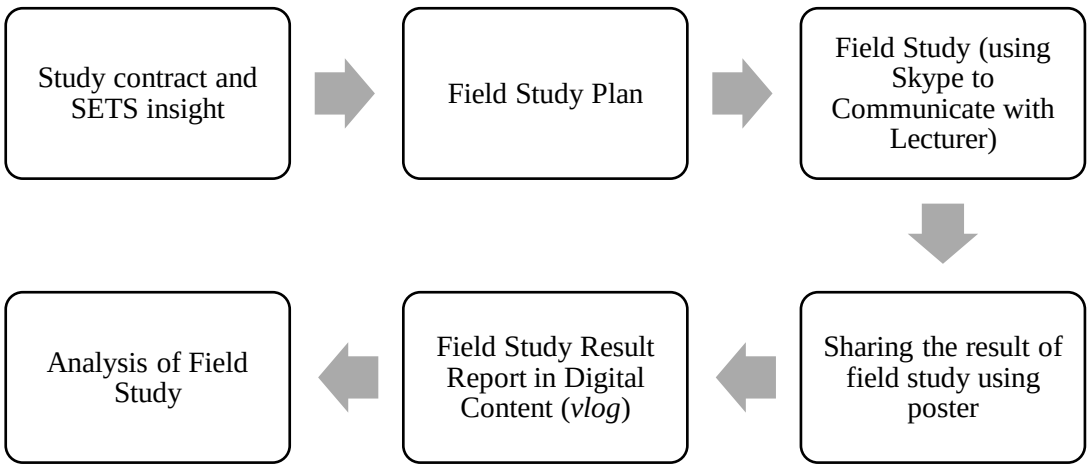

Figure 1. Research Stage

CONCLUSION AND RECOMMENDATION

A. Conclusion

Learning in Basic Chemistry 1 using the SETS approach works effectively since every topic of "Science" is connected to "Environment," "Technology," and "Society". It is simple for students and lecturers to use blended learning with Skype and Edmodo technology in the classroom and out in the field. Because they are exposed to chemistry as a science and interact with the technology used in their home industries as well as the surrounding environment and community, the field lectures in SETS help students understand chemistry better.

B. Recommendation

Advanced research on the creation of SETS learning models that integrate Basic Chemistry 1 ideas with sustainability principles is the advise provided by this study. Also, in future research, efficient teaching techniques can be observed to help students comprehend the connection between chemistry and important environmental and societal issues.

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