Students’ perspective: instructional design and technology that should be done in vocational teacher education

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Abstract. The development of science and technology, the industrial revolution 4.0, the 21st century required skills, the ASEAN Economic Community, and the characteristic of 21st-century students bring significant effects for educational programs for preparing appropriate skills for students to face those challenges. Instructional design that should be done in the teaching and learning processes in the classroom is one of the crucial things that have high impacts on students’ success in mastering subject matter. This study aims to describe important things of instructional design and technology that students want to be implemented in their learning activities. This study is a descriptive survey research with exploratory sequential mixed-methods data analysis. The data was collected by conducting focus group discussions (FGD) and questionnaires with first-year students in 2 classes of automotive vocational teacher education in Yogyakarta State University. The results of this study are (1) having a structured program in an online platform with specific preferred learning materials before classroom activities for preparing needed background knowledge, (2) having discussions for exercising high order thinking skills in classroom activities, and (3) having checking understanding and discussion forum program in an online platform.

1. Introduction

Today’s students need professional today’s teachers or educators that have today’s required teaching skills. Professional educators are needed in the demand of the 21st century to teach today's learners [1]. Firstly, they should respond to several existed challenges by equipping their students with skills that will be useful in the work and live [2]. Besides, they also need to implement the 21st-century education system that concern to consider what materials that students need to learn [3]. Ultimately, they need to implement the system of education 4.0 as an answer to today’s industrial revolution challenge [4]. Those educational systems occur because of the need of making sure that the students could succeed in the competitive world [3].

On the other hand, as students, they should learn needed 21st-century skills apart from their academic competencies to overcome the challenges of the 21st century [5]. They need to learn communication, collaboration, and problem-solving skills with people around the world [6]. Besides, they also have to master higher-order thinking skills such as complex thinking, communication skills, and deeper learning [6]. Those skills are the key to be qualified people in the 21st-century era and professional educators have an important role in this issue to help students learn the required skills.

Teachers as educators have an important role in student’s achievements to make them successful in mastering several required skills [7]–[12]. Succeeding for the improvement of students’ achievement can be achieved by improving the quality of the teachers and school [13]. Students’ achievements cannot
be separated from the student's experiences. The teachers have an important role to improve the learner's experiences during teaching and learning processes [14]. Therefore, improving the quality of teachers is crucial to be done to overcome today’s challenges.

A kind of education that concern to prepare the students with skills that students need to do a job for avoiding unemployment phenomena is vocational education [15]. To make this purpose achieved, vocational education needs qualified vocational teachers that could help students master today’s required skills. Automotive vocational expertise is the highest number of vocational school expertise in Indonesia which is 35.59% [16]. This means by improving the vocational teacher candidates of that expertise will have high and large impacts in Indonesia. The unique characteristic of vocational teachers is that they have to have work experiences so that they could give sufficient knowledge and skills to their students and ultimately they could compete in the labor market [17]. Besides, they need to stay updated with the development of science and technology related to their field [18]. By having those competencies, vocational teachers could give a huge impact on the success of their students.

Vocational teacher candidates in Indonesia are produced by vocational teacher education institutions in higher education level. Those institutions should concern to prepare vocational training so that they could produce qualified vocational teachers with high quality of vocational competencies [19]. Besides, they should also accommodate the learning style of the students as vocational teacher candidates and the lecturers should develop optimally interest, talent, ability, and potential of learners [20]. Therefore, conducting a study related to the characteristics and interests of the students is pivotal to be done in the earlier of their study. This paper shows the results of students’ perspectives related to the instructional design and technology that they want to be done in their learning activities.

2. Methods

This study is survey research with the first-year students of the automotive vocational teacher education department in Yogyakarta State University as respondents. Focus Group Discussion (FGD) and Questionnaire were conducted in this study to gather students’ perspectives of instructional design and technology that they want to be done in their learning activities. FGD was conducted to explore what kind of instructional design while the Questionnaire was used to investigate the learning materials that should be facilitated in their learning activities to deal with their learning style. The data were analysed qualitatively and quantitatively with exploratory sequential mixed-methods data analysis.

3. Result and Discussion

Based on the result of FGD with first-year automotive vocational teacher education students, there were three general preferred activities with the technology that students want in their learning activities in every topic, which are pre-classroom, classroom, and post-classroom activities.

3.1. Preferred pre-Classroom Activities

Pre-classroom activities are intended for giving needed background and fundamental knowledge for students related to the topic that they will discuss in their classroom activities. Students said, “we need a systematic material for study before joining to the class activities”. These activities are packaged in an online platform and consist of several preferred learning materials so that students could access it whenever and wherever they want [21]. Below is the result of the questionnaire that students have answered related to the learning materials in pre-classroom activities. This questionnaire was conducted because of the importance of accommodating all of the learning styles of students during learning activities. This is because every student has their preferred learning materials that might make it easier for them to understand the topic [22]. Figure 1 shows Preferred Learning Materials for pre-Classroom Activities.
There are several preferred learning materials in these activities in every topic that more than half of students want to be conducted which are a summary article from the lecturer, a video file from the lecturer, and a presentation file with an explanation voice from the lecturer. Those three preferred learning materials will be as educational or instructional media for students to learn the needed background knowledge before joining to the classroom activities. The educational media could help students to understand the learning materials [23]–[26]. Therefore, by providing those preferred materials, students could acquire needed background knowledge before entering the classroom activities.

A summary article from the lecturer should consist of several important points from the topics that are discussed for students to be mastered before conducting classroom activities. Those points are followed by an explanation that makes students easy to understand the meaning of those points. This file is expected to be a guide to the students to focus on needed topics that they have to master. This file should be followed by several explanation files like video and presentation files. By having those files, all of the learning styles of students could be accommodated because of that importance to achieve the instructional goals [27]–[31].

A video file from the lecturer means the lecturers should make a video whether they take it by themselves or they create a video from several videos that are related to the topics. This video should be simple, short enough, and understandable. This is because the students do not want to see a long-duration video that makes them feel bored and difficult to understand the content of the video. The 5–10 minutes video is the most optimal video duration [32]. This video will be an educational media to help students understanding the materials easily [32]–[36].

A presentation file with an explanation voice from the lecturer means the lecturers should make a presentation file with sound recorded in every slide to give an explanation related to the content of that slide. It means when the students access this file, they could get sufficient explanation sound from their lecturers related to the topics that being discussed so that they feel like in the classroom lectures in traditional form. This has an objective to conclude and give sufficient oral explanation related to the materials as background knowledge. After accessing this file, students are expected to have mastered all of the materials as needed background knowledge. This is very important to make success in classroom activities that students have to implement high order thinking skills [37]–[40].
3.2. Classroom Activities

Classroom activities are expected as exercise programs to enhance high order thinking skills because low order skills are expected to be mastered by students in pre-classroom activities by studying several provided materials. This is very crucial because the high order thinking skills of Vocational High School (VHS) is low [41]. Besides, these activities are expected to train the students to improve their teaching skills by having peer-teaching activities [42]. To achieve these goals, several activities like real problem-based learning, conducting discussions, and also having experiments so find something new should be done in classroom activities [43]. Based on the result of FGD with the students, they want to have peer learning and teaching activities and problem-solving classroom discussion activities related to the topic. Students said, “we need to implement the teaching skills during classroom activities and also need to solve the problem related to the classroom topic”. The lecturers should prepare several problems related to the topic that will be discussed by students. Besides, they also need to provide a discussion guidance sheet that could guide the students when they conduct a classroom discussion. Also, the lecturers should prepare the final explanation with structured stages so that the students will be easy to understand to the discussed topic and the whole learning materials. This activity should use educational technology that makes students easy to understand the materials and enhance the students’ motivation during classroom activities.

The sequence of steps is peer teaching or learning activities followed by problem-solving discussion. The objective of the first activity is to make sure that all of the students have already understood the required background knowledge before conducting classroom discussions. The students should teach each other about the required background knowledge. On the other hand, the second activity is expected to enhance the students’ high order thinking skills by discussing with advance topics.

3.3. Post-Classroom Activities

Based on the FGD, students want to have a closing activity beyond the classroom activity for making sure the achievement of their study. Students said, “in order to make us confident about the materials, we need to have a closing activity for formative assessment after joining classroom activities to make sure we understand about the materials”. This activity aims to conclude the materials being delivered both in pre-classroom and classroom activities and also to evaluate the achievement of student learning outcomes. The form of the first aim could be an online forum and the second one could be an online test. This activity is conducted in an online platform that lecturers should build integrated with the online platform for pre-classroom activities.

4. Conclusion

There are three activities as instructional design for vocational teacher education programs which are pre-classroom, classroom, and post-classroom activities. In the first activities, three learning materials should be provided by lecturers originally in an online platform technology which are a summary article, video, and presentation files. In the second activity, there are two main activities which are peer-learning or teaching and classroom discussion. In these activities, lecturers should use sufficient technology to enhance the understanding of the materials with high order thinking skills and improve the students’ motivation. The last one, there are two main activities which are an online forum and an online assessment.

5. References

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