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Using instructional media based on technology in west sumatera: "what are the problems faced by teachers in secondary high school?"

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Abstract. Instructional media is a tool used by teachers to deliver learning material to all students. This tool plays an important role in efforts to improve learning outcomes, as a whole. The development of instructional media in the last few years is not only focused on printed media, but also media based on technology, internet and information. However, based on our observations, it is known that the use of instructional media that suits the need of students and the development of the times is still very low. Meanwhile, teachers are demanded by the government to improve the quality of education at the elementary to high level. This study presents fact about teachers in several high schools in West Sumatera, who have problems to create, to use and to empowerment of instructional media. The research method are interview and survey. The purpose of the study was to describe qualitatively the main problem of the teacher which was a barrier for them. The teacher who is the object of research works in schools in West Sumatera Province. The selection of schools was carried out by purposive sampling technique. The conclusion of the study is about the dominant factor that is become a problem for the teacher.

1. Introduction

The success of the learning process should be based on many things, including the domain of knowledge and conceptual theory[1]. Another factor is the use of instructional media. Instructional media is a tool used by the teacher to convey the purpose and content of learning, to students. In essence, the learning process is the process of communication[2]. Even in developing countries, for example Egypt, the use of social media as a learning aid provides good positive value to the learning process itself[3]. With instructional media, it will make it easier for teachers to improve students' understanding of the material, which is taught. So that learning outcomes will be better. Even mobile technology is growing rapidly at this time, entering every age level[4].

With the previous explanation, it is clear to us that instructional media plays an important role in producing quality learning outcomes. But in many real schools, instructional media is not a major concern. Instructional media seems to only be a complement to the teaching and learning process. Even the use of instructional media as a teaching culture is influenced by management strategies[5], for example the use of laptops in the learning process in school forces school management to adjust to these conditions[6]. For most teachers, the main purpose of the teaching and learning process is how students get high grades, without interpreting the values of the learning process that students go

through. Likewise, for students, high grades are success, but students do not understand the true nature of learning. For school management, the focus of school development tends to be on facilities and infrastructure, or other things that will contribute well to schools from outside the school community. Very few problems about instructional media sticking to the surface. This is certainly not good. School management is controlled by school leaders (principals). The principal should have the will to improve himself, improve leadership skills and renew vision[7].

The government has socialized to teachers and school management to always try to improve the quality of learning outcomes, namely graduates who can compete for higher education and employment. In essence, the quality of learning must be better by using technology in learning. For example, the use of video cases, can improve the ability of teacher pedagogy and understanding of student material[8]. But on the contrary, teachers do not have the time to develop the quality of learning, even for the development of the quality of their selves. The failure of teachers to use instructional media based on technology is caused by teachers' concerns, because they are afraid of failure, lack of time, and unpreparedness to integrate technology into the learning process[9][10]. This has become a concern in several countries, that government policy on education will be a topic of debate with the demands of teacher professionalism[11]. Professional teachers at a certain age get motivation from the incentives they receive[12], but they still have low motivation to improve the quality of learning. This is the problem. The making of instructional media, the use of instructional media, and the treatment, is not done by most teachers at the secondary school level. The teacher uses products developed by other people (third parties) to deliver material in class. Is there a due diligence, not yet known. We also observed that many torso and other model models in the laboratory were dusty and never used. Eventually the object will be damaged and can no longer be used.

There are so many reasons for teachers to be unproductive in making instructional media, utilizing instructional media and even treatment. One of them as written in the previous paragraph, the teacher does not have enough time for it. For this reason, we have conducted a study of what factors experienced by teachers as a barrier to using instructional media, including the use of technology as instructional media. We observed school teachers in West Sumatera Province.

The aim of our research is to provide information to those responsible for improving the quality of education, especially in the aspect of developing instructional media. The benefits are not only felt by the teacher, but also felt by students. This research is important to be carried out and disseminated because it contributes accurate information.

2. Method
The method we use in this study is interviews and surveys. We visited the school that was the source of the data and interviewed the Biology teacher at the school. Not all schools in West Sumatera were observed, we used sampling. The total number of schools that have been observed are 35 schools, consisting of junior and senior high schools. All data obtained is primary data, and tabulated into point diagrams.
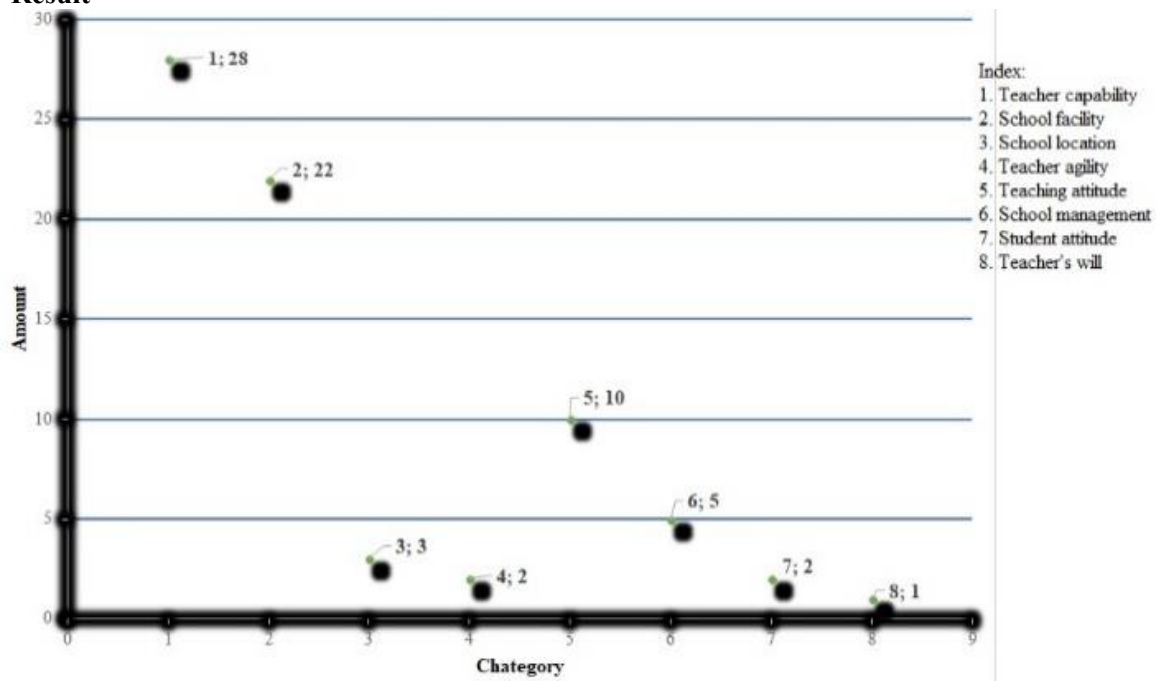
3. Result

Figure 1. Distribution of the result

4. Discussion

Figure 1. shows the results of our findings in 35 secondary schools in West Sumatera Province. In the diagram, the first number is the description for the index to the right of the diagram. While the second number is the number of schools whose problems are caused by these categories. If added up, the second number will be more than the number of schools, because each school has more than one cause of the problem. The problem described in this paper is that teachers do not make, do not use, and do not treat instructional media optimally. While the causes of the problems described in this paper are 8 factors, namely: teacher ability, school facilities, school location, teacher age, teacher teaching habits, school management, student attitudes, and teacher's willingness. The most factor, which is the reason, is the teacher's ability, while the least factor is the teacher's willingness.

The first cause of the problem is the teacher's ability. The ability of teachers is very important in the making, use and care of instructional media. Based on our findings, this is the biggest factor causing the problem. The teacher's abilities include being unable to use computers, not being able to use the internet in searching for information, not being able to operate the projector, not being able to create media, and not being able to innovate instructional media. Actually, the first cause of the problem is related to other causes of problems (eg teacher age, school facilities and teacher teaching style), but does not affect directly. So, we classify this problem due to the first causative factor. The use of technology in learning should pay attention to the level of difficulty of its use and the level of the teacher's ability to make media with these technologies[13].

School management regulates the overall functions of each part of the school, including for teacher self-development. The absence of school attention to provide trainings to teachers led to a decrease in teacher attention to improve the quality of learning. Training training that is inducing teachers will make a teacher more challenged to develop their competencies[14]. In Malaysia, teachers feel it is crucial to attend trainings related to technological development and its relationship with education[15]. However, not all teachers are like this. There are still many teachers who are able to improve their individual quality without facilities from the school. But what concerns us is the teacher who besides that. The making, use and care of instructional media requires special skills. This is a form of teacher pedagogical competence.

School facilities that do not support teacher innovation will reduce teacher willingness (the 8th factor) to improve the quality of learning. For example, the teacher has been able to make instructional media that attract students' interest in learning, but because there is no projector or no electricity, this innovation is in vain. School facilities should not be underestimated as determinants of quality learning. Most parents choose a school for their children based on the school facilities[16]. But, school is not the only cause of incomplete facilities. In practice, the teacher should adjust to the existing facilities, not vice versa. So, it's not impressed to find excuses. Teacher's willingness can also be influenced by the increase in the number of students and teachers feel unable to do so[17], also influenced by teachers' fear of the adverse effects of the times, for example online media[18]. The use of technologies such as laptops in early childhood can affect their social life and reduce politeness[19].

School location is also a factor causing problems. This relates to the development and innovation of instructional media. Education has been heavily influenced by technological developments, so teachers must also be able to utilize technology and the internet. The teacher is an important agent in the application of technology in learning[20]. The location of the school determines the internet connection range, as well as the weak connections. So, innovations that are constrained by school locations will fail. Unless the teacher has their own special tricks. School location is not only related to internet connection, but also control from the education office. The farther the school is from the regulatory center, the greater the chance to avoid responsibility to improve the quality of learning.

Teacher age is also a factor causing problems. Teacher age can not only affect the way students learn their native languages[21], but also relate to the ability of teachers to adapt to the times, for example technological developments and information. This fact explains an old adage "*Belajar masa muda, bagai mengukir di atas batu. Belajar saat tua, bagai mengukir di atas air*". This saying explains that the older people, the harder it will be to learn new sciences. However, the longer a teacher is in charge, a teaching style will be formed whose tendency cannot be changed.

The teacher's belief in what he has considered right, will affect the innovation he does[22]. So that the teaching style will also be a factor that causes problems. In early childhood, the teacher's belief in what he teaches and who he teaches does not affect student skills but can improve communication and literacy skills[23]. Especially in the integration of technology in learning. Many studies have concluded that the teacher's belief in the benefits of technology in learning will influence students to accept or not receive the technology[24]. Teacher's opinions and students determine the level of effectiveness and efficiency of technology in learning[25]. The ability of a teacher to use technology in learning cannot be separated from one's ability in higher education to produce teachers who have decent abilities[26].

In addition to the teacher's teaching style, student learning styles will also influence the use of media by the teacher. Student learning styles in one class are diverse[27]. As a result, the teacher becomes confused in choosing instructional media, and finally fails to develop it. Whereas student learning motivation must be maintained[28]. Technology integration in the learning process can accelerate students' literacy skills, especially when using appropriate software[29].

The causes of the problems found in our study are actually not a significant barrier for teachers to make, use, and maintain instructional media. But everything can be a problem if the teacher makes it a problem. These problems should motivate teachers to be more creative to create real learning goals, achieved. The role of schools to improve self-readiness must also be the reason for developing teacher competencies. Adequate facilities and infrastructure, will support better quality. Even without these things, quality can still be formed. Included in the effort to form qualified graduates. Teachers should be able to find and solve the problems they experience in class related to learning, for example by doing research (teachers who do research[30]). The government also must not be held responsible for this. Teacher's understanding of technology, for example web 2.0[31], should be taken into consideration to establish the direction of education policy. Included in the teacher education program, technology should be discussed and introduced to prospective teachers[32].

5. Conclusion

Our research concludes that there are 8 factors that cause problems for teachers not to make, use, and maintain instructional media, namely (1) teacher ability, (2) school facilities, (3) school location, (4) teacher age, (5) teacher's teaching style, (6) school management, (7) student learning styles, and (8) teacher's willingness. All causes of the problem are reasons for teachers not to make media, use the media and care for the media. This problem is also the reason for the development of the learning process, especially in the integration of technology as instructional media. To measure the level of acceptance of teachers and students towards technology in the teaching and learning process can be used TAM (Technology Acceptance Model)[33]. Teachers should align learning objectives with technology that will be integrated into the learning process[34].

Acknowledgment

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