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ANALYSIS OF THE NEED FOR DEVELOPMENT OF COMPUTER BASED TEST (CBT) ASSESSMENT BASED ON HIGH ORDER THINKING SKILL (HOTS) IN BIOLOGICAL LEARNING

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Abstract

The purpose of this study was to obtain a description of the views and constraints faced by teachers and students in the field regarding the development of assessment instruments . This research is only limited to needs analysis research which is sourced from the results of initial observations and a review of the relevant literature. Researchers made observations in four schools, namely public senior high school4 Samarinda, public senior high school 6 Samarinda, public senior high school 15 Samarinda and public senior high school Samarinda. The data collection technique in this study used an analysis of the needs of teachers and students. The results of the observations were in the form of an instrument of teacher needs assessment which was analyzed using descriptive qualitative analysis. The researcher found that the development of assessment instruments Teachers have never done a Computer Based Test based on High Order Thinking in Biology learning because of the teacher's limited knowledge of computer-based exams, the teacher's limited time in making assessment instruments, limited facilities and infrastructure. Learners want assessments that are more attractive and efficient for them .

Keywords: *needs assessment, Computer Based Test (CBT), High Order Thinking (HOT)*

Making High Order Thinking (HOT) items can be presented using information and communication technology. The use of information and communication technology increases in line with the use of the internet as a supporting aspect. According to Sudargo, et.al 2010 , the development of questions for levels C4, C5 and C6 is very rare. Teachers often make questions using theoretical contexts and there is no connection between the knowledge gained in learning and the actual conditions in everyday life. The current condition of most students has low abilities. To overcome this, students need to be trained in honing higher-order thinking skills by getting used to giving questions that can solve problems.

According to Hamid (2016), so far teachers have assessed learning outcomes or student learning outcomes tests using conventional methods , namely *paper-based tests* . Teachers as educators are required to provide effective and attractive learning evaluation instruments so that students are interested in continuing to learn and practice . As technology advances very rapidly, we must be able to take advantage of technological developments for useful things such as for assessment or evaluation of learning. Therefore, researchers are interested in conducting needs analysis research to see the needs of teachers and students to assist in the process of developing a computer assessment instrument based on High Order Thinking (HOT).

METHOD

This research is a preliminary research which is included in the pre-development stage of the research and development (R&D) procedure. This research is only limited to the need assessment research which comes from the results of initial field observations and a review of the literature relevant to this research. The data collection technique in this study used an analysis of the needs of teachers and students. The researcher made observations in four randomly selected schools. Namely public senior high school4 Samarinda, public senior high school 6 Samarinda, public senior high school 15 Samarinda and public senior high school 17 Samarinda. The locations of the four schools are spread across Samarinda City, East Kalimantan. The research sample or respondents from the four schools were 8 bio- logic teachers and 112 students of class X- MIPA . The research instrument was a questionnaire / questionnaire . The data from the questionnaire filled out by the respondents will be analyzed descriptively qualitatively.

RESULTS

From the calculation of the questionnaire for the needs of teachers and students, the presentation of the Likert scale results was obtained as follows:

Table 3.1. Presentation of Teacher Questionnaire Likert Scale Results

No.	Teacher Questionnaire Assessment Indicators	Percentage of Results Likert Scale
1	P enyusunan grating about	87.50%
2	Time constraints for making HOT CBT	100%
3	Constraints on sapras making HOT CBT	37.5%
4	HOT CBT lack of understanding	25.0%
5	Knowledge About HOT CBT	25%
6	Use of HOT CBT	25%
7	Willingness to do evaluation development	100%
8	Desire to do Evaluation Development	100%

(Data: Teacher Needs Analysis , 2019)

Table 3.1. Presentation of Student Questionnaire Likert Scale Results

No.	Student Questionnaire Assessment Indicators	Presentation of Results Likert scale
1	Use of CBT in schools	37.1%
2	Paper-based instruments are less efficient	70%
3	Students are happy with CBT-based instruments	58, 6%
4	CBT based instruments can practice honesty and discipline	82.9%
5	CBT-based instruments can train computer skills	95.7%
6	Development of High Order Thinking (HOT) based computer assessment (CBT) instruments	82.9%

(Data: Student Needs Analysis, 2019)

DISCUSSION

To find out the learning outcomes of students in the cognitive realm, the evaluation of learning carried out by all Biology teachers who became respondents was using a HOT -based written test on the grounds that it was more effective in measuring student learning outcomes. However, regarding the experience of teachers in developing computer-based assessment instruments, it shows that only 25% of teachers whose schools have already developed this, while the remaining 75% have never developed this computer-based assessment instrument. As for what often becomes an obstacle is the limited time constraints of teachers, infrastructure, limited knowledge and experience in developing High Order Thinking (HOT) based computer assessment instruments.

The results of the questionnaire also stated that all Biology teachers who became respondents were willing if their class or school was the object of research and development of computer-based assessment instruments (CBT). With the reason that it is very useful for teachers and very helpful .

Based on the results of the questionnaire analysis of the students' needs above, the percentage of the results of the Likert scale on the first indicator was obtained 37.1%, meaning that on this scale the school was not doing well using CBT in the process of assessing student learning outcomes, because not all schools used computer-based assessment instruments. (CBT). In the second indicator, 70 % percentage of results were obtained, meaning that students agreed if the paper-based assessment instrument was considered less attractive and efficient for various reasons, for example because it was boring, sometimes the writing was not clear to read. While the results of the third indicator shows the percentage on a scale of 58 , 6 % means that learners enough / neutral enjoys computer-based assessment instrument (CBT). The fourth indicator presentation of results obtained by 82 , 9 % means that on this scale learner is agreed that if the instrument-based CBT is said to be able to train honest attitude and discipline. While in the fifth indicator of students strongly agreed to suggest that CBT-based instruments can train your computing skills for learners, especially in preparation for the National Exam Computer Based, this is indicated on the presentation of results likert scale of 95 , 7 %.

From the results of the analysis of the needs of teachers and students, the researcher obtained an overview of teacher knowledge and students' perceptions about the assessment of Biology learning. From the results of observations made in four schools for Biology learning, no one has ever developed a computer assessment instrument (CBT) based on High Order Thinking (HOT).

CONCLUSION

Based on the analysis and discussion, it can be concluded that the development of assessment instruments computer (CBT) based High Order Thinking (HOT) has never been done by a teacher in biology due to limited knowledge of the teachers about the exam and computer based preparation about HOT, time constraints of teachers in making assessment instruments, limited facilities and infrastructure. Given the importance of assessment in the Biology learning process, it is necessary to carry out further research on the development of assessment instruments that are more efficient, practical and effective in order to take advantage of advances and developments in today's technology. Teachers are expected to be able to increase knowledge about the use of Information Technology and Computers. Meanwhile, the government and schools can provide both moral and material support related to the development of computer-based assessment instruments.

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