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Implementation of Computer-Based Summative Assessment

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Abstract: In this current condition, SMK Negeri 1 Tanjungpandan has utilized a paperbased test as the main method of carrying out academic exams and evaluations. Nevertheless, through the rapid development of information and communication technology, various schools and educational institutions have started to switch the evaluation process using computer-based tests as a much more efficient and effective alternative. This also applies to SMKN 1 Tanjungpandan, that expect to implement a computer-based test as the substitute for paper-based tests. This study aims to describe the implementation of computer-based summative assessment at SMK Negeri 1 Tanjungpandan. The subjects in this study were school principals, vice principals for curriculum, the school management team and proctors and technicians in charge of assessment activities. The object of this study is the use of computers based tests in the implementation of summative assessments. This research is a descriptive type using a qualitative approach with the best practice method. The research data were collected by observation and interview methods. Data analysis included data presentation and drawing conclusions. The results of the research conducted shows that the computerbased summative assessment has been running well. This can be seen from the process of preparation, implementation, monitoring, evaluation, and reporting of the assessment results that proceeded smoothly. This is also supported by the readiness of human resources in performing duties as proctors and technicians, as well as adequate infrastructure for the implementation of computer-based summative assessments.

Keywords: Computer-based assessment; Learning evaluation; Summative assessment

Introduction

In this modern era and in line with the development of information and communication technology, education faces various challenges and significant changes (Diler, 2021). One of the important aspects in the world of education is the assessment of learning outcomes, which play an important role in measuring understanding and student achievement. Summative assessment, which is the final evaluation of learning outcomes, become a crucial element in evaluating student achievement in the curriculum (Pratomo et al., 2022; Sukmawati et al., 2023).

Conventional summative assessment methods often involve the use of answer sheets paper and manual processes in calculating values (Gamage et al., 2019; Hancock, 2010; Volz et al., 2019). This approach can be time consuming and prone to human error (Al-Hawamdeh et al., 2023; Dixson et al., 2016; Gezer et al., 2021; Volz et al., 2019). In addition, the results of this summative assessment may not fully reflect the actual skills and abilities of the students, due to the limited space for them to demonstrate competencies in an environment that is closer to real-life conditions (Broadbent et al., 2018; Ismail et al., 2022; Vicente et al., 2021).

In in the context of Vocational High Schools (SMK), summative assessments play an important role in determining the feasibility and competence of students to enter the world of work. In an attempt to face the strict global challenge and work competition, SMKN 1 Tanjungpandan in Belitung Regency has identify necessity innovation in method evaluation summative. One method to achieve this is through the implementation of computer-based summative assessment.

SMKN 1 Tanjungpandan is a vocational secondary education institution committed to improving the

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quality of learning and assessment. One of the important aspects in assessment is the employed assessment method. Until now, SMKN 1 Tanjungpandan has been utilizing paper-based assessment test) as a method in carrying out academic exams and evaluations. With the rapid development of technology information and communication, numerous schools and educational institutions began to switch to evaluation using computer-based (computer-based test) as more efficient and alternative effective. This also applies to SMKN 1 Tanjungpandan, which aims to implement computerbased tests as a replacement for paper- based test.

Several reasons for the background of this problem are the computer device and internet access is becoming more accessible, even in rural areas, this opens up the opportunities to apply computer-based test in SMKN 1 Tanjungpandan and utilize potency technology in process evaluation. The second reason is evaluation on paper-based requires a lot of administrative preparation management, including question printing, and distribution, collection, and manual evaluation. Through the use of computer-based test, administration process become more efficient as question can be prepared in a digital way, distribution can be carried out electronically, and assessments can be automatically carried out by the system. Then, the third reason mentions that computer-based test can provide higher accuracy and security in evaluation process. Questions and answers can be shuffled automatically, reducing the risk of cheating. In addition, the system can also provide security features, such as limited time and monitoring use cameras and microphones to ensure the integrity of the assessment. The fourth reason, computer-based test can provide flexibility in terms of question format, including options multiplexes, short entries, and interactive simulations. This allows for a more appropriate assessment with the curriculum necessities and can evaluate understanding participant in a more holistic manner. The last reason is that the current digital era, students' ability to use technology can adapt to the environment highly digital is important. Bv computer-based implementing test, **SMKN** 1 Tanjungpandan can assist in preparing students to face challenges in the digital word and enhance their technological skills.

In the implementation of computer-based test at SMKN 1 Tanjungpandan, it is necessary conducted research involving needs analysis, technology infrastructure, and staff training. This study aims to maximize the benefits derived from the use of technology in assessment.

Literature Review

Evaluation of learning is a process to collect, analyze, and evaluate information about the progress, achievement, as well as effectiveness of student learning and outcome. This evaluation is carried out to evaluate so far learning objective has been achieved, obtain the feedback about success of learning, and identify areas that need to be improved. Learning evaluation involve various method and tool evaluation which is used for knowledge, measuring skills. attitude, and understanding of the students. According to Sani (2018), objective from learning evaluation is the method to determine the effectiveness and efficiency from system learning in a wide manner. On the other hand, according to (Subali Bambang, 2012), evaluation of learning outcomes encompasses summative evaluation, which is imposed on the subject of learning as the participants in the learning program. Teacher as designer and implementers of the program (whose designs are manifested in the form of curriculum, syllabus, lesson plan), in relation to the effectiveness of learning activities within a specific program (Gamage et al., 2019; Hancock, 2010).

Evaluation learning, which is implemented in SMKN 1 Tanjungpandan is using paper-based test. Of course, this is less effective and efficient as it requires much cost. This aligns with the opinion of Ambiyar et al. (2020), which states that one of the efficient ways that can be done in financing activity posts at school is through computer-based or Android-based assessments.

A number of study about evaluation based computer had been carried out such research conducted by Hidayat et al. (2016) from Universitas Negeri Jakarta and Universitas Kebangsaan Malaysia, entitled "Development of Computer-Based Test" which states that the use of computers as a replacement for paperbased test and pencil is considered more efficient and effective. Relevant research was also conducted by Santi et al. (2019), entitled "Analysis of Computer-Based National Examination Implementation with Paper-Based Examination at SMPN 3 Ingin Jaya, Aceh Besar Regency". Results study indicate that the students were prepared to participate in Computer-Based National Examination (UNBK), and the school management was also ready to conduct Computer-Based National Examination (UNBK). The next research conducted by Yulianti (2019) entitled "Implementation of Computer-Based Test Learning Evaluation at SMA Yadika 6, South Tangerang" showed that the learning evaluation, which employed a technology-based system, maintained the components of learning assessment stages during the implementation of Computer-Based Test (CBT). A similar study by Wardani (2021), entitled "Effectiveness of Using Computer-Based Test and Paper-Based Test System in the Implementation of Mid-Semester Indonesian Language Examination at SMPN 6 Singaraja". The results of the study revealed that the implementation of CBT led to a reduction in paper usage and also decreased the time required for examining results, causing in more efficient and effective examination procedures.

It is expected that results study will provide the knowledge about potency from implementation the computer-based summative evaluation in SMKN 1 Tanjungpandan. The findings of this research can offer valuable insight to other educational institutions interested in adopting technology in their assessment practices. Moreover, this study can also identify challenges that may arise during the implementation process and provide guidance to policymakers in overcoming these obstacles. Through this research, it is expected that computer-based summative assessment can make a significant contribution to enhancing the effectiveness and efficiency of student learning outcome assessments at SMKN 1 Tanjungpandan.

Method

This study was carried out at SMKN 1 Tanjungpandan in May-June 2023 through a qualitative approach as best method practice. Raco (2010) suggests that the qualitative method own a number of characteristics in particular, emphasizing naturalistic setting, inductive reasoning, flexible, direct experience, in-depth exploration, wholeness, active participation involvement, and interpretation. The best practice method is an approach or methodology that has proven effective and is acknowledged as the highest standard for accomplishing a task or achieving optimal results. It is based on experiences, research, and the best practices that have been successfully applied and resulted favorable outcomes. This method outlines the best stepby-step practices. The data collection for this research was carried out through literature review, interviews, and direct observations, in which the researcher actively participated in the program. This study aims to evaluate the implementation of computer-based summative assessment in SMKN 1 Tanjungpandan, Belitung Regency. This study analyzed the influence of evaluation quality, response of the students related to this method, as well as changes in speed and efficiency in the evaluation process.

Result and Discussion

Result

Based on the results of observations and interviews conducted by the researcher, the implementation of the computer-based summative assessment studies at SMKN 1 Tanjungpandan can be divided into five stages as follows:

Identification of Necessities

First stage is the identification of need or problem that want to be resolved. This involves a thorough analysis of the existing conditions and situations, as well as determining the objectives to be achieved. In this stage, the school management team identifies issues with paper-based assessment that are less effective and efficient. It aims to find solutions and explore the school's available resources and assets.

Planning

Formulate specific goals, identify targets and participants, and design strategies and activity to be carried out. At this stage, it is also necessary to concern to the allocation of resources necessary, including budget, personnel, and infrastructure. Furthermore, compile work plan, schedules, duties and responsibilities, as well as monitoring and evaluation to be carried out. At this stage, the school management team takes the following steps design Computer-Based Summative Assessment Assignment Letter, which includes assignment for teachers and staff serving as team leaders, secretaries, room supervisory teams, question creator, technician, space supervisor, maker questions, and others. The proctor and technician team determines the application to be used for assessment. In this case, the application used are Woka and Exambro.



Figure 1. Display of computer-based assessments summative application

Develop a financing plan required in summative assessment activities. Check condition of available source power, number of TUK or laboratory computer, computers, and internet networks. Team editing and uploader question gather questions lists of summative evaluation from teachers into google drive. The team leader, along with the proctor and technician, formulate the technical implementation, starting from calculating the ratio of computer availability compared to the number of students taking the assessment, distributing timetable evaluation each learning, arranging and distributing student to testing rooms, as well as scheduling exam room supervisors. The proctor and the technician teams configure the system in the assessment application and upload the questions to the system. The application used are Woka and Exambro. The proctor and technician teams print card participant examination. Carry out exam simulations that aim to ensure all TUKs can used and running smoothly. The simulation was carried out the day before the implementation of the examination. Deliver summative assessment information to students, all school members regarding schedules, division of sessions, scheduling of room supervisors and others.

Program Implementation

This stage is when the activity is actually carried out. During implementation, all activitieshas planned to run according to the schedule and tasks that have been set. There are 12 proctors and technicians on duty, and six examination rooms used are Computer Network Engineering (TKJ) Laboratory, Computer Network Engineering (TKJ) Workshops, Software and Network Engineering (RPL) Laboratories, Accounting (AKL) Laboratory, Marketing Laboratory, and Office Administration and Document Processing (OTKP) Laboratory. All parties involved in the assignments coordinate effectively.



Figure 2. Implementation of summative evaluation in TKJ laboratory



Figure 3. Implementation of summative evaluation in TKJ workshop



Figure 4. Implementation of summative evaluation in RPL



Figure 5. Implementation of summative evaluation in AKL laboratory



Figure 6. Implementation of summative evaluation in marketing laboratory



Figure 7. Implementation of summative evaluation in OTKP

Monitoring and Evaluation

This stage involves monitoring and evaluating the implementation of a summative-based assessment computer. Monitoring is carried out to ensure that the program is running according to plan and catch changes or problems that occur. Evaluation process is done to assess the success of a program, achieve the set goals, and evaluate the impact achieved. Monitoring computer-based evaluation summative based in SMKN 1 Tanjungpandan was carried out by headmaster with the vice principal of curriculum. From the results of monitoring, this summative assessment can run smoothly, even though there are occasional technical problems but these can be overcome by a proctor and technician teams.

Reporting and Dissemination

The final stage is compiling a report on the results of the implementation of a computer-based summative assessment, including achievement objective, evaluation, and recommendation for revision in period future. This information can be expanded through dissemination to stakeholders' interest, which is relevant, such as the management team, the school community, and the school committee. Overall, the implementation computer-based of summative assessment proceeded as planned. For future improvements, the proctor and technician team will seek solutions for several technical challenges that were encountered.

Discussion

Implementation of computer-based summative evaluation summative at SMKN 1 Tanjungpandan is the progressive way to increase effectiveness and efficiency of evaluation process. This study aims to evaluate the implementation of computer-based summative assessment as well identify benefit and challenge related. In this research, the researcher conducted observation and interviews to obtain relevant data. Based on the results of observations, it can be concluded that implementation of computer-based summative evaluation at SMKN 1 Tanjungpandan is divided into five stages, that is identification need, planning, implementation programs, monitoring and evaluation, as well as reporting and dissemination.

The needs identification stage involves analyzing the issues with paper-based assessment that are less effective and efficient. In this phase, the school management team successfully identified these problems and studied the available school resources and assets (Bello et al., 2021; Cerutti et al., 2019; Mitra et al., 2015). In the planning phase, the school management team formulated specific objectives, identified targets and participants, and designed strategies and activities to be carried out. They also considered the allocation of necessary resources such as budget, personnel, and facilities (Aojula et al., 2006; Gamage et al., 2019; Lewis et al., 2007). The computer-based summative assessment assignment letter was drafted to assign roles to the teachers and staff involved in the implementation.

During the program implementation phase, all planned activities were executed according to the schedule and assigned tasks. Proctors and technicians played a crucial role in configuring the assessment application system, uploading questions into the system, printing examination participant cards, and conducting a simulation exam a day before the official implementation. The computer-based summative assessment took place in the available computer laboratories at the school.

Evaluation was performed to assess the achievement of goals and impacts. During monitoring, the computer-based summative assessment proved to run smoothly despite some technical challenges that the proctor and technician team managed to overcome. The final phase is reporting and dissemination. A report on the results of the computer-based summative assessment implementation was prepared to document goal achievements, evaluations, and recommendations for future improvements. This report is shared with relevant stakeholders such as the school management team, school community, and school committee.

The implementation of computer-based summative assessment at SMKN 1 Tanjungpandan provide benefit in increasing the effectiveness and efficiency of the process. Nevertheless, evaluation the technical challenges faced can be overcome with coordination and proctor effort of and technician teams. Recommendations for future improvements include troubleshooting techniques that are still being discovered. Thus, the implementation of computersummative assessment based at SMKN 1 Tanjungpandan is a progressive step in improving the quality and learning evaluation efficiency.

Conclusion

The implementation of computer-based summative assessment went smoothly. This is evident from the process of preparation, implementation, and analysis of summative assessment results that proceeded without This achievement also supported by the issues. readiness of human resources in performing their duties as proctor and technician teams as well as the availability of adequate facilities and infrastructure for computer-based summative assessment. The advantages of computer-based learning assessment are feasible to apply to school with sufficient infrastructure assets and human resources. However, the drawbacks that is cannot be implemented in schools with facilities infrastructure in the IT field that is not inadequate and also limited human resources.

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Author Contributions

Investigation, Y.S; formal analysis, Y.S and Y.S; investigation, Y.S; resources Y.S; data curation, Y.S: writing – original draft preparation, Y.S; writing – review and editing, Y.S: visualization Y.S; supervision, Y.S; project administration, Y.S; funding acquisition, Y.S. All authors have read and agreed to the published version of the manuscript.

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Conflicts of Interest

We certify that there is no conflict of interest with any financial, personal and other relationships with other peoples or organization related to the material discussed in the manuscript.

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