DEVELOPMENT OF INTERACTIVE ASSESSMENT CBT BASED ON LEARNING MANAGEMENT SYSTEM IN LEADERSHIP PROJECT I COURSE

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Abstract

This research was arisen by the lack of an assessment in the form of test items as an interactive assessment for Computer-Based Test (CBT) based on Learning Management System (LMS). Previously, only topic-based tasks were available, particularly lacking in leadership project courses. In practice, assessment mainly relied on tasks in leadership project courses for teacher professional education students (PPG), resulting in suboptimal data collection for measurement which made educators difficult to assess or measure student performance. The research method used was Research and Development (R&D) with the Miles & Huberman model. This study aims to develop effective and efficient measurement data in the form of interactive LMS-based mechanical assessments (CBT). The research involved students who enrolled in the Leadership Project course at PPG Unsri. The research object was the measurement tool results from the collection of data from answered assessment items, to be effectively and efficiently presented in the form of interactive LMS-based mechanical (CBT) assessments. Data collection begins with observation and the creation of item grids. Data analysis techniques use the Miles & Huberman model analysis, which includes four stages: data collection, data reduction, data presentation, and drawing conclusions. Data analysis was performed using SPSS. The results of this study indicate that the product in the form of LMS-based test items (CBT) is valid and reliable as an assessment tool in leadership project courses at the Faculty of Teacher Training and Education, Universitas Sriwijaya.

Keywords: interactive assessments, learning management system, service-learning

Introduction

Nowadays, the world of education plays an important role in creating a good understanding of assessment. Assessment is one of the important aspects to observe the learning achievement through learning objectives to seek for information on the progress of students. Assessment is a sequence that is carried out on an ongoing basis which is used as a tool for collecting information about learning outcomes with the aim of obtaining a decision based on certain criteria and considerations (Mujiburrahman et al., 2023). Assessment has been recognized as one of the key drivers for improving teaching practices and student learning around the world with a deeper level of understanding of assessment (Kim Koh, Cecille DePass, 2019). Especially in current technological era, learning and teaching rely on the internet. The implementation of assessments is often integrated with the use of LMS (Learning Management System) which makes it easy for students to learn interactively and comfortably. The combination of LMS with CBT interactive assessments allows the creation of assessments that can be accessed easily, interesting, and useful as a means of evaluating student learning. Based on the results of the study, the use of digital assessments received a positive response from students with an average score of 49.72% who answered the category strongly agreeing, and 36.74% for score 4 category agreeing, 13.33% for score 3 with a fairly agreeing category and 1% answered score 2 with a less agreeing category (Permatasari et al., 2023).

CBT (Computer Based Test) Interactive Assessment itself is an application of technology that can be done by educators to be able to assess students' final evaluation. CBT interactive assessment is very possible to utilize various types of information and communication technology to facilitate learning processes and activities inside and outside the classroom, thus providing a large space for learners to access at any time. CBT interactive assessment can help educational institutions in developing the end of learning process because it can be used and accessed anywhere, so it does not need a long time to carry out the assessment process by educators. They only need to access CBT interactive assessments only through one platform (Wahyuni et al., 2020).

Assessment integrated through CBT is believed to be a strategic step to improve learning effectiveness, provide a more in-depth learning experience, and support the development of leadership skills in prospective teachers. The use of LMS for classroom management accommodates effective offline and online learning and can achieve 21st century skills. (Tantri & Efendi, 2020). The Teacher Professional Education Program itself LMS has been used as a learning platform that can help users enjoy learning while doing the assignments given. However, there is no assessment in the form of questions that can facilitate students to evaluate the material provided, especially in the leadership project course. The Leadership Project course is one of the important courses for prospective professional teachers that provides opportunities to develop their leadership skills through service-learning activities carried out in the form of school or community-based projects. Through this project, students are encouraged to increase their sensitivity together with various parties in the ecosystem of the targeted school or community.

Measuring instruments, in this case tests used to measure student learning outcomes. Therefore, educational institutions need to make various innovations to improve the quality of the measuring instruments used. One of the test forms is using an online form. The use of Computer Based Testing has been widely used to measure student learning outcomes and can improve the quality and efficiency of test assessment development (Paramartha, 2016). Through CBT interactive

assessment, learning activities, and processes become one of the supports that can be used to carry out learning that can be done anywhere and anytime. It is based on supporting data that the application of CBT is very influential on the character building of today's students.

CBT influences the perceived proximity, peer reference, ease of use, and perceived benefits. There are four things that support CBT can improve assessment in education; (1) increase the depth of student knowledge and skills that can be assessed; (2) increase the range of accuracy for test results; (3) increase the efficiency of the assessment process; and (4) increase fairness in assessment. (Alturki & Aldraiweesh, 2021). In addition, this CBT-based assessment can save teachers' time in assessment since it is easily accessible.

CBT product test data shows that CBT has feasibility as a product to help teachers, in particular, and students in general to be able to carry out evaluations in the form of tests more easily because of the support of animations, images, photos, video tutorials, and interesting tests so that students can see directly the scores achieved through computer displays. The results of the analysis show that CBT products are in the excellent category (89%), for material aspects and from media aspects including the category is also very good. The results of the analysis based on the product trial were also in the excellent category. These results indicate that this CBT product is feasible to use as an alternative media to solve the problem of implementing learning evaluation. (Novrianti, 2014). In carrying out the leadership project, it is also necessary to assess with effective and efficient media to support learning improvement so that in the PPG leadership project course, CBT assessment is needed for students because CBT-based assessment does not yet exist in this course, especially in the form of questions. Therefore, the purpose of this study is the importance of assessment in the form of CBT questions in assessing student learning in the faculty of education, especially the leadership project course of PPG program students. The development of interactive assessments in the form of questions in a CBT-based LMS for the Leadership Project I course can be considered a progressive step to answer the demands of educational development and better prepare PPG students for the demands of future work.

Literature Review

The essence of interactive assessment

The use of interactive information and communication technology as a medium for creating assessments can be one solution to overcome the limitations of previously used assessments. CBT can be defined as the use of computers to create an assessment model by combining text, graphics, video, motion pictures, and allowing users to navigate, interact, create, and communicate. This assessment itself is one of the important terms in assessing the learning process of students in the classroom (Wahyuni et al., 2020).

CBT interactive assessment is an assessment that basically utilizes the development of information and communication technology to facilitate learning processes and activities inside and outside the classroom. The use of Socrative application-based technology can improve pedagogical competence in the classroom (Wahyuni et al., 2019). CBT has great criteria and is a suitable tool as a learning assessment instrument using the wondershare quiz creator application with the results of validation trials of media experts, assessment experts, small-scale and large-scale tests of students, and educators (Febriani, 2016). Based on some previous opinions, it can be concluded that CBT

interactive assessments are assessments that use information and communication technology in every process of utilization that can improve pedagogy and are appropriate to use.

LMS

Learning Management System (LMS) is a software or platform used to deliver electronic learning. LMS is usually used in the context of education and training in educational institutions, companies, or other organizations that provide learning programs. This system allows teachers or instructors to create, organize, and deliver learning materials to participants. LMS has been widely used as a learning and teaching tool. The use of Learning Management System as a learning media is very practical by obtaining an average percentage of 93.59%. (Anggriawan, 2019). Through the LMS, students can access lecture materials provided, participate in discussions with lecturers through discussion forums, chat, and access assignments given by lecturers. Lecturers are also encouraged to make learning materials more creative by uploading videos or other learning media into the LMS. The LMS plays a major role in optimizing learning outcomes (Nugrahani, 2022).

Leadership Project

The leadership project course is one of the most important courses in the journey of creating professional teachers. Leadership project courses are generally courses that study leadership. In this Professional Teacher Education (PPG) itself, the leadership project course is divided into 2 parts, namely Leadership Project I and Leadership Project 2. From the learning process and the order of the material packaged in semester 1 to the end of semester 2 intersect with each other which then from the sequence of processes will produce a program as a solution to problems that exist around the community so that the output produced from this leadership project course does have good implications for the present and the future (Kementrian pendidikan, 2022).

The output produced is a graduate who is accompanied by the quality of changes in one's attitude, behavior, thinking through the learning process that he has taken himself (Yusiyaka, 2016). The output of the leadership project course carried out by PPG students is not only limited to the impact of the program in the field, but students are asked to write in the form of work reports and articles published in accredited journals. For example, at LPTK Sriwijaya University, projects that were produced and implemented in a community, such as an orphanage, a group of mothers, a school, and others were successfully published in a community service journal. This further proves that the output produced by the leadership project course is not only theory-based, but evidence-based that gives rise to a generation of high-quality professional teachers.

Methodology

Research design and approach of the study

The method used was Research and Development (RnD) with the development model used is the Miles & Huberman model, including 4 stages. They are data collection, data reduction, data presentation and finally drawing conclusions. It will be completed as a supporting material for quantitative research, namely scoring the results of observations, summing up the total score of each

component, grouping the scores obtained and processing the scores obtained (level of difficulty, differentiating power, validity and reliability). This study also analyzed the assessment of items with a grid of items in the form of grouping questions based on topics with the HOTS domain (Bloom's Taxonomy). The samples in this study were pre-service PPG students of FKIP Sriwijaya University.

Research site and participants

This research was conducted at the Ogan campus of FKIP Sriwijaya University with 34 research subjects of pre-service teacher professional education students. The sample technique used simple random sampling. PPG students were chosen to be research subjects randomly without looking at the strata in the population, since they have enrolled the leadership project course which is the object of developing LMS questions in this study.

Data collection and analysis

Data collection in this study begins with the introduction, namely observation. Then, collecting initial data which includes searching and collecting literature studies from various sources from reputable journals and conducting data collection research stages on several students and lecturers teaching courses to find out the problems experienced. The initial data collection that will be taken is in the form of: RPS, Grids of Assessment Items in PPG Courses. Third, prepare the composition of assessment items that have been analyzed from the lattice of items covering the topic of the leadership project course, namely multiple choice (PG), complex multiple choice, and matching. Fourth, validate the items to experts (Expert Judgement), namely material and language experts. Fifth, carry out a trial of the items that have been validated by experts. Then, analyze whether the items are valid and reliable. If they are not valid and reliable, then the items will be revised and retested and if they are valid and reliable they will continue at the next stage. Seventh, analyze the data from the test results from both experts and respondents, namely empirical data (trials), including difficulty level, and differentiating power. Eighth, analyze and make conclusions and suggestions. Finally, applying the results of the development of mechanical LMS-based interactive question item assessment (CBT) in the leadership project course of PPG fkip unsri students. The data analysis technique uses the Miles & Huberman model, including 4 stages, namely data collection, data reduction, data presentation and finally drawing conclusions.

Findings and Discussion

The following is a systematic presentation in the form of a CBT-based HOTS assessment table.

Table 1. *Table Asesmen*

No	Indicator/Aspect Accessed	Average Score
1	Material Aspects	
	Clarity	4,12
	Content Accuracy	4,14
	Relevance	4,10
	Total Average of Material Aspects	12.36
2	Language Aspect	
	Using good and correct language rules	4,47
	Use terminology that is appreciate to the concept of the subject matter	5,00
	The language used is straightforward and easily understood by students	
	The language used is communicative	4,40
	Accuracy of language selection in describing the material	
	The sentences used represent the content of the message or information to be conveyed	4,00
	The sentences used are simple and to the point	5,00
	Spelling accuracy	
	Consistency in the use of terms	5,00
	Consistensy of symbol usage	
	Average Language Aspect	4,30
		5,00
		5,00
		5,00
		51,97
3	Overall Average	64,33

Table 2. *Themes and sub-themes*

Themes	Sub-themes
Theme one: Learning Theory Materials	Teacher leader vision
Theme two: Mapping community/school challenges and strengths in improving the quality of learners' learning	Change with an empowering, joyful, encouraging approach
Theme three: Implementation planning and project management	Creative-innovative principle
Theme four: Project monitoring, evaluation, and final report	Concrete evidence in determining quality
Theme five: Project proposal and communication strategy	Relevant and contextual

The results of preliminary studies/observations and literature studies that have been carried out produced an item assessment consisting of 100 items with details of 20 questions/ topics. Leadership Project I subjects have 5 topics consisting of Learning Theory Material, Mapping the challenges and strengths of the community/school in improving the quality of student learning, Implementation Planning and Project Management, Project monitoring, Evaluation, and Final report and the last topic is Project Proposal and Communication Strategy. This research was a Research and Development (RnD) by analyzing the items with a grid of items in the form of grouping questions based on topics with the HOTS domain (Bloom's Taxonomy). For the domain, it will also be analyzed in quantity including, validity, difficulty level, differentiating power, and reliability. The data validity test in this study used qualitative and quantitative parameters. Based on qualitative, namely on expert judgment, including material and language, while quantitative parameters are based on empirical data (trial), including difficulty level, distinguishing power, and validity and reliability. It is still considering the LMS-based CBT interactive question item assessment instrument. Kahoot-based digital assessment is highly favored by students because it is easy to use, interesting, and useful as a means of evaluating learning for students (Permatasari et al., 2023). LMS as a learning media using open source can attract students' attention, motivate students, and be tailored to students' interests so that the information conveyed through the media can be captured by students, improving the quality of learning optimally (Anggriawan, 2019). It is concluded that an assessment is influenced by the utilization of the LMS as well as other applications.

The things that have been done are First, conducting preliminary studies, namely observation, then collecting initial data, namely searching and collecting literature studies from various sources from reputable journals related to interactive CBT item instruments based on the Learning Management System, conducting data collection research stages on several students and lecturers teaching courses to find out the problems experienced. The initial data collection that will be taken is in the form of: RPS, Grids of Assessment Items in PPG Courses. Third, prepare the preparation of question items that have been analyzed from the lattice of question items covering the topic of the leadership project course, namely multiple choice (PG), complex multiple choice, and matching. Fourth, validate the items to experts (Expert Judgement), namely material and language experts. Based on the results of validation from material experts, it is feasible to test without revision and linguists explain that the instrument is feasible to test with some revisions. The assessment instrument uses a Likert scale. This CBT product has been validated by media experts and assessment experts with a percentage achievement of 91.50% and 93.75% respectively. The average percentage achievement of the validation test results by media experts and assessment experts is 92.63% with a very good assessment category, so it is feasible to use as a learning assessment instrument (Febriani, 2016). Other results also show that CBT products are feasible to use as alternative media to solve learning evaluation implementation problems (Novrianti, 2014).

The next stage that will be carried out is to carry out a trial of the assessment of items on the LMS that have been validated by experts. Analyze whether the items on the LMS are valid and reliable, if they are not valid and reliable then the items will be revised and tested again and if they are valid and reliable they will continue at the next stage. The results of the instrument distributed to students on the LMS of the leadership project I course for PPG fkip unsri students known that the validity of all items is valid with the number of respondents N = 34 at a significance of 5%, then the rtable value can be obtained through the table r product moment pearson. rtable = 0.339. Pearson's r product moment table is attached. The results obtained are the average value of rcount> rtabel

product moment, so the questionnaire items are declared valid and the significance value is <0.05 = Valid. Furthermore, the reliability results of the assessment instrument obtained a Cronbach's Alpha value of 0.981> 0.60, so it is declared reliable or consistent. Assessment or assessment has a very big influence in improving the quality of learning independently (Mujiburrahman et al., 2023).

Table 3. *Reliability*

Cronbach's Alpha	N of Items
.981	100

Based on the validity and reliability results, interactive assessment is suitable for use and/or further development on the LMS. Next, analyzing the data from the trial results from both experts and respondents, namely empirical data (trial), including the level of difficulty, and distinguishing power. The results of the level of difficulty of the items using Mean data (SPSS Output) are 80 questions with very easy difficulty levels and 20 questions with easy difficulty levels. As for the results of the differentiation test data recap, there are 49 questions with excellent levels, 41 questions with good levels and 10 questions with sufficient levels (attached). The last thing to do after validating, testing the level of difficulty, differentiation and reliability is to reapply the results of the development of interactive assessments on mechanized LMS-based (CBT) in the leadership project I course of PPG fkip unsri students.

Conclusion and Implications

Based on the results of the validation of the CBT item assessment on the LMS that has been carried out by experts (Expert Judgement), namely material and language experts, which are feasible without revision and linguists explain that the instrument is feasible with some revisions. The question items have been valid and reliable, the results obtained are the average value of rcount > rtabel product moment, the questionnaire items are declared valid and the Significance value is <0.05 = Valid. While the results of instrument reliability obtained Cronbach's Alpha value of 0.981> 0.60, with excellent consistency, then declared reliable or consistent. As for the results of the level of difficulty of the items, there are 80 questions with very easy difficulty levels and 20 questions with easy difficulty levels. Then the results of the differentiation test data recap, namely there are 49 questions with excellent levels, 41 questions with good levels and 10 questions with sufficient levels. Therefore, this CBT item assessment is suitable for use on a mechanical LMS in the leadership project I course for PPG fkip unsri students and/or further developed.

Disclosure statement

No potential conflict of interest was reported by the authors

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