

## **THE USE OF WEB-BASED EXAM (WBE) TO OPTIMIZE STUDENTS TESTING RESULT**

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### **Abstract**

Some basic problems found during the test occurred in mid and final test using the conventional testing system are the students tend to do cheating, the sleepy supervisors, the inconsistency of test time, and the risk of losing the answer sheet. To overcome those problems, the researcher applies a concept called web-based exam system which uses three main tools to run the system. First, it uses teacher's laptop as the server; second, the teacher makes the questions using the software (web-based exam software) in his own laptop; third, it uses access point to communicate the server and the user (students' laptop). From the result of the research, it can be seen that this system can overcome the problems found in conventional testing system and it needed no paper.

**Keywords:** web-based exam, testing system, testing result

### **Introduction**

One of the ways to measure the students' competency in mastering certain subject or knowledge is by using test. In fact, the researcher found many weaknesses during the test occur and the biggest addicted ancient problem is the students' cheating. The other problems he found are the sleepy supervisors and they frequently out of the class and have a chat with other supervisors, the inconsistency of time in which the students keep doing the test even the test time is over, and the risk of losing the answer sheet after the test time ends because they hand in almost in the same time. After doing a series of research and after applying many ways to overcome these problems, finally he finds a testing system called as web-based exam which is able to handle those problems.

To run the system, the researcher needs three main tools namely the server, the web-based exam software, and the access point. For the server, he transforms his own laptop to be a server using wampserver software. The basic requirements of the laptop server are the clock should be higher than 1.5 GHz and the RAM installed at least 4 GB. After the server is ready, then the next is the web-based exam software. Here, the researcher with his team make software of computer based test and he named it with web-based exam 1.0. This software is easy to operate because it is windows based and we have made the manual book so that the teachers can use it easily. The last tool is the access point which function is to communicate between the server and the users (the students' laptop).

In holding the test, the teacher just needs to plug the access point to his laptop and he needs to activate his laptop as server by clicking wampserver software. Then, he has to open the web-based exam software and set the test open so that it can be seen by the students. After that, he asks the students to do the test using any web browser installed in their own laptop and they must log in using username and password set before. When the students have already done the test, the result will be appeared both in the teacher and the students' laptop screen. By the time, the students can see which number answered correctly and incorrectly. By applying this system, the researcher can measure the students' real competence.

This article is written based on the research and there are two main theories taken to support the research. The first theories talks about the web-based exam. Sessink, et al. (2004) says that web-based exam refers to a situation in which a student accesses questions and submits answers by a web browser and in which the exam results (partially or completely) determine the final grade for the subject. Meanwhile, Wang, et al. (2004) defines that web-based exam is an exam works over internet and utilizes web browsers as its interface. It is not only provide online real-time tests and online construction of items, but also enable teachers to check answer sheets rapidly and record scores over the Internet. Temitayo, et al. (2013) explains that a web-based examination system is developed to address these aforementioned drawbacks. It is designed to facilitate the examination processes and manage challenges surrounding the conduct of examination, auto-submission, auto-marking and examination result report generation.

There are many benefits might be taken by applying web-based exam. Kuzmina (2010:193) points out some benefits of using computer (web-based exam) as a tool to test. Those benefits are 1) reduced testing time, 2) increased test security, 3) provision of instant scoring (the test can be discussed while the whole thing is fresh in the subjects mind; in selection where the number of candidates again immediate results are valuable; where a huge number of subjects is tested this facility is not so important), 4) better use of professional time, 5) reduced time lag, 6) greater availability: individuals can be tested in a computer setting individually or in groups, usually in more user-friendly environments than the large classroom auditoriums where p-p tests have been administered traditionally. 7) greater accuracy: computers can combine a variety of data according to specific rules; human are less accurate and less consistent when they attempt to do this. Computers can handle extensive amounts of normative data, but humans are limited. Computers can use very complex ways of combining and scoring data, whereas most humans are quite limited in these capabilities. Computers can be programmed so that they continuously update the norms, predictive regression equation, etc., as each new case is entered, 8) greater standardization: the computer demands a high degree of standardization both test procedures and test interpretations, and, ordinarily, does not tolerate deviance from such standardization, 9) greater control: this relates to the previous point, but the issue here is that the error variance attributable to the examiner is greatly reduced if not totally eliminated, 10) greater utility with special students and groups: there are obvious benefits with computerized testing of special groups, such as the severely disabled, for whom p-p tests may be quite limited or inappropriate, 11) long-term cost savings: although the initial costs of purchasing computer equipment, of

developing program software, etc., can be quite high, once a test is automated it can be administered repeatedly at little extra cost, 12) easier adaptive testing: this approach requires a computer and can result in a test that is substantially shorter and, therefore, more economical of time. The test can also be individualized for the specific examinee.

The second theory discusses about test. Brown (2003:3) defines that test is a method of measuring a person's ability, knowledge or performance in a given domain. Meanwhile, Arikunto (2013:53) defines that test is a procedure or instrument used to determine or measure something in the case, by the ways and the rules that have been determined. The other definition is stated by Nitko (2002). He says that test is a systematic procedure for observing persons and describing them with either a numerical scale or a category system. Thus test may give either qualitative or quantitative information. Widoyoko (2014:2) mentions that test is a measurement to obtain information on the students' learning success that requires a correct or wrong answer or response.

There some test types used to measure the students' competency. Brown (2004:43) divides the test into two categories namely teacher made test and standardized test. Some tests categorized into teacher made test are language aptitude test, proficiency test, placement test, diagnostic test, and achievement test. Meanwhile, standardized test presupposes certain standard objectives or criteria, which are held constant across one from of the test to another. According to Arikunto (2013:32), test is divided into two types namely teacher made test and standardized test. Teacher made test is a test that compiled by teacher with a particular procedure, but has not been tested many times, so the test characteristics and kindness is unknown. Meanwhile, standardized test is the test that usually already in the testing institution with guaranteed quality.

## **Method**

This research uses research and development (RnD) method and it is done in English Department of Muhammadiyah University of Purworejo. It takes three courses as the subject of the research and it takes 12 months in doing the research. The observation is chosen as a method to dig up problems arises during the test and the researcher uses the result of the early observation to plan up the solutions of the problems.

The researcher gets the data he needed from two main sources namely observation (using observation list) and questionnaire (the students and the teachers). From the data, he then does analysis to get the result of the research. There is an additional data got from suggestion page written by the students. This suggestion page will be used to develop the testing system so that it will be more interesting and close to perfect.

Qualitative analysis is a technique to analyze the data of the research he got. Here, he analyzes the data from the observation and the questionnaire given to the students and the teachers of three subjects. For additional information, the researcher also considers the validation result of expert judgment from the IT side and from the testing side. For IT, he asks the IT expert to do validation from the side of technology, system users, and the application in classroom. For the test, he asks the expert of test to analyze the questions made by the teachers whether it has fulfilled the validity and the reliability of the good test.

## Findings and Discussion

Before showing the result of the research, the researcher did need analysis in which to know the weaknesses of the testing system used in English Department. Then, he interviewed lecturers and students related to the testing system used. From the observation and the interview, the researcher did early data. The next step is drafting the system by consulting it with IT expert to make a computerized testing system which can handle the problems found in conventional testing system. The main features of the system are login/registration, question bank, inserting media (picture and sound), time controller, auto correction, monitoring, and users. Below is the draft of the system:



Picture 1. Draft of WBE testing system

(source: research report: Memanfaatkan Teknologi Informasi Komunikasi (TIK) Sebagai Upaya Optimalisasi Penilaian Hasil Pembelajaran di Universitas Muhammadiyah Purworejo - 2015)

The diagram above explained the process of test using web-based exam in which the tester upload the questions into server and then it is spread out through access point. Then, the students do the test using their own device installed web browser. After the time finished, the score will be sent to the server automatically. To run the system, the writer uses software named web-based exam 1.0.

In the research, the researcher did several steps to test the system and analyze the weaknesses of the system then he develop it to make it come to perfect. The detail of the research findings are as follows:

### ***Step 1: Testing the system part I***

After finishing the software web-based exam 1.0 and preparing the devices needs (laptop server and access point), the researcher started to test the system. First of all, the researcher made the questions in software web-based exam 1.0, set the questions and the time, and he opened the questions so that it can be accessed by the students. Then, he asked the students to login and to do the test. For the result of the test, the students can directly see to their own laptops.

### ***Step 2: Evaluation part I***

From the result of the system test part I, it shows that the test runs well enough because the system is windows based so that the students are familiar with the system. I just explain the way to do the test in a glance and they have understood it. Many students hard to do cheating and due to the limited time, they need to do the test fast.

Some problems appear during the testing session are 1) the audio is not clear enough, 2) the time allocation is very limited, 3) the connection sometimes getting slower or unstable, 4) some students' laptop use low specification so that it obstruct them to do the test well, 5) computer virus infects the students laptop which forces the RAM to work over and it makes the laptop works slower.

### ***Step 3: Expert Judgment***

After evaluating the test part I, the researcher asked the IT expert to see and to give some comments and advice to the system he made. From the two IT experts, they give comments 1) the appearance of the system is quite well but I need to make the manual book so that the users are easy to operate it, 2) the database uses MySQL and this database is good because it is more stable and easy to handle, 3) the software web based-exam 1.0 has fulfilled the needs of the teacher as the tester and the students as the test takers, the features available are good enough just need some justifications, 4) the devices used need to be developed especially the access point, the specifications needs to be increased so that it can handle more users, 5) the media might be used is limited to audio and pictures whether the video is not available yet.

### ***Step 4: Developing the system***

From the result of test part I and the expert judgment, my team and I develop the system with the goal to overcome the problems appear. During the two months, the focus of the development is on the appearance so that it is made as user friendly as possible. Besides, there are some shortages on the system i.e. no mp3 icon, the picture inserted was too big (need to be converted), no students' identification number on the students screen, and others so that it needs bugs to fix.

### ***Step 5: Testing the system part II***

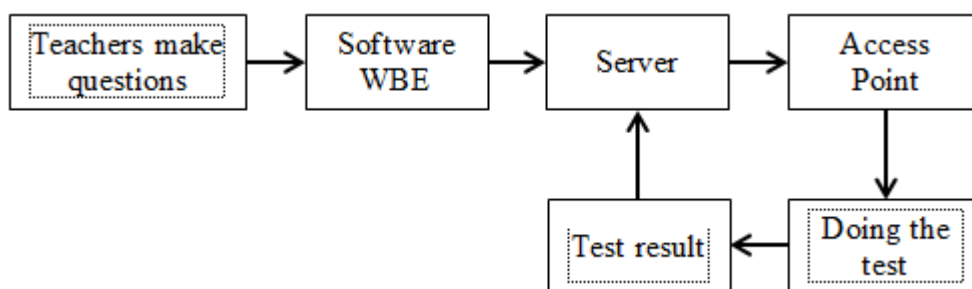
After overcoming the shortages, the researcher did the second test of the system to know whether the problems will come appear and to know its implication toward students' result of the test. There are some findings from the second test and they are 1) the students are familiar with the system, 2) the big audio file makes the connection runs slower so that it needs to be compressed, 3) the students and the teacher can directly see the score so that the score is transparent. In general, there are no obstacles when running the second test.

### ***Step 6: Evaluation part II***

After running the test part II, it can be concluded that the test run well and there is no big problem dealing with the system and the test. From the observation and the result of the test, it can be seen that the system is able to measure the students' real competence because it really measures what the tester want to measure.

To help the teachers and the lecturers in operating the system to do the test, my team and I also have made the manual book so that if the teachers face some difficulties they can see the manual book.

From a series of activities done in the research, the process of the test using web-based exam can be seen based on the following diagram.



Picture 2. Diagram of WBE testing system

(source: research report: Memanfaatkan Teknologi Informasi Komunikasi (TIK) Sebagai Upaya Optimalisasi Penilaian Hasil Pembelajaran di Universitas Muhammadiyah Purworejo - 2015)

The process starts from the teacher inputs the questions to the software WBE installed in the teacher's own laptop that will be the server, and then it is connected to access point which will connect the students' laptop with the server. After the students finish doing the test, the result will come appear to the students' own laptop and to the teacher's laptop. Beside the result, the students might also do self-check to the questions answered.

By applying this testing system, the benefits might be taken by the teachers are 1) no paper needed because all has been handed by the system, 2) the efficiency of time for doing and scoring the test, 3) scoring transparency, 4) the low cheating chance due to the questions appear in random, 5) low cost of test due to no more paper needed.

By using the same source, there is a significant influence of the system used toward teachers' testing model especially the teacher of the listening I course. Those influences are 1) it helps the teacher much in scoring and grading, 2) for the multiple choice test, this system appropriates much, 3) it only appropriates to measure the students competence for knowledge and comprehension

## Conclusion

From the research findings and discussion, it can be concluded that the web-based exam can optimize the students' testing result. In detail, the conclusion of the research are 1) the use of web-based exam testing system handles the weaknesses of the conventional testing system i.e. low chance to cheat, no paper needed, efficiency of time, 2) this system only provides multiple choice tests. I will develop this system more so that it can be used for other testing type such as essay, 3) the system is windows based so that it is easier to operate. Moreover, most of the students have windows for their laptops' operating system, so that this system is user friendly, 4) by applying WBE testing system, the students' real competency will be measured with great accuracy.

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