

New Approaches for Providing Validity in the Web-Based Tests

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Abstract: In this study, “New Approaches for Providing Validity in Web-based Tests” was investigated. To provide validity in web-based tests seem as a big problem. The survey method is used in this study. In this context, information on current and new approaches for providing validity of Internet based measurements is requested from relevant universities and organizations. The population of the study is the four universities in Turkey performing Internet based measurements (Anadolu, Firat, ODTÜ and Sakarya) and the relevant organizations. The sampling of the study is established as follows: e-mails were sent to 53 persons working at relevant universities and organizations. 42 out of 53 persons (79,2 %) sent a reply. The data were collected from the reply e-mails, documents and articles, and they were analyzed. The solution for these tried to reveal new approaches. As follows: (1) The approach of measuring while teaching, (2) The approach of encouraging for research and project development, (3) Digital identity approach, (4) Videoconference, (5) Central examination – center of examination, (6) Internal discipline approach.

Key words: Web, Test, Validity and New Approaches

INTRODUCTION

With rapid development in science from the beginning of 20th century, technology has began to get into human’s lives. As the technology develops most of the things in human’s lives started to get easy and we had the opportunity to do them from the place we sit. With the distance education, students can join the courses wherever they are, reach the course’s materials whenever they want, and students don’t be obliged communicate with educators, and educators can follow, test and evaluate students easily.

Testing which professional educators concern are very important. Tests provide information about students. So we can say that tests are measurement decisions. Measurement is an evaluation expressed in quantities terms (the numeric description of an event or characteristic. Measurement tells how much, how often, or how well by providing scores, ranks, or ratings. Instead of saying, “ Berkay doesn’t seem to understand addition,” a teacher might say, “Berkay answered only 2 of the 15 problems correctly in her addition homework.” Measurement also allows a teacher to compare one student’s performance on one particular task with a standard or with the performances of the other students [1]. Therefore they should used to influence.

Testing is the process of administering or taking a test. Tests have always played an important role in education; teachers have used examinations to guide their teaching [2-6].

Testing by computer is becoming popular, for convenience, test security, and other administrative reasons [7-9]. Computers revolutionized the educational system, which is in the world. Many teachers do use microcomputers on a daily basis. But their computer activity is word processing-preparing course syllabi,

worksheets, and administrative reports. Besides this, many teachers have integrated the computer into the curriculum. Recently policymakers and teachers are convinced that computing technology will revolutionize testing at all levels of the educational system. On the other hand, the Internet provides an effective avenue for testing students on knowledge and attitudes. More and more certification examinations are available online, offered through computer-based testing centers [10, 11].

Researches report that tests conducted over the Internet yield similar results to standard paper and pencil tests in a traditional classroom, leading to the conclusion that online tests can be as valid and reliable as any other kind of exam [12-14]. Along with distance education comes the experience of student assessment in a non-traditional format. Students now submit course work by e-mail, complete learning activities through the Web, and complete student assessments in the form of online testing [12, 15-24]. Online testing is typically seen in the form of a database of multiple choice questions posted on the Internet with secured access [18, 19, 24-31].

Even though multiple choice questions are the typical form of assessment seen on the Internet, many software programs also have the capability of using fill-in-the-blank, matching, and essay questions, and some are even capable of producing tests that use a variety of multimedia tools [16, 17, 19, 23, 32]. There are concerns with the use of online testing methods for student measurement. One concern is the lack of resources; more specifically, the limited hardware, software, and technical expertise that may be needed. A second concern lies in the area of security and reliability of the testing system [12, 15, 20, 26, 31]. An additional system, or a back-up plan, should be in place in the event of a breakdown of the system. Teachers

also need to be insured that students who are getting credit of the assessments are the ones completing the online test. Finally, there is an overall concern that online testing will have either positive or negative effects on student test scores when compared with traditional testing methods [25]. Furthermore, educational researchers are concerned if other variables (gender, special education needs, economic/educational backgrounds, or disabilities) place sub groups at disadvantages when measuring achievement [13]. Even though there are some concerns in the area of online testing, there are many positive features. One benefit is that tests can be scheduled when it is convenient for the student, which also encourages students to increase time management skills [2, 28, 32-34].

Computer-based tests taken online can be scored immediately, which means students are able to receive feedback within a matter of seconds [15, 18, 23, 27, 28, 32-36]. After the tests are scored, the data can be easily downloaded into an electronic grade book system for teacher convenience [24, 28, 30, 33].

There are many advantages for using web testing. As indicated above, web testing is an option today for staffing organizations. Used effectively, web-based testing provides the following advantages (www.skillcheck.com) [37, 38]:

- * **Centralization of Test Content:** Anyone who has had to oversee deployment of a software-based testing system understands the time and cost involved with providing disks or CDs to dozens, if not hundreds of locations.
- * **Centralization of Scoring Information:** Just as the Internet can help centralize test content, the Net can also be used to centralize test-scoring information.
- * **Testing Virtually Anywhere:** Must testing take place only in a staffing company's office? Of course not! This is where testing has traditionally taken place, and to be sure, the office does offer a degree of test security by providing testing within some kind of proctored environment.
- * **Time Advantages:** Web-based tests take less time to prepare and conduct than conventional tests. An important benefit of web testing is that data can be more easily, thoroughly, and quickly analyzed.

There are many disadvantages for using web testing, too. As follows (www.skillcheck.com, without date; [37, 38]):

- * **Cost:** Current testing software solutions have two major costs, the testing software itself (SkillCheck, Qwiz, etc.) and the hardware on which the software runs.
- * **Security:** Particularly with regard to testing at home, how do you know the person taking the test outside of your office is not cheating? This is the greatest dilemma facing not just staffing services, but any organization interesting in remote testing.
- * **Reliability:** The web is currently somewhere between its infancy and adolescence. While it provides remarkable capabilities, it is prone to

slow-downs and errors that are beyond the control of even the most sophisticated users.

Although it is obviously known by everyone that the above-mentioned factors have to be established for achieving validity, not much has been said on how they could be established. New approaches have to be presented and developed for providing validity of web-based tests.

New approaches for providing validity of web-based measurements are discussed in this study. In this context, the following questions are taken into consideration:

- * What are the current approaches for providing validity of Web-based tests?
- * What are the current approaches for providing validity of Web-based tests?

MATERIALS AND METHODS

The survey method is used in this study. In this context, information on current and new approaches for providing validity of web-based tests are requested from relevant universities and organizations.

The Population and Sampling of the Study: The population of the study is the four universities in Turkey performing Internet based measurements (Anadolu, Firat, ODTÜ and Sakarya) and the relevant organizations. The sampling of the study is established as follows: e-mails were sent to 53 persons working at relevant universities and organizations. 42 out of 53 persons (79,2 %) sent a reply. The data were collected from the reply e-mails, documents and articles, and they were analyzed.

RESULTS AND DISCUSSION

The Findings on Current Approaches for Providing Validity of Web-Based Tests: In Internet based measurements, the Higher Board of Education (YÖK) accepts 20 % of the midterm examination. 80 % is formed by assignments and projects. Moreover, YÖK states that the main examination has to be given face to face at the school. This approach can be named as "the approach almost similar to face-to-face measurement".

The Findings on New Approaches for Providing Validity of Web-based Tests: In asserting new approaches, the available system, technological infrastructure and the time elements required for modernization have to be taken into consideration at all times. The new approach models given below are composed of proposals, which can easily be concluded by changing or improving the current opportunities and facilities:

The Approach of Measuring While Teaching: In an evaluation stage, the progress (improvement) of students has to be traced by recording their expected (normal) answers and unexpected (abnormal) answers to the questions. This can be achieved by asking surprise questions to students at the end of each section

of a course. Although a similar application is available in certain certification courses, the answers of the students and the subject notes taken in line with these replies are not recorded. Recording these notes in personal databases established for students and the affect of these notes on the success grade will play positive roles. Therefore, the students will definitely try to understand the course and they will avoid the idea that they can be successful by cheating in the examination. Because, in this way, the measurement covers the entire education process and it becomes almost impossible for students to have someone take the examination for themselves.

The Approach of Encouraging for Research and Project Development: Projects and assignments have to be given to students in order to have them reach the target level of theoretical information and obtain practical skills. It should be kept in mind that affinity is not a complete alternative for a real experience. For instance, at the end of a course where a student learns the Pascal programming, it is expected that she/he knows what all the commands are used for and that she/he can obtain the skill of writing a new program by using these commands. The latter can be realized most effectively by encouraging for developing projects and assignments. These projects definitely have to contribute to their passing courses as well. A similar application is available in all universities in Turkey giving Internet based education. However, practical skills of students are not taken into consideration in certain certification programs such as Microsoft and CISCO. Oral examinations definitely have to be performed for the students, who hand in their assignments and project studies. Thus, a factor, which involves students having their assignments and projects performed by the others and which negatively affects the validity, can be eliminated.

Digital Identity Approach: This concept has recently been mentioned in several fields. The digital identity is the name of the technological application, which verifies that the information sent via electronic environment, definitely belongs to the person or organization sending them and which guarantees that the data has not been sent by somebody else. The digital identity can be employed in education for achieving validity and reliability of Internet based measurements. That is, it points out for sure that the person, who is the subject of measurement, is the right person targeted. It is not known who is together with the student taking an examination in his or her house and she/he makes use of which people or which resources illegally. In the sub steps of the digital identity approach, the solutions regarding these problems are given:

Voice Identity: The voice identity is required in a model where the students are assumed given an interview or taken into an oral examination by voice conference method via Internet. This can be achieved by designing a current technology in line with the goal. In addition to the voice call feature, which is currently

available in many mobile telephone models, this feature is employed in the English (USA), Simple Chinese and Japanese versions of the Microsoft Office XP.

Fingerprint Identity: Fingerprints of students and their way of using the keyboard can form a digital identity. Neil White and his team, Southampton University, the United Kingdom, developed a system recognizing the tapping manner of persons on the keys. White states that the system senses the manner resulting from tapping, and compares it with the information in its memory. Hite adds that everyone has his own style of tapping.

Videoconference Approach: The videoconference is the method of real time audio and video communication where people located in two or more different sites by using various devices. The videoconference enables the real time meeting, education, counseling services, and conference between the student at home and the teacher at the school instead of dealing with various problems in order to get together.

A microphone, speaker, web cam and a voice card are required for the videoconference via Internet. Today, the computers are sold with microphone, speaker, and a voice card. Therefore, the students will simply buy a simple web cam for performing a videoconference via Internet.

By using certain software such as Netmeeting, CU-SeeMe Pro, real time chat, data exchange, sharing an application, supporting the white board feature are available and a mutual drawing can be performed on a drawing program thanks to the whiteboard feature and joint projects can be concluded.

It is known that face-to-face communication and interaction lead to quite positive returns concerning validity and reliability. It is quite clear that the videoconference approach is of utmost important as far as providing the same returns in the web-based tests.

Central Examination-Center of Examination Approach: Central examination-center of examination approach, a validity approach currently employed particularly in professional certification programs, enables the certificate students to take examination at the same time together with the entire world. The technical certification examinations in the world are performed with a central system independent from the companies developing the technology and offering certification programs. Therefore, no matter where the students take the examination, they come across with the same standards.

There are few companies providing worldwide technology-based examinations and qualification tests. The most well known companies in this area are VUE and Prometric. By 2001, VUE and Prometric companies carried out 2400 different examinations in 141 countries and in 25 languages.

Multiple-choice questions are asked in examinations. Moreover, other examination methods, such as fill-in the blanks, are employed. That is, the examinations include simulations. Apart from this, (in English) a case study can be given, and questions can be asked on that.

The examination is given via computers in an examination room totally isolated from voices and noises (testing room) with the presence of a proctor or camera. The examination program and examination computer are private, and they do not allow any interference with the computers with which examinations are given. The examination questions are received from the relevant companies at the computer, with which examination is given, for private use only via online communication.

Internal Discipline Approach: The internal discipline in students has to be developed from the pre-school period. A student with a developed internal discipline does not tend to cheat in an examination in any case. Parents, teachers, and administrators have major responsibilities and duties in this issue.

CONCLUSION

According to Bugbee [11], although paper and pencil testing may never go the way of the dinosaurs, computerized testing is definitely in ascendancy, especially in distance education, certification, and licensure, and will probably eclipse paper-and-pencil testing in the future. Online test is an important part of the evolving educational teaching opportunities provided by web. New approaches for providing validity of web-based measurements are investigated in this study. The method of this research is survey method. In this context, information on current and new approaches for achieving validity of Internet based measurements is requested from relevant universities and organizations. The population of the study is the four universities in Turkey performing Internet based measurements (Anadolu, Firat, ODTÜ and Sakarya) and the relevant organizations. The sampling of the study is established as follows: e-mails were sent to 53 persons working at relevant universities and organizations. 42 out of 53 persons (79.2 %) sent a reply. The data were collected from the reply e-mails, documents and articles, and they were analyzed.

The findings about new approaches for providing validity of web-based tests are given below:

- * The Approach of Measuring While Teaching
- * The Approach of Encouraging for Research and Project Development
- * Digital Identity Approach
 - * Voice identity
 - * Fingerprint identity
- * Videoconference
- * Central Examination-Center of Examination
- * Internal Discipline Approach

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