

Moodle Online Test (Quiz) for Computer Science Students of Higher Educational Institute

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Abstract

The importance of formative assessment of students in higher educational institute can be carried out by introducing new tools for the assessment. As the teaching trend is changing due to the technological changes, Learning Management System (LMS) plays a vital role in it. There are so many tools available in LMS and Moodle's quiz[1] serves as a method for the assessment in lieu of paper based testing. As part of curriculum, a compulsory online test (quiz) is been conducted for the entire final year undergraduate students of a University in India. The quiz covers all the core subjects included from first to fifth semester of the undergraduate course. This paper reviews about the creation of Online Test (Quiz) by using LMS Moodle for Computer Science students and its effectiveness by taking into account the marks of students and also from the attitude of the students towards activities of this kind.

Keywords:

LMS, Moodle, quiz

I. INTRODUCTION

India is one of the great countries in Asia with rapid progress in education with advanced teaching and learning technologies. The universities in India are slowly introducing the Learning Management System to keep pace with the emerging technological upliftment. There are numerous ICT tools implemented in education and the Learning Management System (LMS) is considered as the most important and effective tool for ICT enabled teaching-learning process[2]. It is emerging as a potential source of medium for teaching and learning.

There is an increasing role of Information and Communication Technologies (ICTs) in the field of student's assessment [3][4][5], to the extent that E-assessment has emerged as a new issue in the educational field [6][7][8][9].

The author working as Assistant Professor in the Department of Computer Science in a University in India, started to use Moodle, an open source learning management system where initially learning materials were uploaded for various

Computer Science subjects[10]. Moodle has been selected because it is one of the most frequently used LMS and enables the creation of powerful, flexible and engaging online courses and experiences[1]. So many reports have proved that Moodle rates well and is being used in a number of institutions and has a wide variety of active courses, available in many languages[1].

The students used to download the learning materials for exam preparation. The students were also asked to submit assignment using Moodle online assignment tool[11].

As part of curriculum, undergraduate final year students of all majors of the university have to undergo online test at the end of fifth semester. In the online test, eighty multiple choice questions will be asked where questions will be from all the core subjects the student has studied till fifth semester. The software used for the online test was developed using ASP.NET. The questions will be uploaded in the university intranet server. The students take the test by logging in their username and password. The duration of the test is 60 minutes. The time, date and venue (computer laboratory) for both trial and main test will be given by the controller of examinations. For each course, a trial test will be held prior to the main test. The test will be conducted centrally by the computer centre of the university and not by each department. The students have to take test in the computer laboratory allotted for them. There are two computer laboratories where the test takes place. Many problems are faced by the student while taking the test. They find difficult to login their username and password. For correct answer the student has to type the correct choice (A,B,C,D) in the box given. Before attending all the questions unknowingly they press some keys on the keyboard and the questions they have attended so far disappears. Again they try to login but since one attempt is allowed they are not able to attend the test again. So some students get less mark and fail in the test. Because of server problem the system gets hanged sometime. So to overcome all these problems as a first step, the department of Computer Science planned to conduct the online

test (quiz) for the computer science students alone for the academic year 2015 using LMS Moodle Quiz tool. The students of Computer Science (B.Sc) and Computer Applications (BCA) attended the online test (quiz) using LMS Moodle. The students prior to main test underwent two trial tests. Training was given for few students in how to access Moodle as they have never accessed before. One trial test was conducted in Computer science department computer laboratory itself. The total strength of students who attended the online test from both disciplines of Computer Science was 93.

The 80 questions taken for the test were from the core subjects of Computer Science covering Digital Computer Fundamentals, Data and File Structures, Computer Architecture, System Software, Database Management Systems, Object Oriented Analysis and Design, Operating Systems, Computer Networks, Software Engineering, Internet and E-Commerce. The minimum passing mark for the online test is 50. Since it's a compulsory component to get the degree the students are under pressure to clear the test. So they put effort and manage to pass with a reasonable amount of effort.

II. MOODLE QUIZ FOR THE ASSESSMENT

A question bank was prepared comprising of 1500 multiple choice questions where 150 questions from ten subjects were taken. The concerned subject faculty helped in preparing the questions. From the question bank 80 questions were chosen for the online test. Two sets of questions were prepared, one for the trial test and another for the main test. The questions comprised of 8 questions from each subject.

Table 1: Number of questions and type

Number of Questions	80
Question Type	Multiple-choice

Table 2: Number of questions covered from each subject

Q1-Q8	Digital Computer Fundamentals
Q9-Q16	Data and File Structures
Q17-Q24	Computer Architecture
Q25-Q32	System Software
Q33-Q40	Database Management Systems
Q41-48	Object Oriented Analysis and Design
Q49-56	Operating Systems
Q57-Q64	Computer Networks
Q65-Q72	Software Engineering
Q73-Q80	Internet and E-Commerce

The 80 questions selected from the question bank were formatted according to Aiken format. Sample

questions according to Aiken format are shown below:

The distinct symbols in a number system is referred as

- A. radix
- B. range
- C. complements
- D. modulus
- E. ANSWER: A

In the _____ transmission mode, communication is unidirectional.

- A. simplex
- B. half-duplex
- C. full-duplex
- D. hybrid

ANSWER: A

The question order in the layout of the quiz has been selected as shuffled randomly. So each student will get the questions in shuffled manner so there is no chance for a student to copy from her neighbor. The author decided to show feedback for the questions once the student finished answering and clicked submit button. By this the student can know which is the correct answer and can evaluate their own mistake and thus makes the student to be successful. After answering all the questions, the student can view their grade they have obtained.

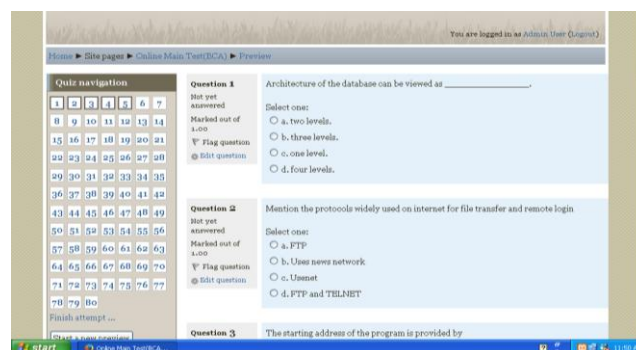


Fig 1: Layout of the Quiz

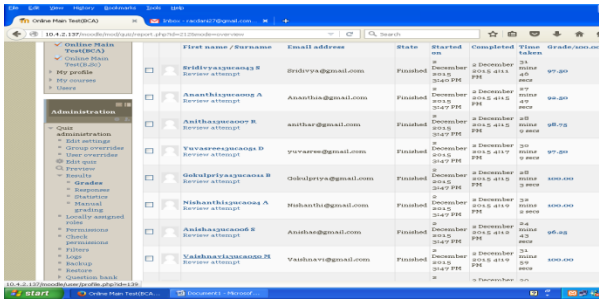


Fig 2: Grades obtained by the students

Two trial tests and one main test were conducted for both B.Sc and BCA students. The results of the quiz are being given in table 3. In trial test 1 both B.Sc and BCA secured very less percentage of pass. In trial 2 they have improved well and in main test both classes secured 100% pass with each student scoring good marks and it can be seen from the mean value with 94.78 for B.Sc and 96.84 for BCA. The correlation between two trial tests and main test is shown in Fig.3 for B.Sc students and Fig.4 for BCA students. The students completed the main test faster compared to the trial tests.

III. RESULT ANALYSIS

The quiz module gives information like the grades of all students, which question the student has got wrong or correct, individual responses and attempt summaries. All the statistical reports can be downloaded as Excel or text file.

Table 3: Analysis of the scores of the Quiz (both Trial and Main Test) S-No. of students present for quiz, S*,-

No. of students absent, SD-Standard Deviation

Online Quiz		S	S*	Mean	SD	Median	% of pass
B.Sc	Q1-Trial test-1	42	4	48.42	10.71	47.50	45.2
	Q2 Trial test-2	44	2	69.57	13.23	72.50	88.6
	Q3 Main test	46	Nil	94.78	7.68	97.50	100
BCA	Q1-Trial test-1	45	2	40.63	11.16	38.75	20
	Q2 Trial test-2	46	1	61.87	14.26	63.75	78.2
	Q3 Main test	47	Nil	96.84	3.19	97.50	100

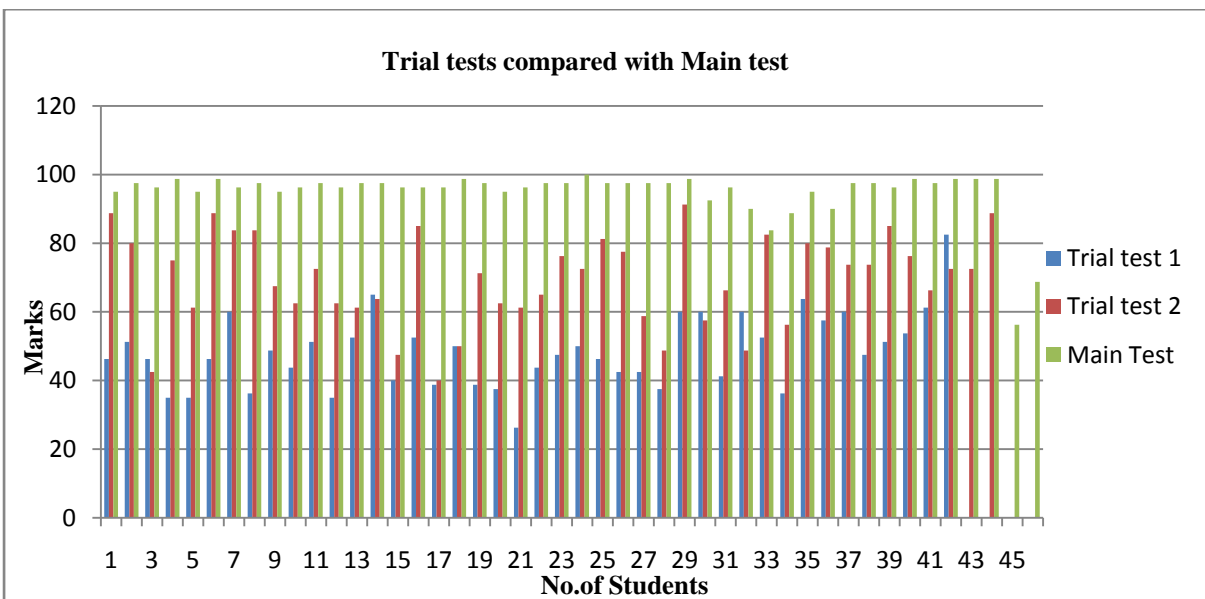


Fig 3: Correlation between Trial tests and Main Test for B.Sc students

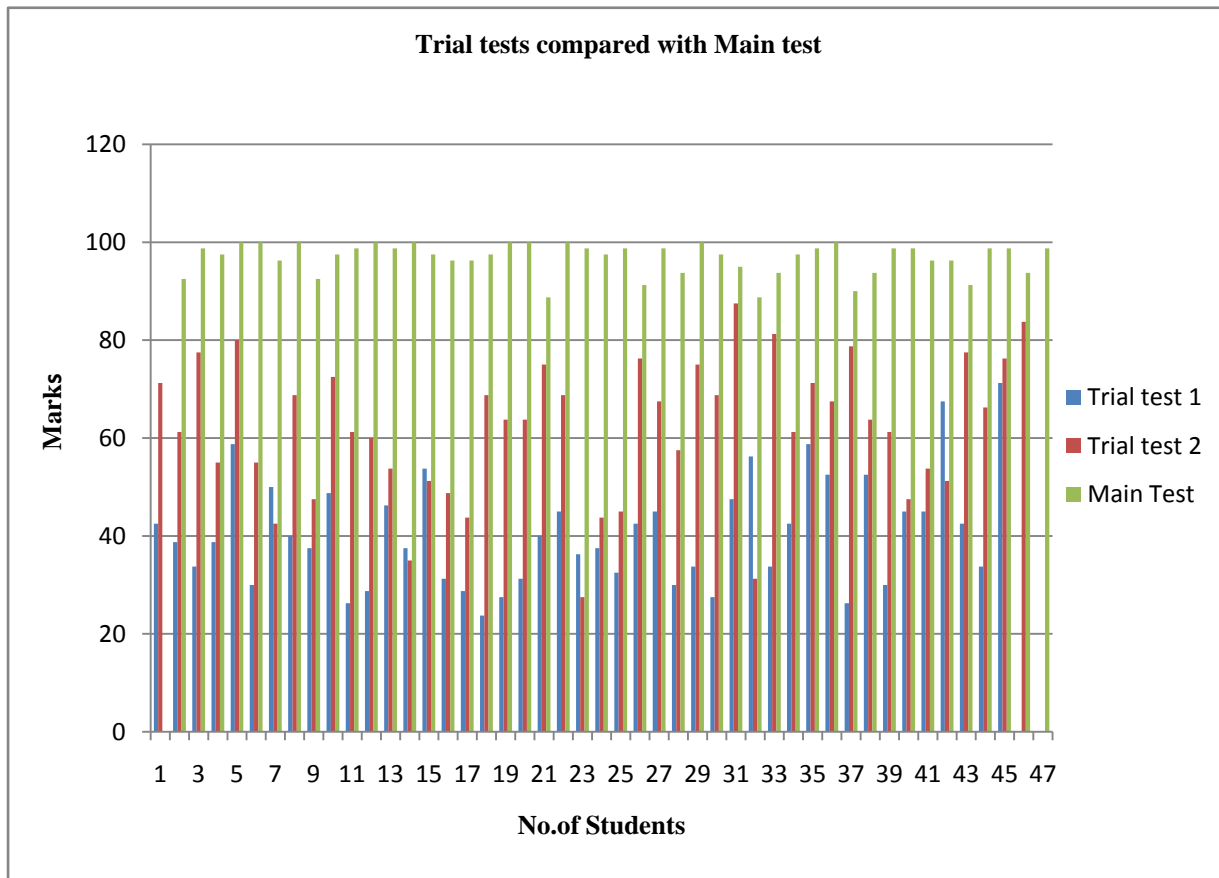


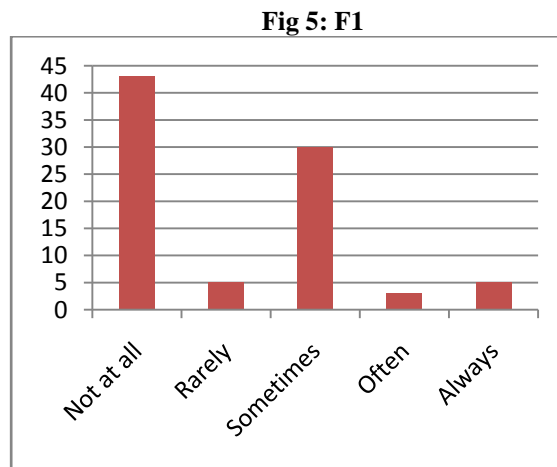
Fig 4: Correlation between Trial tests and Main Test for BCA students

IV. STUDENT’S FEEDBACK ON MOODLE QUIZ

It is a usual practice of the University to get feedback from students at the end of each semester. The students give feedback about the teacher for the subject taught by her. Likewise the students were asked to give feedback about the usage of Moodle Quiz as they were using it for first time. A questionnaire was prepared that consisted of 6 questions. The feedback was designed so that minimum effort and time is required from the students to get their opinion about a number of objective facts [12] with regard to assignment submission and receiving feedback. All the six questions contained pre-programmed answers asking students to select the most suitable response. The questionnaire was made available to 93 students but only 86 participated (92%). The questionnaire is shown below in Table 4.

Fig. 5 shows the results of the feedback given by the students. 50% of the students have not used Moodle at all and 50% of the students have used it before attending the online test (F1). Regarding the usage of Quiz using Moodle 95% has give positive feedback (F2). 90% of students have responded that they could recollect the topics covered in the theory classes (F3). 73% of students have felt that

knowing the correct answers after submission of quiz can correct their mistakes (F4). When it comes to (F5) 73% agreed and strongly agreed. Finally 78% of students agreed and strongly agreed that their marks in online test were satisfactory.



F1	Have you used Moodle before on this course?	Not at all <input type="checkbox"/>	Rarely <input type="checkbox"/>	Sometimes <input type="checkbox"/>	Often <input type="checkbox"/>	Always <input type="checkbox"/>
F2	I would rate the online test using LMS Moodle as	Very poor <input type="checkbox"/>	Poor <input type="checkbox"/>	Satisfactory <input type="checkbox"/>	Good <input type="checkbox"/>	Very good <input type="checkbox"/>
F3	The online test helped me to recollect some of the topics covered in the classes	Strongly disagree <input type="checkbox"/>	Disagree <input type="checkbox"/>	Neutral <input type="checkbox"/>	Agree <input type="checkbox"/>	Strongly agree <input type="checkbox"/>
F4	I get to know the correct answers immediately after submission of the quiz so I can correct my mistakes	Strongly disagree <input type="checkbox"/>	Disagree <input type="checkbox"/>	Neutral <input type="checkbox"/>	Agree <input type="checkbox"/>	Strongly agree <input type="checkbox"/>
F5	Helps to know the marks immediately after submission of quiz	Strongly disagree <input type="checkbox"/>	Disagree <input type="checkbox"/>	Neutral <input type="checkbox"/>	Agree <input type="checkbox"/>	Strongly agree <input type="checkbox"/>
F6	I was satisfied with the marks obtained in online test	Strongly disagree <input type="checkbox"/>	Disagree <input type="checkbox"/>	Neutral <input type="checkbox"/>	Agree <input type="checkbox"/>	Strongly agree <input type="checkbox"/>

Table 4: Questionnaire

Fig 5: F2

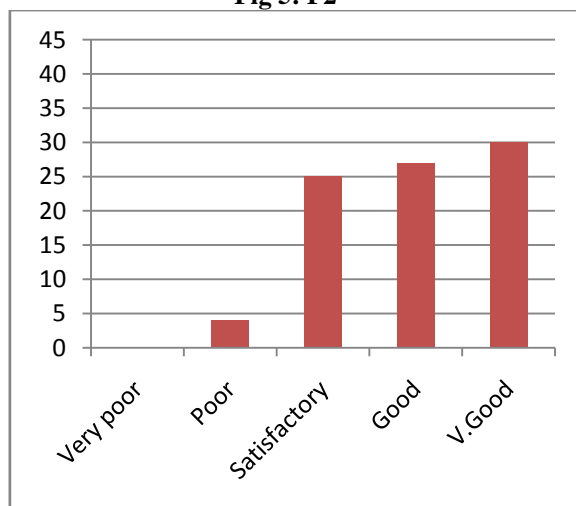


Fig5:F3

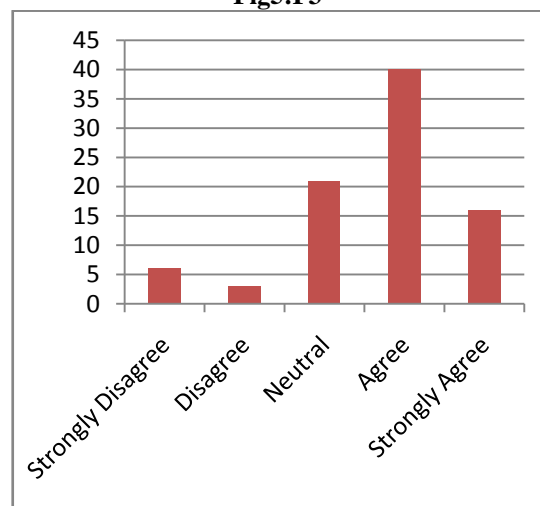


Fig 5: F4

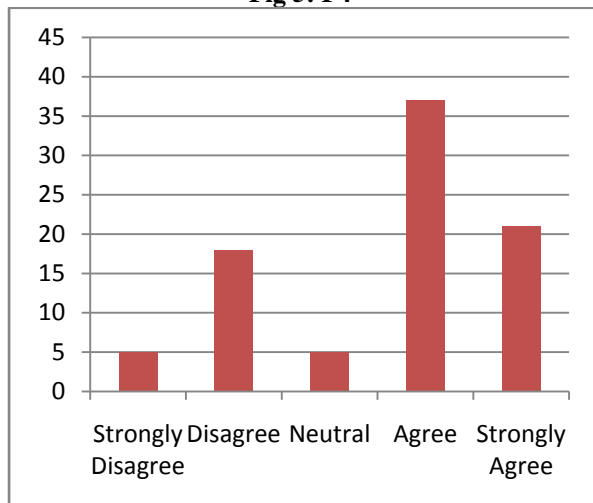


Fig 5: F5

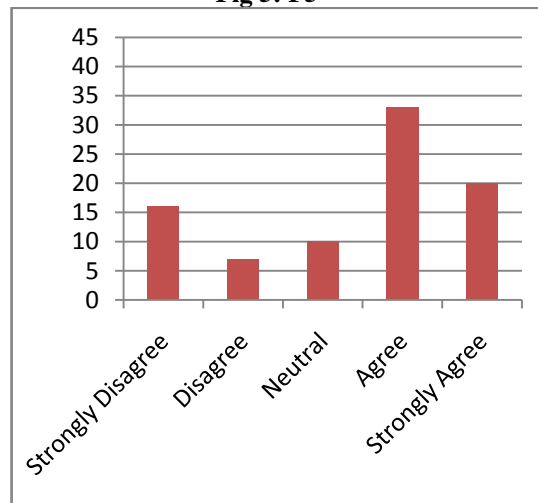
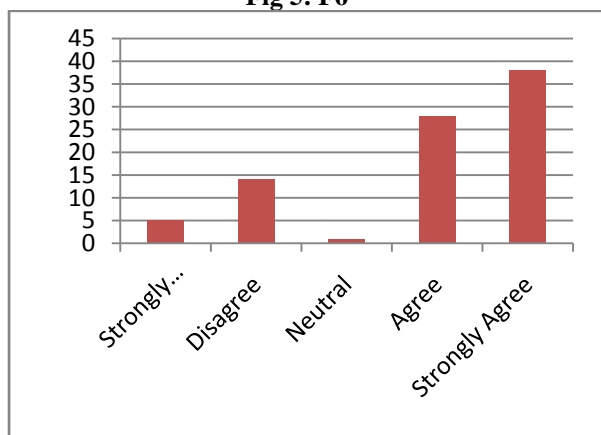


Fig 5: F6



V. CONCLUSION

From the experience we can conclude that Moodle Quiz is a very useful tool that can be used for assessment. Students find it easy and friendly to use taking into account the results from student's feedback. As a first step only Computer Science students used Moodle for online Quiz. We are planning to perform online test using Moodle Quiz in future for entire University students.

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