Digitized Assessment technology to Improve Effectiveness of Teachers Instructions with Facilitating OBE

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Abstract—*Outcome Based Education (OBE) includes variety of assessments to concentrate on the learning outcome of the students. One of the integral part of outcome based education is computer-assisted assessment (CAA). In this paper, we try to compare the effectiveness of teacher instructions that follows the components of OBE in the curriculum of MCA in Tamilnadu state in India with some of the developing countries.*

Keywords- *OBE,CAA,Outcome based Education,Teacher Instruction,Computer-assisted Assessment*

I. INTRODUCTION

The main aim of assessment in OBE is used to check the learning outcome of students, either it may be summative or computerized or formative. Outcome is measured based on the significant learning experiences of a student at the end of any learning activity. Assessment is a evaluative synergist for student learning (for example, Brown *et al.*,1997) and there is considerable force on higher education institutions to measure learning outcomes more authorized (Farrer, 2002; Laurillard,

2002).The availability of new statistical methods and having different changes in strategies, a careful review is essential to identify the effectiveness of teachers based on their instructional methods and learning outcome of the students. The purpose of this study, is to examine the impact of teachers on student learning and then to examine the instruction delivery of effective teachers. Computer assisted assessment (CAA) has significant potential both to ease assessment load and provide advanced and powerful modes of assessment (Brown *et al*., 1997; Bull & McKenna, 2004) Student's Learning Outcomes (SLO) is used as a training tool that assessed the learning content of a student. CAA is used to upgrade feedback to staff and students, to save time, reducing administrative loads and improving the stability of assessment methods. Based on computer assisted assessment ,the teacher

can easily understand the ability of student, knowledge and skill, strength to motivate and identify those students need additional support. In turn, it gives an opportunity for a teacher to change the instructional strategies. The main aim of OBE is to move from teaching to learning and to assessing students learning through various learning activities, like adaptive testing (e.g. Quiz), web-based (e.g. project design, gaming), Electronic questionnaire (e.g. Survey) are major features.

This paper contains the data collected through a survey conducted on 32 trainee participants who had visited Chennai, India during January-March 2018, for a training at the National Institute of Technical Teachers Training and Research, Chennai be included from 20 different developing countries around the world (Table 1.0). The authors guide was the training programme's coordinator and authors were interacted with the participants were undergoing an ICT training programme through Outcome Based Education (OBE) sponsored entirely by the Indian Government. Questionnaire was designed to the participants on the influence of ICT of India. The feedbacks were compared with a similar surveyed data conducted for the teachers of MCA programmes in Tamilnadu (restricted to Chennai district), as most of the participants from the developing countries also belonged to similar areas of ICT. The study reported in this paper is only a part of a whole research project, while presentations of other findings are beyond the scope of this paper. Important conclusions have been drawn from the comparative study.

II. OUTCOME BASED EDUCATION

Outcome based Education means targeting to organise the things that are essential for all the students in an educational system and improves their ability to acheive at the end of their learning experiences, explained by William Spady, one of the lead authorities and considered as the father of OBE. The OBE is therefore, an education should be outcome-based rather than content-based, but it requires curriculum developers to relook on a process of designing the curriculum to produce desired outcomes, the content, instructional strategies, learning activities, and assessments in order to meet the intended outcomes. He explains that Outcomes can take many forms, ranging from specific content skills to complex performances important in life (Spady, 1994).

III. BACKGROUND

This article explains a clear picture of what is important for students to be able to do, then organizing the curriculum, instruction and assessment to make sure this

learning ultimately happens (Spady, 1994). Effectiveness is a mandatory concept that provides the complex task of teaching and the importance of learning content in which the teachers work. The preparation of teacher and the qualities of instruction is noted correctly by Lewis(et al 1999) that "teacher quality is a complex situation and there is a little agreement on what it is and how to measure it". Knowledge, skill and values are assessed by using varieties of assessment approaches (SPT Malan, 2017). Even a few learning content must cover the integrated knowledge, skills and values. A critical discussion for assessing unit outcome either by the manual based system and online system has been documented by (Shamsul Muhamad et. al.2012).

The authors have argued that learning outcomes can be used as indicator for mapping the long term Programme Educational Objectives and it can be measured through direct assessment. Experiments on Computer Programming Course (case study) assessment were carried out and results obtained were used as tools to illustrate the quiz for measuring cognitive category, while designing a project were used for measuring affective domain. Supported by these demonstrations, this research work considered three instruments namely quiz, project design and survey to be administrated by the authors in the state of Tamilnadu(restricted to Chennai district) in India, while considered mock test, group activities and others (spelt out specific case) apart from these three for the Developing countries. The paper has considered only the essential portfolios of assessments according to OBE. Results obtained are from survey conducted on the samples.

IV. METHODOLOGY

For the proposed comparative study, the Conversation interference is used for survey methodology was considered. Demographic data are presented below. Purposive sampling technique (Sharma, BVS, 1988) has been adopted.

A. Demography of the Samples:

In this paper the hypothesis is that there is a significant difference between India (delimited to the State of Tamilnadu) and developing countries in considering assessment portfolios of Outcome Based Education in the area of Information and Communication technology. The demography of Developing countries: Number of samples (respondents): 32, representing 20 different countries as listed in Table 1.0 (consisting of ITEC: Indian Technical and Economic Cooperation programme, TCP: Technical Cooperation Scheme of Colombo Plan and the SCAP: Special Commonwealth assistance for Africa Programme). These participants had visited

Chennai for go through a two months training programme on "ICT Applications in Education and Training", sponsored by Govt. of India. (February and March 2018). The demography of Tamilnadu (restricted to Chennai district): 23 Institutes offering MCA programmes (10 from Central region; 2 from Northern region and 11 from Southern region). Number of samples (respondents): 23 teachers of MCA (12 from Central regional institutions; 3 from Northern regional institutions and 8 from Southern regional institutions) with a well combination of gender and experience.

The sampling is based on "Purposive or convenient

sampling"(Sharma BAV 1988). Purpose sampling is selected for the purpose of opinions for feedback analyses, as it is known to represent the total required data that is known to represent well-matched groups. In addition, this selection is also influenced by the fact that the availability and willingness of respondents are also sensitive, but satisfies the purpose of the research Average (excluding lower level schools): Quiz = 2.656; Questionnaire = 1.095; Project-design = 4.565. Average experimental survey of Tamilnadu (restricted to Chennai district): Quiz = 2.66; Questionnaire = 1.027; Project-design = 2.031.

V. RESULTS AND DISCUSSIONS

Figure 1.0 shows the distribution of average minimum number of quiz opined by the participants of the developing countries. The average of average coincides with that of Tamilnadu (restricted to Chennai district), namely 2.66.Kyrgyzstan, alone shows relatively high, and appears that the assessment system would match with OBE practices.

(Table 1.0)

COMPARISON OF CAA CONDUCTED IN DEVELOPING COUNTRIES AND TAMILNADU(RESTRICTED TO CHENNAI DISTRICT) – FOR SIMILAR COURSES

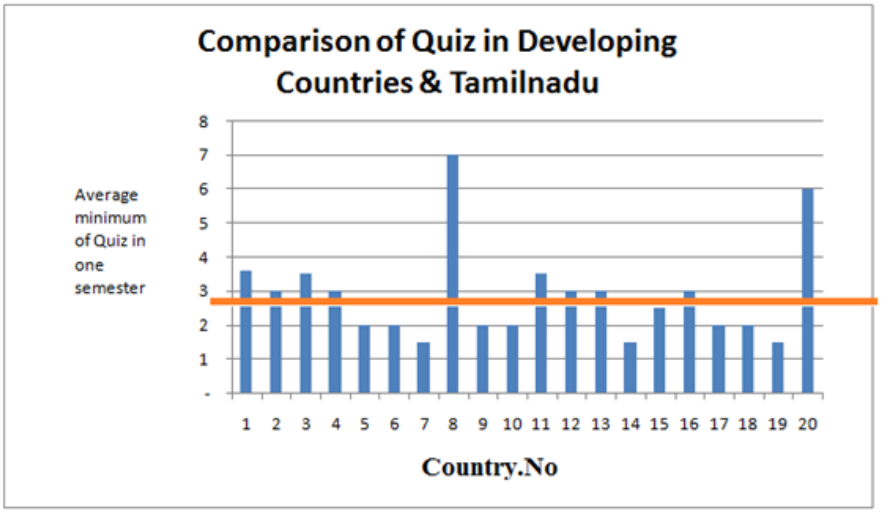
Country No	Country # of responses	Average minimum # of Computer Assisted Assessment – practices followed in One term						Complementing Areas
		Quiz	Project-Design	Questionnaire	Mock-test	Group-Activity	Others	
1	Bhutan(5)	3.6	3.0	1.0				Interview/Book Review
2	Kenya(3)	3.0	2.4	2.0				

3	Syria(1)	3.5	4.0	1.0		1.0		
4	Uganda(1)	3.0	2.0	1.5				
5	Fiji(1)	2.0	1.5	2.0			1.0	Depends on course type
6	Vietnam(1)	2.0	20.0	1.0	2.0			Survey for every topic
7	Zambia(1)	1.5	2.0	2.0				
8	Tunisia*(1)	12.0	14.0	6.0				*for lower level technician schools
9	Afghanistan(2)	2.0	5.0	2.0		1.0		
10	Nigeria(3)	2.0	6.0	2.0				Using CBA
11	Srilanka(1)	3.5	3.5	2.5	2.0			
12	Tanzania(1)	3.0	2.0	1.0	1.0			
13	Uzbekistan(1)	3.0	15.0	2.0				Quiz for every practical
14	Mongolia(1)	1.5	2.0	1.0				
15	Namibia*(1)	2.5	16.0	1.0				*for lower level technician schools
16	Niger(1)	3.0	3.0	1.0				
17	Ethiopia(1)	2.0	2.0	2.0	3.0	4.0		Design for every new technique
18	Nigeria(3)	2.0	3.5	3.0			1.0	
19	Mauritius(1)	1.5	2.5	2.0				
20	Kyrgyzstan(2)	6.0	3.0	3.0	3.0	2.0		

*Not directly compared with MCA Institutions of Tamilnadu (restricted to Chennai district)

FIGURE 1.0

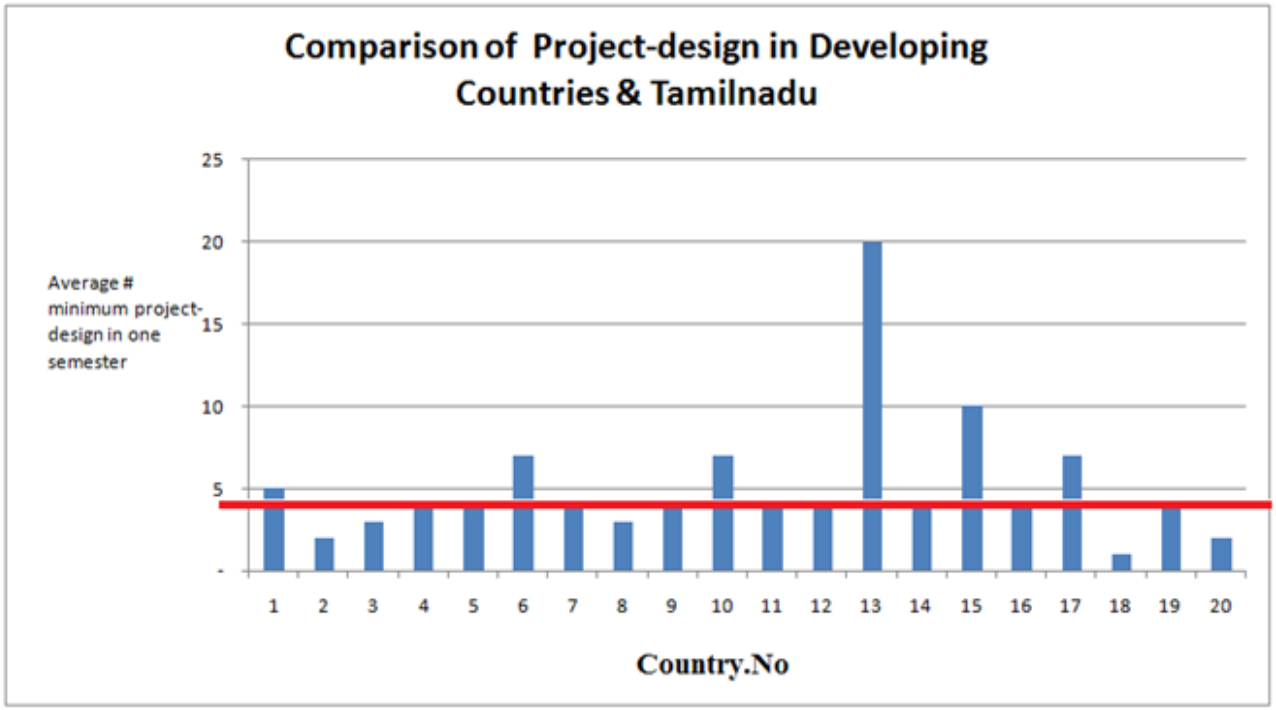
COMPARISONS ON AVERAGE # OF QUIZ PRACTICED IN 18 DEVELOPING COUNTRIES WITH TAMILNADU



Standard deviation: 1.0925

FIGURE 2.0

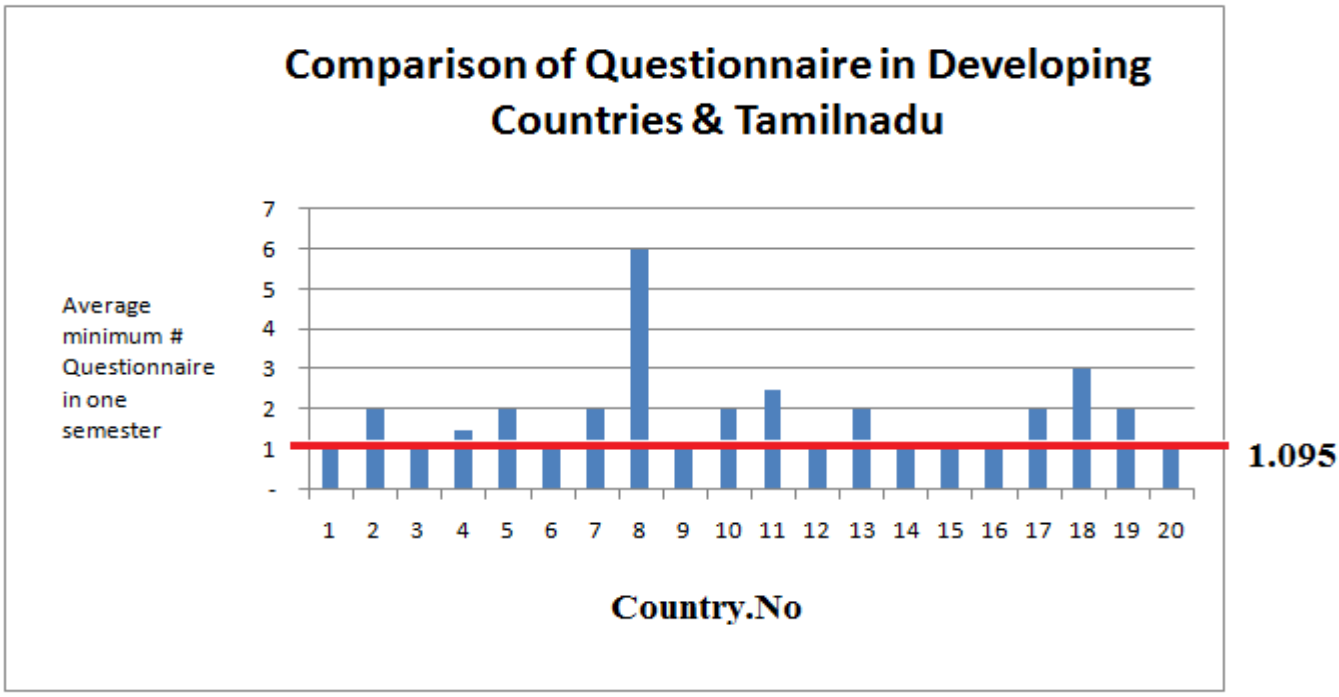
COMPARISONS ON AVERAGE # OF PROJECT-DESIGN PRACTICED IN 18 DEVELOPING COUNTRIES WITH TAMILNADU



Standard deviation: 4.5625

FIGURE 3.0

COMPARISONS ON AVERAGE # OF QUESTIONNAIRE(SURVEY) PRACTICED IN 18 DEVELOPING COUNTRIES WITH TAMILNADU



Standard deviation: 1.095

In the case of average minimum number of a is concerned Figure 2.0 shows average of average value is 4.56 in the case of developing countries, where as Tamilnadu shows a meager 2.031. Since standard deviation is also very high, excluding "Uzbekistan" and "Vietnam", the recalculated average of the rest for the developing countries, the value becomes 2.93. Even with this value, the average # of project-design practiced in Tamilnadu is found to be grossly inadequate when compared with the average of developing countries.

VI.CONCLUSION

Portfolios such as online quiz, project-design, mock test and questionnaire works would greatly assist in enhancing the learning outcome of a student by a teacher as instructions in order to understand the ability, skill and knowledge of students to improve their learning outcome as well as the overall progress, as per the principles and practices of Outcome Based Education. Many developing countries across the world are attempting to create Outcome Based Education in similar problem based subjects like the MCA of Tamilnadu State in India. The study reported in this paper gives alarming results which are brought as conclusions presented below.

While the average number of project-design works being practiced in Tamilnadu is even though less, is comparable with the developing countries for facilitating computer assisted assessments of students. In the case of periodical tests, the average number practiced in Tamilnadu matched well with that of developing countries. However, in the case of survey test by questionnaire, an important portfolio of computer assisted assessment, the average number practiced in Tamilnadu is grossly inadequate when compared with Asian countries such as Afghanistan, Vietnam and only partly comparable with some African countries.

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