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Challenges and opportunities in assessing practical ICT module in the revised national TVET curricular in Uganda

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Abstract
Uganda Business and Technical Examinations Board administered and marked on the spot practical ICT papers in the revised TVET curricular in all examination centers in November 2016 and 2017 country wide. This study explored the different challenges and opportunities encountered during these assessments using qualitative survey research design. Data were collected using questionnaire from practical ICT examiners. Low computer to student ratio, inadequate working space and power supply interruptions were the major challenges, while Increased paid up assignments for examiners, chances to learn computers by students, increased grants to examination center and demand for computers in the market presented opportunities. Most ICT instructors benefited from the opportunities while the challenges were institutional and beyond the control of the Board. Availing solar & electric generators, purchase of additional computers by centers in phase manner and hiring of trained ICT laboratory technicians could address most of the challenges.

Keywords: TVET, ICT, Practical, Curriculum, Assessment

1. Introduction

This paper, review briefly the innovation to address skills gap in the graduates of Uganda TVET system through assessment reform. Using questionnaire and interview guides, the present study explored and here reports on the challenges and opportunities which accompanied the innovation of incorporating practical ICT assessment.

Employers in Uganda have often complained about skills shortages that constrain production and expansion. The country responded by developing a strategic plan on Business, Technical and Vocational Education and Training (BTVET) to address these skills shortages. The plan aimed to create employable skills and competences relevant in the labour market [1]. One of the four sets of institutional interventions identified in the plan as critical to BTVET reforms was "expanding the scope of Uganda Vocational Qualifications Framework (UVQF) and ensuring that training content corresponds to world of work requirements". This led to the urgent and massive curricular reviews and development for both School and institutional programs by the National Curriculum Development Center (NCDC). The National Certificate curricular in over ten (10) Technical programs were some of the new developments to address the skills gaps in TVET.

Uganda is one of the only six countries whose ICT development index (IDI) rose by more than five places in the rankings between 2016 and 2017 [2]. According to the same report, the proportion of individuals with ICT skills (skills sub-index) rose from 159 in 2016 to 164 in 2017. In line with the rapid development and usage of ICT in the workplace, it is important that the current generation of students need to be well-prepared with ICT knowledge and skills in order for them to face the tasks in the world-of-work after graduation. In fact, ICT is the way of life for the majority of us and we should be fully prepared to live in the ICT world [3].

The Information and Communication Technology (ICT) is an effective educational technology which has promoted some dramatic changes in the teaching and learning processes. Blurton [4] defined Information and communications technologies (ICT) as "*a diverse set of technological tools and resources used to communicate, and to create, disseminate, store, and manage information*" [5]. The importance of ICT cannot be over emphasized in Ugandan TVET system. Oduma & Ile [5[, emphasized that the use of ICT in education can help to improve memory retention, increase motivation and generally deepen understanding. The ministry of education and sports through the National Curriculum Development Center (NCDC); revised the national technical certificate curricular to include compulsory ICT modules in all trades. The curricular provided for both theory and practical ICT assessment, which the Uganda Business and Technical Examinations board (UBTEB) is implementing. Effective assessment of ICT content is very much needed so that the students can achieve necessary knowledge, expertise and attitude from the content [6]. The Board now assesses practical ICT in over 250 centers compared to about 200 centers in 2016 when the new curricular was first piloted. It employs the appropriate assessment techniques such as continuous assessment (Homework, group work, class test etc.) and summative assessment (including learning by doing/ practical work and written test). Such assessment techniques play a pivotal supporting role in the assessment of and for learning ICT.

Innovations in assessment have always carried with it a number of factors. Oduma & Ile [5] reported poor knowledge of the teachers and instructors in using the ICT system gadgets as one of the challenges in the application of ICT in Nigeria education system. In Ethiopia, Dureiti, Wakgari, & Manas [7], reported limited infrastructure, capacity building of teachers, language and curriculum content among the

problems affecting the adoption of ICT in education. For the purpose of this research, assessment and examinations shall be used interchangeably.

Statement of the Problem

The introduction of a new set of curricular for National Certificate in Technical programs brought with it compulsory ICT modules which examinations are administered practically in all centers. During marking of these modules, the Board encounters a number of issues ranging from unfinished student work to suspected copying of work. In addition, administering two to three shifts of different sets of questions but with the same structure and strength is costly to the Board. Given its importance in TVET, the Board still has to conduct practical ICT assessment.

Rationale for the Study

The practical ICT modules are included in the newly revised sets of National Technical Certificate curricula and they have to be assessed practically. In order for the Board to come up with the best mix of strategies to administer the practical ICT module examinations, there is need for well researched information on the challenges and opportunities that comes with practical ICT assessment. The findings of this study will inform decisions for win-win measures to the Board and examination centers during administering of practical ICT assessment. This will eventually enable UBTEB and examination centers pick the best system mix to administer the practical ICT examinations.

Objectives of the Study

The objectives of the present study are;

1. To find out the different challenges facing the administration of compulsory practical ICT modules in Ugandan TVET institutions.
2. To explore the different opportunities presented by the administration of compulsory practical ICT modules in Ugandan TVET institutions.

Research Questions

To achieve the above objectives, the following research questions were developed;

1. What are the challenges facing the administration of compulsory practical ICT modules in Ugandan TVET institutions?
2. What are the opportunities presented by the administration of compulsory practical ICT modules in Ugandan TVET institutions?

Research Methods

The present study employed qualitative survey research design. It lasted for Six (06) months from December 2017 up to April 2018.

Questionnaire method of data collection was used to collect the data from a sampled total of 120 out of the targeted 150 population of practical ICT examiners. Before implementing the survey, the instrument was reviewed by three ICT examiners in order to identify problems with wording, content, and question ambiguity. After some changes were made based on their suggestions, the modified questionnaire was piloted on six lecturers who are teaching at different institutions. These pilot respondents were not included in the main study. Based on the feedback of this pilot study, minor edits were introduced to the survey questions, and the questionnaires were distributed to the participants at the marking center. Other participants who were not invited for marking were requested to participate by responding to online questionnaires sent by links to their emails.

The paper questionnaires were distributed to examiners at the marking center, just after they finished marking but before they could sign off from the marking center. This was to enable prompt and maximum return of the filled questionnaires. A total of 120 questionnaires were returned. The data collected was analyzed thematically using descriptive statistics in statistical package for social sciences (SPSS, Version 23) to discern the conclusive information from the study. Simple tables and graphs are presented to aid and ease interpretation of the findings.

Findings (Results)

This section presents the findings based on the 120 responses recorded. Tables and or graphs are presented for reasons explained under research methods.

Challenges Experienced in the Assessment of Practical ICT Module Examinations

Figure 1.0 below shows the different challenges experienced during the administration & assessment of practical ICT modules in TVET institutions in Uganda. Generally, Low computer to student ratio (32%), Inadequate working space (24%) and Power supply interruptions (15%), were the major challenges reported by most examiners.

Slow computers (6%), limited computer knowledge exhibited by students (8%) and delays in setting up ICT laboratories (7%) were also reported from few assessors.

Other challenges which included non-cooperation from exam centers and limited time allocated for examinations accounted for 8% and appeared relatively less common challenges experienced in the assessment. The responses from examiners from both Government and private institutions were almost uniform (Fig2.0).

Government centers weighed more on challenges of low computer to Student ratio (32%) and Inadequate working space (26%) compared to private centers with 30% and 20% respectively. On all other challenges, both categories of institutions compared almost equally.

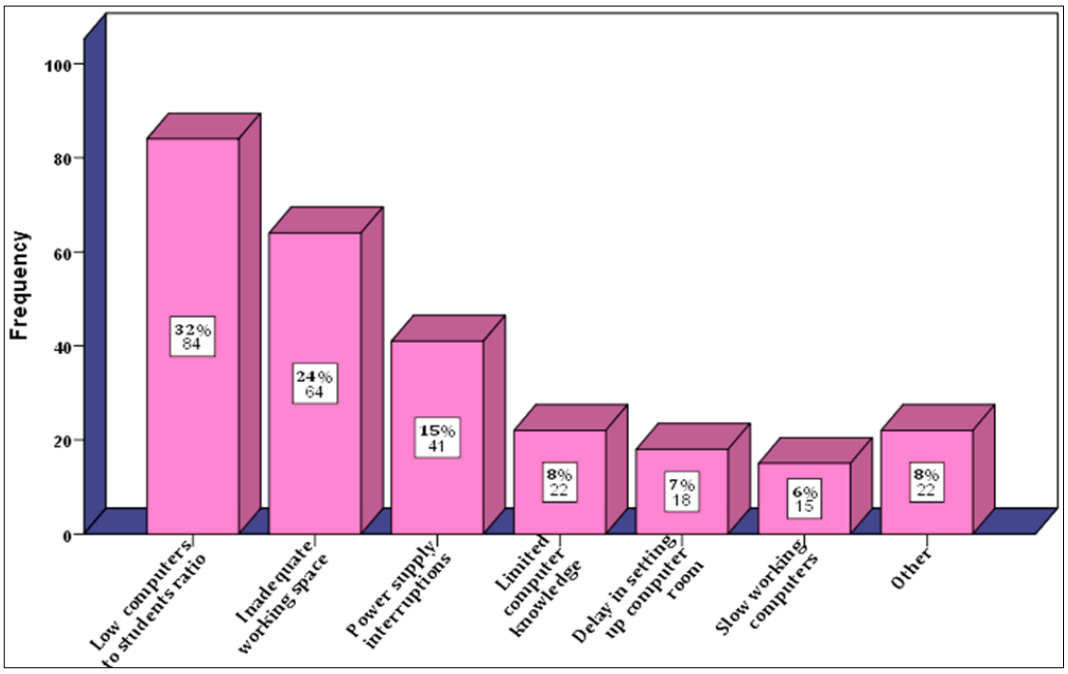

Fig 1: Challenges experienced During Administration of Practical ICT Assessment

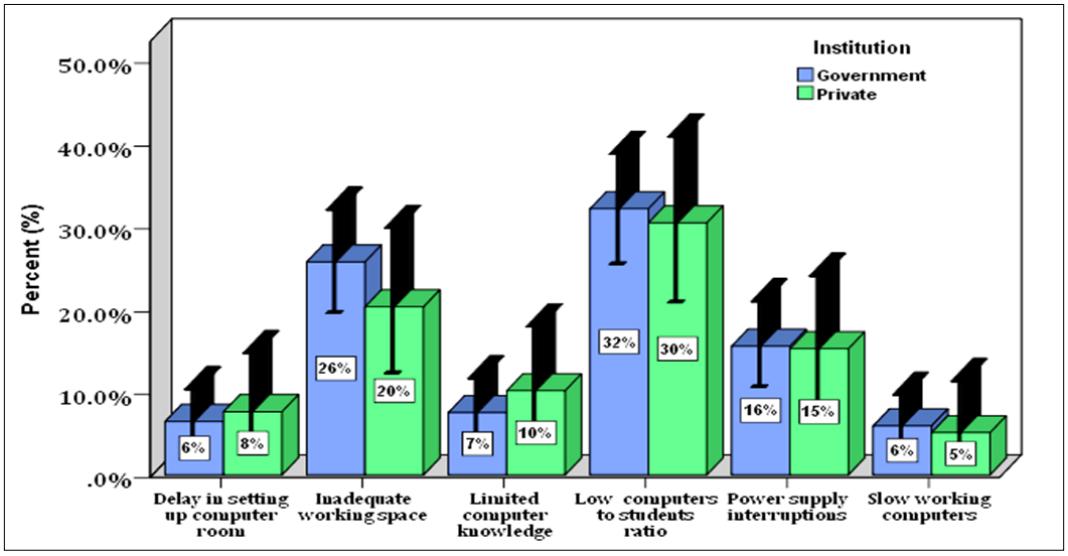

Fig 2: Challenges experienced During Administration of Practical ICT Assessment in Government & Private Institutions

This study shared similar findings with those of Tithi *et al*., [6], who found out that most schools lacked computers for assessing students in Bangladesh and Mavellas, Wellington, & Samuel [8], who also found that in Zimbabwe, most ICT resources required for training were not available at all, and those that were available were inadequate. Dureiti *et al*. [7], also reported lack of skilled manpower, limited computers, inadequate internet laboratories and ICT libraries as major challenges that affected the adoption of ICT integration in Education in Ethiopia.

Retnawati, Hadi, Nugraha, Arlinwibowo, Sulistyaningsih, Djidu, Apino, & Iryanti [9], in their study of implementing computer based national examinations in Indonesia reported unstable power supply, insufficient rooms and limited computers among constraints to that initiative.

While the present findings may not reveal the status in all institutions, most of the TVET institutions, especially in rural areas are worse than this case. Based on these findings, it can be concluded that ICT resources are not available at most examination centers in general and where available, they are inadequate.

This study also draws that most of the challenges are external to the control of the examinations Board, but a combination of factors at the assessment centers which can best be addressed through joint advocacy, since the challenges affect the Board's operations indirectly.

In figure 3.0 below the study revealed that increased chances (30%) for paid up assignments with the examination Board, opportunity to learn computers by students (24%) and increased grants to centers to equip ICT laboratories were the most opportunities that came with the introduction of practical ICT assessment.

Opportunities presented by administration of Practical ICT Module Examinations

Increased employment opportunities and increased demand for computers were ranked low amongst the opportunities. This could probably be due to limited contact of the examiners with the world of work where candidate transit and the computers are sold. Tay, Lim, & Lim [10] mentioned

the policy, school leadership and physical infrastructure development among the major ways to address the challenges above.

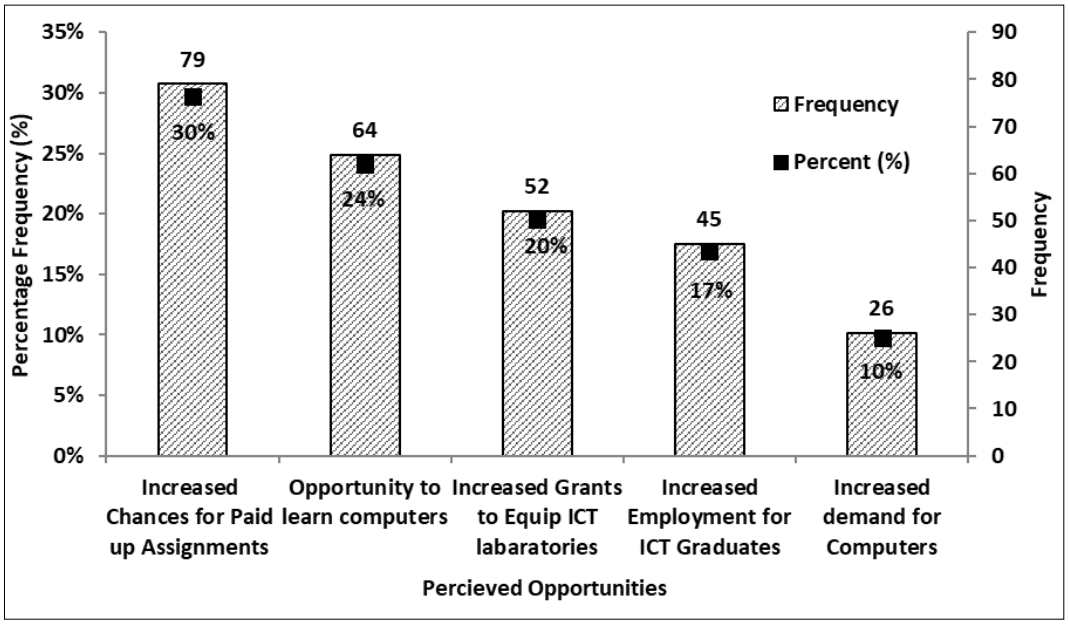

Fig 3: Opportunities Created by Compulsory Practical ICT Assessment

Conclusion

Several challenges affect the smooth administration of practical ICT assessment in TVET institutions in Uganda, than the opportunities it presents. There is need for political will and funding resources to improve on the ICT infrastructure in these institutions. Procurement of power generators and computers in a phase manner can address the respective challenges in the institutions during TVET assessment/ examinations.

Recommendation

Based on the findings from this study there is need for training institutions to adopt the strategy of purchasing a few computers and replenish the stock in a phase manner. Private and Government's institutions should introduce solar power or generator to check power supply interruptions during examinations. This study was done on only ICT examiners, but expansion of study population to include all ICT instructors would give better understanding of the state of ICT in Ugandan TVET institutions.

I have no conflict of interest to declare on this submission.

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