TECHNOLOGY INTEGRATION IN TVET COLLEGES IN A SEMI-URBAN AREA

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Abstract

The study explores the use of technology-enhanced learning (TEL) in TVET (Technical and Vocational Educational Training colleges). TVET colleges caters for students who have left school at a pre secondary phase to pursue a vocational qualification. The pass rate at TVET is below 50%. Further, the lecturers in TVET colleges are product of the TVET system. They lack teaching and learning skills necessary for the TVET colleges. There is collage of challenges in the use of technology in the TVET such as finance resources skilled staff and digital literacy. The study focuses on the nature of the challenges and possible solution by identifying barriers to effective implementation of technologies in TVET colleges. The study was conducted in a semi-rural TVET college. The sample consisted of forty staff and students participated in the survey.

A questionnaire was designed to determine students and staff perceptions, attitudes and types of technology-enhanced learning devices that was necessary in TVET. The transformative theory was used as a theoretical framework. A mixed method was used to evaluate the data. However, for the simplicity of the study, a sample of 40 students was chosen for the quantitative data and 20 lecturers were chosen for qualitative data. The quantitative and qualitative questionnaire included close-ended questions regarding the problems faced by the students in case of education in the TVET colleges. The qualitative results indicate staff prefer blended learning and teaching. The result of the research has revealed that there is requirement of adapting to the new technologies, implementation of effective regulatory framework and focus on the quality of the technology. Moreover, information communication technology (ICT) can also provide students with the technical knowledge to deal with issues at their respective job spheres. The qualitative results indicate challengers to technology enhanced learning at TVET colleges are lack of resources, poor infrastructure and implementation of technology. However, staff and students agree TEL will improve the quality of teaching and learning to a large extent. The improvement such as communication between students, staff and admin, self-directed learning and adoption of the community of enquiry model maybe a point of departure for TVET.

1 INTRODUCTION

Technical Vocational Education and Training (TVET) provide job-specific professional teaching to students aspiring for employment in technical organisations. Students normally leave junior secondary formal schooling and embark on vocational training for better opportunities in future. This training helps students to be more proficient at their jobs in the future with more technical skills incorporated with theory and makes them to be the best quality in the market. Technology is highly significant in Technical and Vocational Training to provide high-quality information that can help students in fulfilling their job roles. Teaching and learning in TVET are performed in a traditional mode (chalk and talk and learn by rote).

TVET education needs flexible modes of delivery to students due to the transient nature of the vocation knowledge. TVET colleges has a practical dimension such as chef, motor mechanics, carpentry and plumbing etc. Therefore, TVET colleges can be optimised by using face to face learning and eLearning called blended learning. Face to Face teaching can focus on practical aspects of the vocation and eLearning focuses on the transformative nature of the vocation. The advantage of blended learning can occur any time whether students are present in a classroom or remote, learning can be synchronous interaction of lectures with immediate feedback for students. It can be performed asynchronously.

Some vocational courses can also be transmitted using open distance learning methods; examples such as events management and secretarial studies and other more courses. Yekini et al. (2016) states ODL is considered as technology that can be used for enhancing learning experience of the
students. Open and Distance Learning (ODL) makes use of telecommunication for enhancing learning of students. The benefit of ODL is that it provides opportunity for students to learn at own pace. The learner gets the chance to replay portion that is not clear about the subject of education that is taught to them. Contrarily, classroom learning does not bring such flexibility as lessons are taught only once in classroom. Therefore, it can be said that ODL is best suited technology for some vocational courses at TVET.

Information and Communication Technologies (ICTs) stands as other technology used to provide a better understanding of the vocation courses. It can be used to provide simulations of various studies and can be used to provide detailed presentations that can help students understand better. These presentations are created with the use of audio and visual graphics that can have a positive psychological effect on students. In the opinion of Ogbu (2015), simulations can be provided on various technical skills such as computer software related proficiency and the development of different software associated skills. Products like the use of BIM can be used for the development of industry-based plans for architecture and arts. Students aspiring for job roles in civil engineering and architecture can, therefore, be provided training with the use of BIM simulations. Online sources of information such as various websites, online books and journals can also help to provide information on different technical subjects as required by the students (Yekini et al. 2016). These online sources of information can promote better learning and help to develop skills that are more useful.

As per the viewpoints of Ramadan et al. (2018), e-assessment stands as the valuable tool for higher education. The e-assessment technology provides students an option to increase engagement with chosen topic, besides gaining chance to retain materials. The benefit of E-Assessment or Online assessment is that the trainer can take assessment at home or in classroom. Online tests are conducted for purpose of evaluating, documenting and measuring learning progress and skills of learner. Contrarily, Yekini et al. (2016) argued that e-assessment technology is not reliable due to problem in internet connection. It is also noticed that e-assessment technology requires huge cost in TVET due to costly software of online assessment.

Various online websites such as Edx and Alison are known for the provision of a wide range of online courses for development in various fields. This research has been conducted to be aware of the multiple methods of skill development in Technical and Vocational Education and Training (TVET) and the role of technological practices in TVET. Additionally, various practices can also be identified to mitigate the negative issues faced by students in the respective job roles.

According to Buthelezi (2018), The theory of transformative learning majorly highlights the three dimension of learning which are psychological, convictional and the behavioural process of learning. In addition to that, the transformative learning is also known as the expansion of the consciousness through the actual transformation of the actual worldview (Ramadan, Chen, & Hudson, 2018). It also includes the specific capabilities of the self-learning in the process. Therefore, this theory is appropriate in the context of self-taught learning procedures where technology plays a major role to develop the analytical skills of the student and also to improve pass rate in TVET colleges.

Most TVET students are not adequately digitally literate to a large extent. Students exited the school formal system at grade 9. Digital literacy is a prerequisite for the effective use of TEL. It enhances the ability to follow or read instructions from graphic interfaces (photo-visual literacy), being able to copy and paste (reproduction literacy), the construction of knowledge through non-linear navigation (lateral literacy) and evaluation of information (information literacy) (Eshet-Alkalai, 2004). Students must be skilled with the learning management system (LMS) as part of their digital literacy preparation. Students entering the TVET colleges have a varied school experience in the use of digital tools for teaching, learning and assessment. It is necessary to evaluate the students’ digital literacy capabilities to determine their ability to learn vocation skills in a digital learning environment. Goodwill (2014) stipulates three phases, reconfigured in figure 1, shows a progression of the digital literacy skills student’s need to develop to work effectively in a digitally driven learning environment.
The aim of the study is to determine the extent TEL can be applied in TVET colleges.

2 THEORETICAL FRAMEWORK

According to Buthelezi (2018), theory of transformative learning highlights the three dimension of learning, which are psychological, convictional, and the behavioural process of learning. In addition to that, the transformative learning is also known as the expansion of the consciousness through the actual transformation of the actual worldview (Ramadan, Chen, & Hudson, 2018). It also includes the specific capabilities of the self-learning in the process. Therefore, this theory is appropriate in the context of self-taught learning procedures where technology plays a major role to develop the analytical skills of the student.

The theory of transformative learning also shows the advancement of the learning process unlike the traditional way (Rahman et al., 2017). The conventional way of study includes classroom study but in this process, it is found that the TVET program enables the student to develop their analytical skills (Kennedy, Udoetuk & Ufot, 2017).

3 METHODOLOGY

The research is based on primary quantitative and qualitative data that have been collected by taking surveys and interviews. SPSS was used to analyse the interview and survey responses. Forty students and twenty staff were considered for the quantitative and qualitative respectively. The survey was done with students in different departments but all were studying at the TVET College. The students were registered in the engineering, hospitality, marketing and IT departments. Some of the students were at entry level, still doing their first year, some were at the exit level doing their final year at the college. Students were selected at different levels, as the view will not be same when they are still new at the college not knowing anything about the working world compared to when they are at exit level, having an understanding of the future when they leave the college. Non-probability sampling technique has been used for quantitative and qualitative (Blom, 2016).

4 RESULTS

The qualitative analyses were performed using thematic analysis among teachers at the TVET.

4.1 How does TVET education impact career growth?

TVET plays a major role to bring positive impact on the student's career. It has also been identified that engineering qualifications offered at TVET's leads to full employment in some of big companies like Eskom because of the demand of the skill acquired by the students. It has also been identified that
because of the skills that TVET students have, they even venture into opening their businesses than being employed.

4.2 What is the role of Technology in TVET education?

The interviewees have agreed that increasing the use of technology can immensely widen the opportunities of the students to explore more in their career. Technology will help in terms of delivery mechanism in classrooms like laptops and projectors or interactive boards, and the use of e-learning systems to interact with their students and lecturers.

4.3 What is the effect of psychology in TVET education?

Motivation can actually influence results for the students who are learning in TVET colleges. TVET college students come from different background mostly disadvantaged background and some of them do need psychological assistance to be able to cope with the rigours of TVET curriculum.

4.4 How does TVET improve the skill of students?

Vocational training and the developing IT skills can bring positive impact on the student’s career. TVET colleges empower students with more marketable and practical skills, which leads to better performance in the industry and ability to do essential jobs as artisans.

4.5 What is the role of online education in TVET?

The online education has promoted better opportunity for the students who are learning through online in the TVET program classes and will help towards the Medium Term Strategic Framework (MTSF) target of a 65% certification rate for NCV (National Certificate Vocational) Level 4, as well as N3 and N6 qualifications. Moreover, it can expand the opportunity to access enough resources.

4.6 What is the impact of using ICT in TVET education?

ICT is seen to contribute a great amount of opportunity for the students who are learning in the process. TVET education is changing to meet the demands of the 21st century and beyond which therefore needs ICT infrastructure and resources. It is also seen to be promoting better unity within the group of the students as most of the TVET students are from disadvantaged background, having limited or no access to computer or internet.

4.7 Does ICT in TVET improves the necessary job skills?

TVET has given ample amount of opportunities to the students those who are looking for job in the near future. It has enabled them to explore more about their analytical skills. ICT plays a role in bridging the Technical and Vocational Skills Development learning environment to the work environment.

4.8 Quantitative analysis among students at TVET.

* Q1. TVET Education improves career growth

![Figure 2.1: TVET Education important for career growth](image)
Q2. Technology used in TVET colleges are critical

![Bar chart](image1.png)

Figure 2.2: Technology has a positive role in TVET Education

Q3. TVET teachers can be more proficient by using technology enhanced learning

![Bar chart](image2.png)

Figure 2.3: TVET teachers are proficient at their job roles

Q4. Psychology have a role in TVET education

![Bar chart](image3.png)

Figure 2.4: Psychology has a role in TVET education
5 DISCUSSION

In figure 2.1, most of respondents have agreed that TVET education is highly responsible to bring growth in their career. Although some of the respondents have disagreed, the main outcomes dominate by favouring the requirement of TVET. The teacher in the qualitative analysis reinforces the view.

Figure 2.2. Most of the respondents have agreed that technology has a great role in the TVET educational program. The qualitative responses suggest teachers agree that technology is critical for upward mobility for the students’ career.

Figure 2.3. Most of respondents have agreed that TVET education is highly responsible to bring growth in their career. Although some of the respondents have disagreed. The qualitative analysis indicates that students improves skills in their vocation and makes them marketable for job opportunities.

Figure 2.4. Psychology plays a great role in the TVET education. Students exit formal schooling at grade 9. Consequently, they lack adequate emotional and cognitive stability. There is a disconnect between school knowledge skills and vocational skills. This causes anxiety. Hence, psychological intervention is necessary at TVET colleges in the form of motivation. The qualitative analysis recommends psychological intervention as it improves the exam scores and throughput rate.

In figure 2.5. TVET programmes are able to promote the skills development of the students. A very few of the respondents have not supported this. However, it has proved to be beneficial for most of the students in the locality. The qualitative responses by teachers suggest that students can change skill set at TVET and consequently apply for better jobs.

Figure 2.6 It could be observed that most of the respondents have agreed that most of the teachers working in TVET are proficient in their teaching role and are able to guide the students in a better manner. From the qualitative analysis with respect to use of ICT and ODL methods of teaching, teachers
agree that ICT helps in developing cooperation and teamwork among the student groups. ICTs should be implemented in the institutions to develop their communication skills in a team.

6 CONCLUSION AND RECOMMENDATION

TVET colleges are recommended as an institution that empowers students' with vocational skills. The quality of the vocational skills can be improved by the use of technology both as a teaching and as learning instrument and vocational instrument. To improve the career prospect the technology keeps the student well informed with innovative information about her/his career.

Students registered at TVET colleges had limited formal school education where emotional and cognitive intelligence are constructed. TVET Psychological Support Workshops improves students’ anxiety behaviour and result in improvement of academic performance, class attendance, and retention rate and improved scores of college examinations.

Due to the disconnect between the TVET students’ schooling and vocational training the students’ use of technology is limited. Digital literacy enhances the ability to follow or read instructions from graphic interfaces (photo-visual literacy), being able to copy and paste (reproduction literacy), and the construction of knowledge through non-linear navigation (lateral literacy) and evaluation of information (information literacy). Students must be skilled with the learning management system (LMS) as part of their digital literacy preparation.

Due to economic factors jobs in a specific career maybe few and frequently made redundant. Students can choose other courses, which can be integrated into their existing vocational courses.

TVET can be significantly improved by integrating TEL in their environment. The impact brings significant growth and productivity of the institute's learning processes. Teachers can use ODL methods for teaching and learning.

ICT will improve consciousness of the students by virtue of dissemination of information from national and international sources. The improvement such as communication between students, staff and admin, self-directed learning and adoption of the community of enquiry model maybe a point of departure for TVET.

REFERENCES


