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# The integration of information and communication technologies in technical and vocational education and training: towards a new pedagogy in vocational education

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**2021**
https://hdl.handle.net/10539/32878

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## Abstract

Technical and Vocational Education and Training (TVET) Colleges are an avenue that allows individuals to take control of their lives. Within the context of South Africa, they aim to support social and economic development, create national wealth, and eradicate poverty. According to the Department of Basic Education (DBE), TVET institutions play a fundamental role in developing knowledgeable and highly skilled citizens, who will be able to contribute effectively to the social, political, and economic development of our country. As a result of that it could be noted that:

> "The demand for TVET and other forms of education and learning are changing. Educational systems are not independent of the rest of the society. When society changes, the educational system also changes" (Varis, 2011, p.3).

Therefore, it is imperative for programs that are offered in TVET Colleges to provide students with relevant, real-world working skills that are required by both the public and private job sectors. This is because the socio-economic growth of our country relies heavily on the development and maintenance of a viable, responsive, and effective TVET sector.

Consequently, the TVET College system that our students are in also needs to be transformed. This transformation will ensure that TVET Colleges can equip students with the necessary knowledge and skills that will allow them to compete with their counterparts in the workplace on both a national and global scale.

One of the key skills that students are required to have in this current technology based world is the ability to use technology. The building of confidence and competence in terms of technology usage should ideally begin in the education system, afore students enter or get absorbed into their respective careers/ industries. Specifically, within the context of Vocational Education, where students are required to be able to use various forms of technology/ technologies that are associated with their respective trades. Essentially this is important to note because technologies, and

particularly digital technologies and media are not only shaping our social, educational, and cultural contexts, but they are also transforming approaches, and environments for learning (Loveless, 2011).

If the impact of the TVET sector is to be felt and for the TVET sector to increase, new ways of developing and delivering courses must be explored. TVET must be taken outside of the classroom and into the communities, the workplaces, and homes of the students. Traditional ways of thinking about TVET must be put aside and different ways of packaging and delivering knowledge and skills must be developed. This is particularly, critical in meeting the skill demands of countries with depressed economies and in countries where people are separated by water (as in islands states) by terrain or by distance.

This study was designed and conducted using the qualitative approach to unearth a new vocational pedagogy. Through conducting this research, the researcher wanted to formulate an understanding of whether lecturers in TVET Colleges are ready to integrate ICTs into their existing pedagogical practices.

For this study, two TVET Colleges in Johannesburg within the Ekurhuleni region were purposively sampled to take part in the study. Convenient /Judgmental sampling methods were utilized to select these five Automotive Repair and Maintenance lecturers, as well as their students, in NC (V) stream. These lecturers formed the sample that was utilized to conduct this study.

Findings from this study revealed that there is indeed “slowness” when it comes to ICT integration in TVET system. In addition to that, the findings also revealed that the TVET sector is plagued by various hindrances and challenges when it comes to ICT integration. These challenges include: the absence of a detailed ICT integration policy and framework for the TVET sector (which should stipulate how ICT integration should take place in the TVET space), limited access to technology and other forms of infrastructure, and lecturers not being equipped with all the necessary

skills and knowledge that would make ICT integration possible. In addition to that, the researcher noted that Lecturers are attempting to integrate technologies into their pedagogical practices. However, this was very surface-level integration, which is mainly evident in the practical classroom (during workshop sessions), and not necessarily in the theory classroom. Whilst the lack of a detailed ICT integration policy and framework and access to appropriate modern-day technologies are amongst some of the key challenges that contribute to this slowness in integration in the TVET sector.

Consequently, the researcher proposes a new pedagogy that integrates and encourages the usage of technology deemed as “Smart Technology/ Technologies” in Vocational Education. This integration is in reference to TVET Colleges on a general level and specifically, within a subject in the National Certificate Vocational NC (V) programme known as Automotive Repair and Maintenance. Smart Technology is a synonym and a slight paradigm shift from general ICTs. It is advancement in terms of vocabulary that can be further utilized as a synonym for term ICT. However, it also encapsulates all forms of ICTs, technologies and specialized tools and technology/ technologies that can be used in various subjects offered in the TVET curriculum.

Furthermore, the researcher also advocates for intervention strategies such as: the procurement of modern digital technologies, tools and other forms of equipment in the TVET sector and making them available in TVET institutions, enhancing lecturers knowledge and skills through training and upskilling programmes like the Advanced Diploma in TVT which will be offered at the University of the Witwatersrand in 2021.

**Keywords**

Technical Vocational Education and Training, Automotive Repair and Maintenance, Information Communication Technology/ Technologies, Smart Technology, readiness, integration, and pedagogy.