

## Quality Vocational Education and Training through Technology-enabled Learning and Teaching

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Vocational education and training or VET prepares people for non-academic careers in different industries. The age-old apprenticeship system of learning is often cited as a typical and successful example of VET. Over the past few decades, VET has evolved markedly worldwide, keeping pace with the changing demands from industries, as the labour market becomes more specialised and economies demand higher levels of skills. This development has given rise to an increasing number of higher education institutions offering vocationally oriented degree programmes.

Broadly speaking, in the context of learning and teaching, vocational education is more concerned with procedural knowledge as opposed to declarative knowledge which has stronger theoretical and conceptual underpinnings. Rapid technological advances in recent years have brought about two major impacts on VET. First, new tools and techniques have been developed in different trades and industries, and students are required to acquire new skills and knowledge to keep up with them. Consequently, procedural knowledge needs to be updated at a much faster pace in VET compared with declarative knowledge in traditional education. Second, information and communications technology has opened up many new possibilities that can enhance the quality in the delivery of VET programmes. Teachers will have to leverage on the technology to realise the advantages they offer, both inside and outside of the classroom.

Technologies supporting learning and teaching in the classroom have been in place for a number of years. They include computer-based productivity applications and visually based applications and technology such as electronic presentation systems, concept mapping, student response systems and video conferencing. Examples of technologies that support learning and teaching outside the classroom include internet-based applications and technologies such as on-line learning, web 2.0 applications and webinars. Computer aided instruction, intelligent tutoring systems and games learning are also powerful tools to enrich the student learning experience. Furthermore, mobile technologies are being increasingly used to facilitate m-learning or "mobile learning", where learning can take place anywhere and at any time.

With the rapid advances in information and communications technology, coupled with an increasing number of computer-savvy students, research efforts will be needed on a deeper understanding of the most effective approach to leverage on the technology to enhance learning and teaching. Furthermore, the convergence of personal technologies offers new opportunities for informal and situational learning, but there remains a widening gulf between such learning methods and the well established methods of learning and teaching in the classroom. Therefore, teachers will have to struggle to adapt previously used pedagogies and curricula to suit the new environment.

Considerable research efforts are required to study technology-enhanced learning and teaching, extending from the micro level to the macro level. Related research questions include:

- How can technology enhance learning and teaching?
- How do we know what technology-enhanced assessment and pedagogy works, and in what contexts?
- How does technology value-add to the learning and teaching of different subject areas?
- What are the potential unintended consequences of learning technologies and how do we minimise them?

Whilst technology will continue to have an increasing impact on learning and teaching, teachers should adopt well-proven methods to support the delivery of the course curriculum. More effort in disseminating research findings should be made, so that such methods will be put to use effectively to improve learning and teaching in the process of delivering quality vocational education and training programmes.