

## The Effectiveness of Training: Equipping and Enhancing ICT Knowledge and Skills among Polytechnic Lecturers in Producing Quality Highly Skilled Graduates

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**Abstract:** In line with Industrial Revolution 4.0 and National Transformation 50, Malaysian Ministry of Higher Education (MOHE) has allocated a huge sum and designed lots Educational Technology (EdTech) in-service or known as Continuous Professional Development (CPD) programmes to equip lecturers with appropriate EdTech skills in order to prepare our Malaysian students for the world's market force demands. In order to boost the academic achievements of students, school administrators are expected to equip lecturers with the 21st century learning and facilitation skills as well as Web 2.0 tools to help enhance students' learning. Lecturers need to be focus on producing graduates who are able to face the challenges of the future. Thus, lecturers are exposed to ICT tools/ EdTech and the 21<sup>st</sup> century skills in order to achieve the mission. This qualitative research paper is aimed at finding out how 50 lecturers of one Polytechnics in the northern region are using and maximizing ICT to enhance 4Cs: communication, collaboration, creativity and critical thinking. The objectives of this qualitative study are to document lecturers' uses of EdTech tools and to find out the effectiveness of their EdTech training. This paper presents the findings and results of the study. This study was carried out within six months using three research methods: questionnaires, semi-structured interviews as well as direct observations. Lecturers interviewed understood that the purpose of EdTech skills and tools that was to improve student learning. However, many felt (70%) that they were inadequately trained to integrate ICT tools into their lessons. The existence of ICT tools has surely opened up lots of opportunities in making teaching and learning process effective but the lecturers still face constraints in fully utilizing the tools. Uncertainties on the best pedagogical approach to utilize the ICT facilities are the main concern among these lecturers. Some of the recommendations given include the importance of monitoring lecturers to ensure the positive impact of training.

**Key words:** Educational Technology, ICT, 21<sup>st</sup> Century Learning and Facilitation skills, Continuous Professional Development (CPD)

### INTRODUCTION

Information and Communication Technology (ICT) in general or Educational Technology (EdTech) specifically is considered as the prerequisite for making Malaysia a high-income country [1]. There have been lots of ICT initiatives and development by the Malaysian Ministry of Higher Education (MOHE) to equip Malaysian lecturers with appropriate EdTech skills in order to prepare students especially polytechnics students for future ICT-rich environment. The Department of Polytechnic Malaysia is one of the

main Technical and Vocational Education and Training (TVET) players in Malaysia. Its Instructional and Digital Learning Division has put all efforts in accelerating EdTech with the aim to inspire learning among students. Center for eLearning and Teaching (CeLT), Massive Open Online Courses (MOOCs), Curriculum Information Document Online System (CIDOS), and the latest Technology Enabled Collaborative Classroom (TECC) are EdTech facilities and platforms adopted and implemented in the Malaysia Polytechnic system. These platforms enable lecturers to enhance learning and facilitation efficiently and

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effectively. It is vital for lecturers to acquire ICT knowledge, skills and attitudes in order to not only equip students with appropriate 21<sup>st</sup> century skills and tools but also to make them readily competitive and marketable in the job markets. At the global level, International Society for Technology in Education (ISTE) has come with certain National Educational Technology Standards (NETS) for lecturers, administrators, coaches and students [2]. With ISTE standards, lecturers and lecturers are expected (1) to facilitate and inspire student learning and creativity, (2) design and develop digital age learning experiences and assessments, (3) model digital age work and learning, (4) promote and model digital citizenship and responsibility and (5) engage in professional growth and leadership.

In applying EdTech skills and 21<sup>st</sup> EdTech tools (also referred to as Web 2.0 tools), lecturers are expected to change their roles as controllers or givers of knowledge to the role of facilitators to make their classrooms to be more student-centred. Students need to be able to design, implement and assess their own learning experiences [2]. These new demands are in line with the industrial revolution the world is facing. Technology changes at a speed thus lecturers as well as lecturers are expected to adopt and adapt to the technology advancement. Polytechnics lecturers need to teach about EdTech tools and to teach with EdTech tools.

## LITERATURE REVIEW

With the advancement of ICT or EdTech tools, Continuing Professional Development (CPD) programmes should be geared to equipping lecturers with current skills to prepare graduates to be highly skilled or at par with industrial demands. Classroom practices should focus on inquiry, discovery of knowledge and understanding, development processes and the design and creation of products. Besides, a practical emphasis as well as research, information gathering, design and production are some aspects to be implemented in classrooms. Undoubtedly, lecturers need a gestation period to be comfortable with the 21<sup>st</sup> century teaching skills and tools. Information and digital literacy are also vital in line with the objectives of the establishment of polytechnics in Malaysia.

CPDs are meant to prepare lecturers to have content knowledge and to be critical as to when and how to integrate ICT into their subject curriculum. Lecturers need to diversify their styles of teaching contents and utilize ICT/EdTech tools into teaching and learning. Integrating technology is “the process of determining which *electronic tools* and which methods for implementing them are appropriate for given classroom situations and problems” [3-4]. It is also known as “*the combination of technology and traditional teaching procedures to produce student learning*” [5]. Lecturers need to realise that they are facing students who are spending more time on the Internet and have more friends on a variety of social network. They are not only talk about lives but also share what kind of contents they learn from their lecturers.

Integration of ICT requires lecturers to be prudent and be able to make important decisions in selecting materials. Lecturers’ knowledge on theories of learning and teaching is significant to their teaching practice [6]. This is crucial as “teaching requires you lecturers to transform the knowledge they possess into suitable tasks that promote learning” [7]. Lecturers’ professional knowledge, professional judgement and subject knowledge are three important areas that affect teachers’ performance and effective pedagogy in the classrooms [7]. They need to consider what teaching strategies to use after making careful analysis of their learners, learning environment and learning activities. In taking advantage of the ICT/EdTech, Roblyer and Doering [3] state that “two questions must be answered when determining technology’s relative advantage in a given situation: What is the problem? and Do technology-based methods offer a solution with sufficient relative advantage?” Lecturers need to decide the most appropriate tools to use in delivering instruction.

## METHODOLOGY

In probing lecturers’ skills in EdTech and 21<sup>st</sup> century learning and facilitation skills, three methods were used to collect the data from 50 lecturers involved. Questionnaires, semi-structured interviews as well as observations were engaged to gather the data concerning the effectiveness of the CPDs attended. The questionnaires were given to the 50 lecturers and series of semi-structured interviews were carried out to find

out which ICT tools are preferred by them and the effectiveness of their training programmes.

The questionnaire was used to find out as much as information on the training they attended. It was used to gather information about lecturers’ experiences and their confidence in the integration of EdTech/ICT tools into their lessons. Lecturers’ choices of tools, knowledge and skills were also surveyed and analyzed. Six lecturers were interviewed and their feedbacks were later analyzed.

In-class observation was carried out to record the extent in which EdTech tools were chosen and integrated. Then, triangulation was used to verify that statements made by the lecturers were realistic and based on what the observers had seen in classrooms.

## FINDINGS

As stated earlier, this study employed three methods - questionnaires, semi-structured interviews as well as documentary analysis to gather the data concerning the effectiveness of EdTech/ICT training attended. The questionnaires documented the preferred ICT or EdTech tools used in their classrooms (see Table 1 below).

**Table 1: Lecturers’ Responses on the Frequency of Use of EdTech/ICT Tools**

Frequency of usage	Percent (from a whole lesson)	Frequency of usage	Percent (from a whole lesson)
PowerPoint	46.5	Google search	6
CIDOS	26	FaceBook	9
YouTube Videos	14	TECC Room	0.4

The open-ended questions in the questionnaire given revealed some problems the lecturers were facing while trying to integrate ICT/EdTech into their classrooms:

- a. Syllabus – too many topics to be completed;
- b. Expectation of the institution– produce excellent results;
- c. Insufficient exposure on practical ICT integration;
- d. No monitoring of lecturers’ use of ICT tool.

Based on the semi-structured interviews of five lecturers, two themes among others emerged from the

data: (1) Lack of monitoring of lecturers after undergoing training; and (2) Lack of knowledge on the way to integrate ICT tool to as expected by the policy.

### **Lack of Monitoring of Lecturers after Undergoing Training**

Based on two series of interviews conducted, lecturers’ comments were gathered and analysed. Lecturers highlight the lack of monitoring after attending training programmes. For instance, Salina says:

*“After training, everything went on just like every day. Nobody checked on the correct implementation”* [Salina/int/20.2.17/p. 2].

Asiaiah agreed:

*“After the training programme, the teaching went on as usual. Only those who attended knew what the Department of Polytechnic Malaysia (DPM) wanted. I was never monitored. I was not even asked to conduct any in-house training”* [Asiaiah/int/22.2.17/p. 2].

Naim reflected that:

*“During the training I tried to learn as much as possible so that nothing would be missed in carrying out teaching in my classrooms. When I returned from the training, everyone was busy preparing for final projects, exams and other curricular activities”* [Naim/int/ 12.4.17/p. 2].

Monitoring success is important in finding evidence of the impact of training. Supervision could certainly highlight problems faced by lecturers. Information is essential in assessing the success of the curriculum implementation. Salina commented:

*“I know the training is useful and has many benefits. I anticipated more observation and supervision regarding the elements learnt from all ICT training.”* [Salina/int/20.2.17/p. 2].

Some of the lecturers felt that most training done were merely to expose them to new ICT tools or platform. They thought the vital need to see that the new policy was a serious matter. Some perceived the new policy as trivial and therefore found it was unnecessary to change. In order to ensure teaching effectiveness, lecturers need to be periodically monitored. Naim

recognized the importance of monitoring as vital in the process of bringing change. He argued that:

*"We do not know how good we are until someone else comes in and observes our teaching. I am certain that by being monitored from time to time, lecturers would realize the needs of using new approaches and strategies"* [Naim/int/12.4.17/p. 2].

Of course, the follow-up training is considered crucial in developing lecturers as professional teachers. Faridah felt that:

*"There should be a schedule or plan for developing lecturers periodically"* [Faridah/int/19.4.17/p. 3].

Continuous assessment and monitoring is crucial in sustaining teaching effectiveness. It is vital for institutions to identify the training needs of their staff. CPD should provide *"opportunities for lecturers to examine their own practice and consider or develop alternatives"* [8].

#### **Lack of knowledge on the way to integrate EdTech tool as expected by the policy.**

During the series of interview, lecturers informed that they embraced the urge to use ICT in their lessons. They believed this would help them function as facilitator and would create interesting and conducive learning environment. However, they were not certain on meeting the standard as required by policy makers. Naim said that:

*"As facilitators we can improve students' performance. We need to develop a conducive atmosphere for learning and make students be excited to learn. The problem is we do not know if we are doing it the way it is expected."* [Naim/int/12.4.17].

Some of the lecturers interviewed were willing to take the challenge to be at par with the technology advancement. They look forward to try new things. Training given, however, tended to focus merely on how to use the ICT tool neglecting on the pedagogical approaches. Zuraiha cited that:

*"Often trainers come show how to use the ICT tools. However, they missed out on how to*

*integrate the lesson in the tool and what is expected out of it."* [Zuraiha/int/24.2.17/p. 3].

#### **Triangulation**

In this qualitative research study, triangulation is achieved when a variety of methods are used to gather viewpoints that can help researchers focus on a topic [9-10]. Denzin [9] distinguished four forms of 'triangulation': data 'triangulation' (retrieve data from a number of different sources to form one body of data), investigator 'triangulation' (using multiple observers instead of a single observer in the form of gathering and interpreting data), theoretical 'triangulation' (using more than theoretical positions in interpreting data) and methodological 'triangulation' (using more than one research method or data collection technique). The triangulation is considered crucial in qualitative research. Smith and Kleine [11] states that triangulation can increase the study accuracy.

It is a strategy for increasing the validity of evaluation and research findings. It can be used to increase credibility of scientific knowledge by improving both internal consistency and generalizability through combining various methods in the study. Data gathered from a method for instance, in an interview can be used to validate data from another method, observations. It is used to verify certain statements said by the interviewees involved. Moreover, researchers can reject certain data when there is a conflict in viewpoints from two methods.

#### **CONCLUSION**

To ensure the effectiveness of the 21<sup>st</sup> century skills, lecturers need to be trained, monitored and given follow-up training on the integration of ICT/EdTech in learning and facilitation process. It is important that institutions do not treat lecturers as people who receive or deliver "centrally packaged decisions" [12]. They should be "outstanding leaders" with "a vision" and be able to communicate "in a way which secures commitment among their lecturers" [13]. The policy makers must be sensitive in providing necessary infrastructure to help the success of the new policy. All in all, lecturers should be exposed to the pedagogical strategies while utilizing ICT tools to ensure effective learning. Lecturers must be versatile in integrating ICT/EdTech tools effectively and to maximize student learning. In the future, it is

hoped that the skills acquired by the lecturers can help train their students to be responsible for their own continuing, life-long learning.

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