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Professional development for enhancing technology-integrated pedagogical practice: An ethnographic study in a Maldivian teacher education context

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ABSTRACT *A substantial body of literature discusses the complexity of integrating technology into teachers' early established pedagogical practices. This paper examines technology-related professional development and its impact on teacher educators' technological and pedagogical practices. The data were gathered from eleven teacher educators through an ethnographic approach that took place during two visits to the research site. With respect to the first visit, the researcher spent six weeks "hanging out" with the participants, interviewed them individually, and observed six participants' classroom teaching. Then, with the second visit, the researcher spent five weeks "hanging out", and organised focus group discussions with ten participants. Lastly, she had follow-up interviews to clarify and validate the main understandings. The findings were generated through various strategies adhering to grounded theory. Key findings identified two types of professional learning: one is formally designed by the institution and the other is which occurred informally between colleagues. The findings also suggest that teacher educators continued using digital technologies in their early established pedagogical practices without necessarily bringing a change to their approaches to teaching. This paper argues that the professional development does not help teacher educators change their pedagogical practices unless it is connected with their backgrounds and the context of practice.*

Key words: professional development; technology; Microsoft PowerPoint; pedagogical practice

Introduction

Effective teaching with technologies requires teachers' understanding of appropriate pedagogical strategies to enhance their student learning. A number of studies support the argument that the constructivist approach is the most suitable pedagogical design for using digital technologies in teaching. For example, Brooks and Brooks (1999) suggested that interactive learning environments allow learners to become partners in the learning process, which also leads them to become "autonomous thinkers" (p. 13). Similarly, Boshuizen and Wopereis (2003) analysed benchmarks for designing learning with technologies, in which they supported the social constructivist framework. Pritchard (2007), in his explanation of teaching with the Internet technologies, noted that the constructivism design of learning allows learners to build their understanding based on their own "personal experiences" through the

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interaction with others (p. 2). Supporting these arguments, many studies have examined the nature of learning when digital technologies are implemented into pedagogical practices. Hsu, Ching and Grabowski (2009), argued that the use of technologies offers opportunities for students to participate in a collaborative and interactive culture of learning. Use of technologies also helps students develop critical and creative thinking (Niess, 1999). Furthermore, some researchers examined specific activities that could take place in the knowledge sharing spaces and communities. For example, micro-blogging such as Twitter can strengthen students' virtual learning experience to encourage students' effective collaboration and their reflective thinking (Grosseck & Holotescu, 2008; Hsu & Ching, 2011; Wright, 2010). Lim and Oakley (2013) argued that technologies enable students to enrich their understanding and develop their thinking through a multitude of sources and technological resources such as images, videos, podcasts, e-Portfolios, and blogs. The literature in this regard suggests that the use of digital technology by teachers ought to help learners become autonomous and reflective thinkers. This, however, could raise a question of whether or not the use of technology by itself can bring a change to teachers' pedagogical practices.

Some researchers recognised that the use of digital technologies by teachers does not always change their early established practices (Adams, 2012; Bang & Luft, 2013; Kurt, 2013; Perkins, 2012; Sipilä, 2010). Adams (2012) investigated college instructors and students use of PowerPoint in Canada. She argues that the use of Microsoft PowerPoint in pedagogical practice often relates to student passivity. Microsoft PowerPoint changes the classroom to "a cinematic space" (Adams, 2012, p. 147), where the teacher takes the role of orator or narrator of the Microsoft PowerPoint and students passively watch and listen to what the teacher narrates. More recently, Kurt (2013) revealed that teachers' use of Microsoft PowerPoint mostly supports their traditional teacher-directed teaching methods in a Turkish school context. Bang and Luft (2013) investigated beginning teachers' use of technology over a five-year-period in a United States school context. Their findings of interviews and observation data indicate that the most frequently used tool was Microsoft PowerPoint, and it was used by teachers mostly for supporting traditional teaching methods. These arguments draw attention to the traditional pedagogical practice being tied with teachers' use of technologies in their existing pedagogies. These researchers suggest that often teachers' early established practices and pedagogical thinking may influence the way they use technologies in teaching.

Koehler and Mishra (2008) argued that technology introduces additional variables to the learning and teaching context, which demands teachers change their practices. The use of technologies thus brings complexity to teachers' practices in terms of marrying their use of digital technologies with their pedagogical approaches. Mishra and Koehler (2006) proposed a framework named Technological, Pedagogical and Content Knowledge (TPACK) for integrating technology in pedagogical practice. The TPACK model was originally an expansion of the PCK (Pedagogical Content Knowledge) model theorised by Shulman (1986). Shulman criticised the way the two types of knowledge: content and pedagogy were being treated in isolation from each other in teacher education programmes. Shulman (1986) argued that teachers

should have a deep understanding of both areas of knowledge, as they are inter-related. Mishra and Koehler (2006) adopted this view and extended the argument with a new conceptualisation of teacher knowledge, which can be understood as three important domains for teacher knowledge: technology, pedagogy, and content. Harris, Mishra and Koehler (2009) believed that teachers often use digital technology as a transformative tool (a delivering tool) in their teaching of subject matter. This concludes that teachers use digital technologies merely to deliver content they want to teach without much thinking about the implication of their use of technologies on student learning. Koehler, Mishra and Yahya (2007) suggested that the complexity of marrying technologies arises due to teachers' lack of understanding of the relationships between content (subject matter they teach), pedagogy (appropriate teaching strategies with technologies), and technology (appropriate use of technologies for enhancing student learning). The literature here suggests that teachers require certain competencies in terms of connecting the three types of knowledge. With this in mind, the researcher sought to understand how technology- related professional development is designed and its impact on pedagogical practices in the Maldives.

The literature on the Maldivian contexts, suggests that teaching in Maldivian classrooms is concentrated on rote learning and memorising both facts and content (Nazeer, 2006). Mohamed (2006) argued that the Maldivian schools are examination-oriented and teacher talk-time was remarkably high. Shareef (2010) confirmed this by observing a focus on transmitting knowledge in the Maldivian classrooms. In a more recent study, Kinaanath (2013) asserted that traditional pedagogy is not only rooted in the school systems but also in the higher education contexts. He described:

> The traditional "chalk-board-talk" dominated the teacher-centred methodology throughout the primary and secondary schools, and even the higher education institutes. …The assessment-driven methods lacked creativity, which was largely ignored in tertiary institutions … The tradition of spoon-feeding [means] facts, lessons and notes were replicated in the exams. Spoon-feeding materials to students meant that teachers did everything for them or told them everything that they needed to know. (Kinaanath, 2013, pp. 174-175)

Considering the complexity of marrying technology and pedagogy, particularly in a context where traditional pedagogical practice has been established, it raises questions on how and what type of professional development would be suitable for such a context.

Review of Literature: Professional Development (PD)

Professional development (PD) is designed to enhance teachers' developing of their pedagogical knowledge, skills, and practices through workshops, conferences, and additional courses (Gallant, 2000). Guskey (1999) believed that running PD programmes can improve "professional knowledge, skills, and attitudes" of teachers (p. 16). Levin and Wadmany (2008) argued that along with the access to digital technology affordances, teachers need to learn, develop, and conceptualise the use of digital technologies in teaching. Through a three-year longitudinal study, they investigated six teachers' professional

learning regarding their developing of using digital technologies in teaching. Levin and Wadmany (2008) reported that there were two developmental patterns: one related to human factors such as on-going professional support, and personal self-organised learning. Similarly, Imants and van Veen (2010) commented that the nature of professional learning is interrelated with factors connected to individual, organisational, and on-site and off-site learning. These researchers draw attention to the importance of PD and how thoughtfully it needs to be designed in order to enhance teachers' professional learning in their workplace.

Over a decade ago, researchers drew attention to how PD must be designed. Hawley and Valli (2000) completely refuted the idea of occasionally designed professional learning. Though Hawley and Valli's study is not concerned with technology related professional learning, it suggests the importance of connecting professional learning with teachers' everyday practices. Similarly, Avalos (2000) argued that teachers' careful self-evaluation of their own practices and their active involvement in the programme over a long-term period is required. She further suggests, in developing countries, that the focus on pushing for change is crucial, including "a conceptual shift from teaching to learning, a focus on effective school results, and the implementation in many countries of systemic education reforms" (p. 457). Despite Avalos's (2000) and Hawley and Valli's (2000) argument being more than a decade old, their views of how PD must be designed are still pertinent for this research context, due to the early established traditional pedagogical practice in the Maldives. As discussed earlier, literature in Maldivian classrooms demonstrated a traditional rote learning practice both in schools and higher education. A relatively recent study by Kramer and Benson (2013) examined a PD programme for a year-long period, which was targeted at lecturers' use of digital technologies and pedagogical change in a university context. They suggested that the programme enabled lecturers to change the way they see and use digital technologies in classrooms. Kramer and Benson (2013) further recommended that the continuous evaluation of the programme is crucial in order to see its success in pedagogical contexts. This view suggests that PD's success relies on its usefulness for teachers and how it can enhance their everyday practices.

Reflecting on Avalos' (2000) argument regarding the importance of taking account of developing countries' contexts, such as the Maldives, the literature noted several aspects that ought to be considered when designing PD. Firstly, PD should be designed as a continuous or on-going experience, rather than one-off sessions (Darling-Hammond, Wei, Andree, Richardson, & Orphanos, 2009; Gallant, 2000; Guskey, 2003). Secondly, PD must be designed in a way that teachers can be actively involved in the process of learning (Darling-Hammond et al., 2009; Guskey, 1999). Greene (2001) considered that active learning can occur through teachers' reflective role as researchers, who always seek meanings out of their practices in terms of ambiguities that occur in everyday teaching. She further affirms that teachers have the tendency to learn more when they become curious about everyday activities in teaching. Moll (2001) argued that humans' thoughts are facilitated through interactions with others. Darling-Hammond et al. (2009), Guskey (2003), Greene (2001), and Moll (2001) highlight the importance of teachers' active involvement and

the connections between PD and actual practices. Bearing in mind that the Maldives has a long history of rote learning pedagogy, that aspect needs to be carefully considered when designing PD in this research context.

Thirdly, designing PD involves concentrating on the context and situation where teachers practise. Van Driel and Berry (2012) believed that PD should address certain instructional strategies and specific areas in which teachers can reflect on what they teach. These researchers drew attention to the importance of PD as an experience that supports collaboration and collegial interaction within their context of practice. This means that through professional learning teachers should be given opportunities to collaborate and interact with colleagues to enhance their pedagogical practices. Timperley, Wilson, Barrar, and Fung (2007) argued that teachers can effectively develop theoretical knowledge (such as TPACK, for example) when the professional learning is connected with their contexts. Timperley (2008) further recognised the importance of considering a) factors such as socio-economic status, home, and community, b) factors related to complex teaching processes, such as teacher knowledge, beliefs about what is important, and how students learn, and c) factors related to professional learning such as workplace culture and the community they work with. These aspects are pertinent when designing PD in the Maldivian context, due to the established rote learning and teacher-centrism practices as mentioned earlier.

This paper examines how PD is designed and its impact on teacher educators' formed pedagogical practices with digital technologies in a teacher education context in the Maldives. The findings shared in this paper are selected parts from a four year doctoral research project (2011-2014). The next section explains the research design adopted by the researcher for exploring her research focus.

Research Design

This study adopted an ethnographic methodology to investigate how PD is designed and its impact on teacher educators' use of digital technologies in their pedagogical practices in the Maldives. The ethnographic methodology considered two focuses: Firstly, the researcher sought to understand the natural milieu (teacher education context) of the teacher-educators' existing pedagogical practices. According to Hammersley and Atkinson (1995), ethnography emphasises in-depth understanding of the real world of participants. Charmaz (2006) defines ethnography as understanding about a "particular group" (teacher educators) which thus entails sustained participation and observation in "their milieu" (workplace), "community" (professional interaction with other colleagues), or "social world" (professional social world) (p. 21). Secondly, since the research is involved in understanding teacher educators' views, experiences, and practices about their formed pedagogical practices and how the PD was designed for them, the researcher required an approach that would allow her to work closely with the participants. Reeves, Kuper and Hodges (2008) argued that ethnographers' engagement and involvement with the natural setting is necessary. This 'in turn' allows ethnographers to provide "thick descriptions" about individuals' social context (Geertz, 1973, p. 10).

Research Process

Prior to conducting this research, the ethical approval from the University of Waikato was sought and granted on 5th May 2011. After gaining consent from the institution (a teacher education institution, located in the Maldives) through a permission letter, the researcher formally invited teacher educators who work in this institution. Participants were approached through purposive sampling depending on their interests and familiarity with digital technologies, and accordingly gained voluntary participation from eleven teacher educators. The sample was thus out of a total of 49 teacher educators employed at the time of the data collection, which represented approximately a fifth of the academic staff members.

In order to gather data, the researcher visited the research site twice: once at the beginning of 2012 and again in 2013. During the first visit, the researcher interviewed eleven teacher educators individually and "hung out" (spent time with them during their work hours) with them for about six weeks. "Hanging out" is a term used to describe ethnographers' field experiences and their involvement with the participants during the field work (Bloor & Wood, 2006). The hanging out experiences and the data from the interviews allowed her to explore the initial background about teacher educators and how their PD was designed. After generating a preliminary analysis, the researcher observed classroom teaching of six participants. These observations enabled her to link the teacher-educators' shared comments in their interviews with their actual practices in the teaching context. Eleven months later, the researcher organised focus group discussions on issues generated from her preliminary findings of the first visit. She explored more about participants' pedagogical practices. During the same visit, the researcher had another five weeks of "hanging out" with participants, which helped her to scrutinise institutional influence on teacher educators' shaping of specific pedagogical practice including how PD was designed and helped their everyday practices. Lastly, the researcher had follow-up interviews with five participants to clear her understanding of teacher educators' formed practices. The research process is illustrated in Figure 1.

The findings were analysed through various strategies adhering to grounded theory. Grounded theory is a process of qualitative analysis, which consists of features such as inductive generation of ideas, coding paradigms (looking for key words from data), and constant comparison (cross-checking) (Strauss, 1987). Through Seidel's (1998) qualitative data analysis model - notice, collect and think–, the researcher developed emerging themes from the data. With these initial themes, the researcher worked iteratively within and across data. In order to mitigate Seidel's (1998) notion of the blind spot, described as things perhaps misunderstood or not realised, the researcher used the thinking aloud approach with her supervisors and other doctoral colleagues to clear her thoughts. The researcher also used diagramming as suggested by Buckley and Waring (2013), to make sense of and synthesise emerging ideas for answering her research questions.

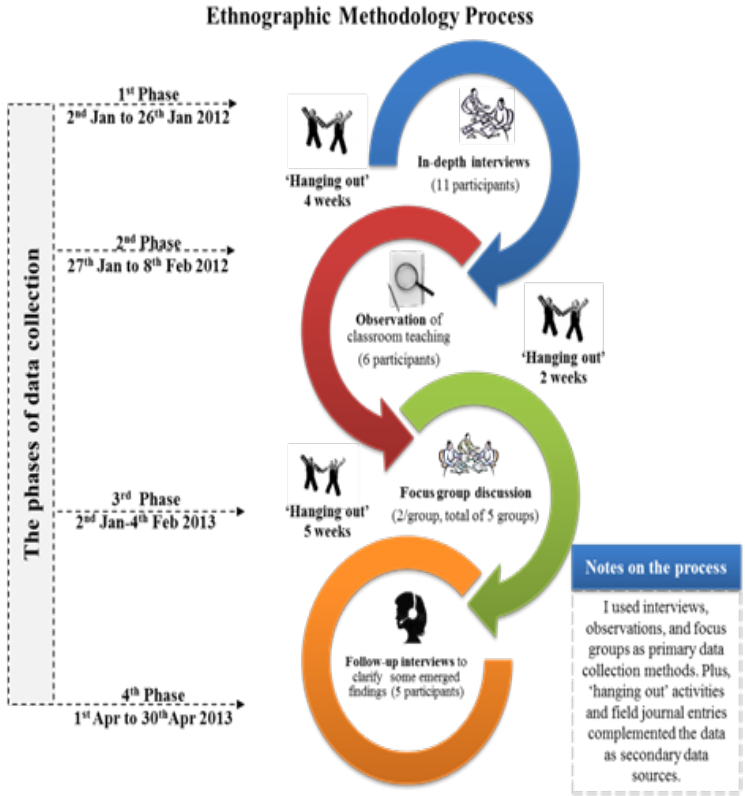

Figure 1. Ethnographic methodology process

Research Findings

The findings presented in this paper were generated through multiple sources such as interviews (IN), classroom observations (CO), focus group discussions (FG), follow-up interviews (F-IN), and hanging out field journal entries (FJ). This section examines two main themes: One is technology-related professional learning, and the other is teacher educators' formed Microsoft PowerPoint (PPT)-assisted and content-oriented pedagogical practice. Each of the examined themes is reported in turn.

Technology-related Professional Learning

Technology related professional learning is designed to enhance teacher educators' pedagogical practices and their use of digital technologies. The data identified two types of professional learning. One was formally designed and the other was informal learning that occurred through corridor talk (sharing new ideas when meeting colleagues informally).

Formal PD. Many teacher educators raised concerns regarding the formally designed PD (PD) in their workplace. These concerns were associated with the way it was designed, as outlined in Table1.

Table 1
Teacher educators' comments on formally designed PD

Sub-themes	Data/Source	Interpretations
Aim of PD	• I believe the university promotes and encourages the idea of using ICT as they are spending a great amount of money on making facilities available to us. (Nisha, IN) • We know that they [university PD professionals] want to promote the use of ICT through these PD sessions; however, it doesn't work in the way they expect. (Lamha, IN)	These comments demonstrated that regardless of the investment, the expected aims from the PD were not achieved.
Organisation of PD	• Making these facilities part of our practice is something that they [university PD professionals] want to happen. It is not done properly by the institution. (Nisha, IN) • If there is any…it sort of is not really well organised. (Raufa, IN) • I think PD needs to be organised in a way that helps the staff to get familiar with those things and do something instead of having short introductory sessions about these things. (Haula, IN) • I mean when giving a session about a new facility or new applications, not enough support is given at the early stage. I guess the support needs to be maintained until we accept it. (Shaina, IN)	The conversations clearly demonstrated that PD was not organised well enough to enhance teacher educators' pedagogical practices. They also highlighted that they did not agree with the idea of 'one off' sessions. Rather they need PD to continue on a regular basis.
Limited opportunities of PD	• There are not many programmes run at our institution to make us learn things. (Shaina, IN) • We had very minimal PD about using GEM and Moodle... I guess opportunities for PD …are very limited. (Nisha, IN)	In these conversations, teacher educators raised concerns regarding the limited opportunities for participating in PD.

Sub-themes	Data/Source	Interpretations
	• There were only limited, occasional PD, which were organised. … I think they [institution management people] just don't run too many. (Zeena, IN) • I think the institution runs a limited programme in order to get teacher educators familiar with these tools. I remember there were sessions about Moodle, GEM, IQWeb, Self-service, website designing. It is like one for each programme. No one seems to be learning anything. I don't think anyone learnt just by attending one session. (Alia, IN)	Apart from that, organising only one PD session for each programme, such as one for Moodle or GEM, seems to be too limited for gaining learning from these sessions.
PD sessions are not connected	• We had very minimal PD about using GEM and Moodle, and the sort of separate bits are not really linked to each other. (Nisha, IN). • Though there is PD organised, it is not helping us to go for it, because everything they introduce is like a new idea, and next year they will come and talk about something else again. (Dhimna, IN) • I remember there were sessions about Moodle, GEM, IQWeb, Self-service, and website designing. But they happened only occasionally and people tend to forget things easily because sessions are not linked to each other. (Alia, IN) • Most of us forget what we learnt from the sessions, because they are not monitored and not linked to each other. (Shaina, IN) • They are calling one day to conduct a session, and another day running a completely different session which has no link to the previous. It feels like it is bit by bit, normally we are not able to get the ideas on how to integrate these things in our everyday teaching contexts. (Faiha, IN)	Teacher educators' conversations regarding the link between the PD sessions highlighted some issues: 1) PD sessions are organised occasionally and separately from each other. 2) When PD sessions are not linked to each other, teacher educators easily forget what is being introduced.

Sub-themes	Data/Source	Interpretations
PD's usefulness	• I believe the sessions do not completely help us to use it in our everyday practices. (Haula, IN) • I don›t find the information shared was much use. (Nisha, IN) • Raufa: I don't think the session provides us much about what we need to with these tools when it comes to our existing practice. Nisha: That's true; sometimes I feel they are just giving us an introduction about a tool and that's it… then what? Raufa: I sometime wonder how these things can be useful for our own practice. They never give us practical examples on anything that is meaningful for us particularly. (Raufa & Nisha, FG) • Normally we are not able to get the ideas on how to integrate these things in our everyday teaching contexts. When a session is given, we usually get to know the tool, but what to do with it and how to do things are some concerns that are always raised and later no one is interested in learning more. (Faiha, IN)	The comments from these teacher educators clearly demonstrated their beliefs about the PD's usefulness for their pedagogical practices. PD only provides an introduction about various tools, which does not necessarily link to teacher educators' pedagogical practices.
Reasons for PD's limited success	• When given a session about a new facility or new applications, not enough support is given at the early stage. (Shaina, IN) • After the sessions not enough monitoring is done, whether we use those things or not. (Alia, IN) • I notice the majority don't use IQWeb because they don't really know how to practically use it for teaching that can only be gained through practising with it. It means we will need support for this. (Haula, IN)	These conversations portrayed the teacher educators' limited uptake of introduced tools through the PD. It resulted from the lack of monitoring and support that should go along with PD.

Sub-themes	Data/Source	Interpretations
	• I guess the support needs to be maintained until we accept it [the tool]. I believe we need some time to get familiar with the new ideas and application when given an intervention. I also believe it needs to be supported and follow-ups need to be arranged. Unfortunately it doesn't happen. This also means that there has to be someone who we are always seeking help from. Unfortunately such a thing is not seen in our workplace. (Shaina, IN)	

Teacher educators' comments on how their PD is designed clearly indicate that it does not help them in the effective use of technologies for their pedagogical purposes. Thus, regardless of the number of PD sessions that were organised for them, it is unlikely to lead them to change their use of technologies, and accordingly, they just follow what best works for them, rather than thinking about appropriate use of technologies for their teaching. Besides the formal PD, many teacher educators recognised that they gained a great deal of technological knowledge through their corridor talks.

Informal Corridor Talk. Some conversations underlined the trend for corridor talks within the department staff. The institution is divided into academic departments according to specific subject areas, such as the science department and mathematics department. Thus, participants meet colleagues in their own discipline more often than people who work in other departments. The idea here is when someone learns about a new tool or useful website; it is very likely to be shared with the person next door. Some of these examples are illustrated in Table 2.

Table 2
Teacher educators' comments on informal corridor talk

Sub-themes	Data/Source	Interpretations
Learning from others	• I learn a lot just by trying out things. Say for example, at first I was not very fluent in using PPT in my teaching. With the help of my colleagues, I can prepare really good presentations now. I also think I have improved a lot... in terms of adding hyperlinks and videos etc. It is like	Zeena developed many skills for using PPT with the help of others.

Sub-themes	Data/Source	Interpretations
	when someone knows something or when you know the other person is better… you seek help from them. (Zeena, IN)	
	• For example, I heard about Dropbox from … [name removed]. I learnt to use it with her. (Raufa, FG)	
	• In talking about informal learning, Nisha said: I like Dropbox too; it has become very common in our practice. Raufa added: It is sort of learning that happens informally. We learn from each other, just by observing or knowing that someone is using a new thing. Then you tend to tell others about it. Nisha agreed: That's true. I actually learnt it from … [name removed], she once told me to install it and have a go. It is a free tool; once it is installed you get free space. Raufa explained: We learn a lot from each other. I feel whenever we find something new we tend to sell those ideas, we talk about it within our professional group [who teach same subject area]. In response to her, Nisha supported: Yeah that's what happens normally; it is like when knowing about useful websites, relevant pdfs, learning activities, tools, videos, and sometimes new applications too (Raufa & Nisha, FG)	Both Nisha and Raufa learned to use Dropbox through the corridor conversations they happened to have with their colleagues in the same department.
Sharing and learning	• I think we learn a lot that way… I remember I shared with many people ideas about some helpful websites and links to get pdfs. (Meera, IN)	Meera often shared useful ideas related to helpful websites with her colleagues
	• Faiha: I often discuss what I do with other people in my department. For example, when I learned about Dropbox through an email from a friend. I installed it on my system. I found it very useful for me. Then I talked about it with many others… [names were removed].	Faiha always discussed new ideas, websites, and tools with her colleagues. She also encouraged them to use them in their teaching.

Sub-themes	Data/Source	Interpretations
	Zeena agreed: That's true, I also learnt it from you … sometimes things we learn that way are much more helpful than the things we learn from the PD, because once the PD's done no one is there to seek help about it. But for example, this way I always go to … [name removed] and get her help. Faiha added: Not only the programmes. We also exchange a great deal of many helpful websites. Zeena supported: You recently mentioned about Google docs, which was something I want to learn and I keep thinking about it now.(Faiha & Zeena, FG)	

These comments indicate teacher educators' enthusiasm for the learning of new ideas through these informal talks. Comments also suggest that teacher educators learned some useful technology related skills, but it was clear that most examples shared through these corridor conversations were simple information that could be easily learnt by sharing in a minute or so of talk. However, when it comes to complicated tools and their use in practice, they expect the institution to design formal PD for them, as reported earlier. The next section identifies teacher educators' formed pedagogical practice with their use of digital technologies.

Teacher Educators' Formed Microsoft PowerPoint (PPT)-assisted and Content-oriented Pedagogical Practice

Many teacher educators used PPT as the main tool supporting their pedagogies. Moreover, informal observation through the "hanging out" approach also documented a number of journal entries, which complemented this understanding. This understanding was drawn from some teacher educators' comments and written field journal entries as illustrated in Table 3.

Table 3
Impact of PD: PPT-assisted and content-oriented pedagogy

Sub-themes	Data/Source	Interpretations
Using PPT for teaching content- heavy modules	• ICT [PPT] helps me to cover heavy content subjects. I put all the important ideas that I need to explain in my slides. (Raufa, IN)	Raufa believed that PPT helps her to cover heavy content subjects.

Sub-themes	Data/Source	Interpretations
	• For example, instead of answering a question or showing an answer on the board, it would help me … to show and discuss the answers by going through the slides ... It won't take much time because I don't need to write on the board. It saves time. (Faiha, IN)	Faiha realised the suitability of PTT for discussing answers for students' queries.
	• When talking about the use of PPT Faiha said: Using PPT is the most common thing in our teaching. I think it helps a lot for our teaching. Zeena added: We can use attractive and interesting visual materials such as diagrams, concept maps, images, audio, and videos while explaining… [referred to use of PPT]. Faiha: For me, using many tables, concept diagrams and images is very helpful for students' understanding… The best thing is … we go to the classroom having all that in our slides. (Zeena & Faiha, FG)	Both Zeena and Faiha found PPT useful for their explaining of the content, as it allows them to use diagrams, images, audio, and videos.
	• I often hear many of my participants complaining about spending a great amount of time for lesson preparation. Later, I started realising what they really meant. In fact, I started noticing many of them spending time sitting at their computers, flicking the pages of the books, online materials, webpages, images from Google, and so were very much involved in preparation of PPT. I observed this in most of my visits to my participants' work stations. Today, for example, I visited six of my participants' rooms. I found all of them occupied with PPT preparation. (22 January 2012, FJ).	Teacher educators spent great amounts of time in preparing their lessons, because they normally include all that they need to explain in the slides. Data in both journal entries (22 and 25 January) suggested that teacher educators' understanding of effective use of PPT involves putting all that they need to teach in the presentation slides.

Sub-themes	Data/Source	Interpretations
	When I went to Nisha's room, I observed that she had loads of books piled on her desk. I asked her: You seem to be really busy with your work. What's on today? Nisha: Yeah, this is a new subject. It is really hard to get everything written down. I am trying to bring all the important ideas into these slides. (25 January 2013, FJ)	
PPT is replacing the board	• Haula: Most of our staff, what they teach through ICT [PPT] is only delivering information using PowerPoint presentations. I don't see much change in the teaching. Meera: That could be true in the sense that most of our teaching remained as it was before these facilities became available. I would say, instead of using the board when we were students, we sort of changed it to PowerPoint. Haula: I believe PowerPoint is a very powerful tool, but we don't seem to be using it the best way. (Huala & Meera, FG)	Haula and Meera believed that PPT is often used as a replacement of a board when teaching. This means that it is used the same way that they would have used the board in teaching.
	• Nisha: In traditional teaching, you sort of write everything on the board, and explain while writing. And students take notes or and listen. But when ICT is used all the information you need to explain is written ahead of time. When you want to explain you can put on the slide you want on. You don't need to write much on the board. … it is much more helpful for teaching than the board, because we get enough time to discuss in the class instead of spending time writing notes on the board. (Nisha, FG)	Nisha agreed that PPT is often used as a board to help them explain the lesson. However, she saw it is much more helpful and easier than using a board.

Sub-themes	Data/Source	Interpretations
	• At the very beginning of the lesson she [Meera] put her slides on. She explained important points related to some theoretical knowledge. She continued explaining what is written on each slide until she finished ten slides at a stretch. (Meera, CO)	Meera used PPT as a major tool for her teaching for explaining the lesson content.
	• She [Faiha] started her lesson with a question on her first slide. She talked with her students for 2-3 minutes. Then she started her explanation regarding the main ideas of the lesson. She had many diagrams, pictures, graphs, videos, and tables… in her slides. But mostly they related to the content she covered in that lesson. (Faiha, CO)	Faiha used PPT as a major tool too. However, her presentation contained many diagrams, pictures, graphs, tables, and video for helping her students' learning.
Interactive but the concentration is on teaching content	• The meaning of student interaction and engagement for me is trying to ask questions in relation to the content I teach. Normally, it is a way of checking whether my students understood or followed the explanation or not. (Nisha, F-IN)	Nisha viewed the meaning of interaction as helping her students to talk so that she can check their understanding of what is explained.
	• I use many interactive activities when teaching. I often open discussion points when I explain. I bring real examples to make them learn better. I provide students time to think in order to understand the concepts and generate their own ideas. (Faiha, IN)	Faiha used PPT and it helped her to open students' discussion and clarifies her students' understanding of what she teaches.
	• We explain the content through PowerPoint presentation, we give activities to students, we also discuss while presenting. I guess you are right, that we use PowerPoint more often. It is basically the major teaching tool. (Meera, FG)	Meera believed PPT helps her teaching, as it allows her to discuss the content and give activities to the class.

Sub-themes	Data/Source	Interpretations
	• Shaina explained a large amount of definitions that students were required to learn. Every time she finished explaining a definition, she asked questions regarding it and students were asked to answer. Students were asked to give the same sort of examples that were discussed in the explanations. Though students interacted with their teacher or with the student next to them, they were mostly discussing the knowledge that was explained to them. Shaina did try to increase students' interaction and engagement. However, their engagement and interaction was concentrated on learning knowledge and memorising the content covered in Shaina's explanation. (Shaina, CO)	Shaina explained definitions, followed by questions for helping her students rehearse the content delivered.

Since the use of Microsoft PowerPoint was the most common tool in teacher educators' teaching, the researcher sought to understand their pedagogical goals for using this particular tool. Data from multiple sources indicated that teacher educators selected this particular tool due its convenience for teaching content-heavy subjects. The main findings presented are discussed in the following section.

Discussion and Conclusion

The findings suggest that regardless of the many PD sessions that were formally designed in relation to a number of digital tools, teacher educators have limited use of these tools in their pedagogical practices. Some PD sessions, which introduced GEM, IQWeb, Self-service, and Moodle, did not help teacher educators use them in teaching. Therefore, these tools were scarcely mentioned when teacher educators talked about the digital tools they used in teaching. The findings thus indicated that the PD sessions designed were not appropriate for enhancing teacher educators' use of digital technologies in teaching. Some concerns regarding these issues were raised by Nisha, Shaina, Zeena, Faiha and Meera. They highlighted that professional learning was designed as 'one off' sessions', not connected with each other, 'not focused on pedagogy', and moreover 'merely introduction of the tools', and which perhaps made them continue their pedagogical practice as content focused or centred on using one specific tool. A number of researchers argued that professional learning should be designed in an on-going (Guskey, 2003), reflective thinking (Greene, 2001), active (Darling-Hammond et al., 2009; Guskey, 1999), and context focused manner (Van Driel & Berry, 2012). These researchers recommended that PD

should be successful for bringing a change into teachers' practice.

This paper argues that professional learning ought to be designed in ways that help teacher educators bring a change in their pedagogical practices. Findings indicate that teacher educators continued using what was mostly available and convenient for them to deliver content, without necessarily thinking about the pedagogical implications for their student learning. For example, Raufa found PPT useful for covering content of the lesson, whilst Faiha found it useful for her explanations as it allowed her to answer students' questions. This could mean that Faiha might have found its relevance in this particular incident, as PPT allowed her to get everything written down ahead of her class. This means that it would save a lot of time for her when explaining whenever a student asks a question that needs clarification. Data in this regard suggest that teacher educators used PPT as a transformative tool (a delivering tool), as argued by Harris et al. (2009). This also means that these teacher educators are unable to conceptualise appropriate pedagogical approaches to using digital technologies in teaching. Koehler et al. (2007) suggest that the complexity is associated with teachers' lack of understanding of the relationships between content, pedagogy, and technology and the context within which they function.

Table 2 illustrates that regardless of the time it takes to prepare presentations (to put everything that needs to be explained in the slides), teacher educators found it useful because of its convenience for them to prepare the content to be taught ahead of their teaching, as indicated in (22 and 25 January 2012) the field journal entries. Data on the theme 'PPT is replacing the board' suggests that PPT is used by teacher educators the same way they would have used a board. Nevertheless, the difference is as they all agreed that it is ostensibly more helpful than a board because PPT permits teacher educators to include diagram, video, and tables more easily and efficiently.

This finding suggests that teacher educators' use of PPT was married with their early established pedagogical practices. This understanding clearly supports the arguments raised regarding the influence of early established practices on teachers' use of technologies (Adams, 2012; Bang & Luft, 2013; Kurt, 2013; Perkins, 2012; Sipilä, 2010). Although comments by some teacher educators indicated that they provide many activities during their use of PPT, their classroom teaching demonstrated contradictory evidence. For example, in both Meera and Faiha's teaching, they used PPT for their explanations of the lesson. Though it may have helped their students' engagement and interaction, PPT did not make much difference to the main pedagogical approach, because it was merely used for delivering the content that they wanted to cover. This finding in this regard, suggests that professional learning in this context ought to be designed focusing on changing early established pedagogical practice in order to help teacher educators develop theoretical understanding of using digital technologies in teaching.

Some findings related to informal professional learning (Table 2) suggest that teacher educators are more willing to use digital tools when they receive support from their colleagues who understand what they need. For example, Zeena, Raufa, Nisha and Faiha started using Dropbox without it being introduced through a formal PD sessions. Some teacher educators excitedly discussed that they learn a lot about using digital technologies through sharing

and learning from each other on a regular basis. This idea suggests that teacher educators in this context do not need one-off or occasional sessions, rather on-going PD sessions are pertinent to support their everyday teaching practices. Timperley et al. (2007) argue that teachers can effectively develop theoretical knowledge (such as TPACK, for example) when the professional learning is connected with their contexts. This paper, therefore, suggests that PD in this context should consider the complexity of marrying technologies with effective pedagogical approaches and also taking account of early established pedagogical practices in the Maldivian context. In short, the PD must be designed in ways that teacher educators can be actively involved and experiment with a variety of digital technologies in an on-going and inquiry learning process.

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