

## Health management students' perception of learning with PowerPoint

Kingston Namun

### Abstract

Divine Word University (DWU) policies on Information Communication and Technology (ICT) encourage teaching and learning to occur in an environment where ICT tools such Moodle and PowerPoint become the norm. This study explores an undergraduate class of university students' perception on the effectiveness of learning with PowerPoint. It investigates whether the provision of PowerPoint or lack of it, through Moodle, over one semester in their final year of their program, helps the students to learn better. This research found that although some students reported improvement in learning without PowerPoint, others had mixed views citing that PowerPoint encouraged 'dependent learning'. It also found that students' perception of key University ICT policies together with the students' consistent use of ICT tools over four years had influenced their view of the PowerPoint mediated pedagogy. This research suggests that although the non-provision of PowerPoint to university students can lead to improved students learning, better teaching strategies and promotion of interactive learning classes, there is a need to strengthen student self-efficacy for learning in a structured and formal manner.

**Key words:** PowerPoint Pedagogy, higher education learning and teaching, andragogy

### Introduction

The *2010 Garnaut-Namaliu Report* called for all higher education institutions in Papua New Guinea (PNG) to reorient themselves towards taking advantage of information and communications technology to promote higher education (Garnaut & Namaliu, 2010). The report alluded that high quality modern telecommunications systems were essential for high performance at universities. Divine Word University (DWU), in line with the second decade goals of its 30 year strategic plan for development, has invested heavily in Information and Communication Technology (ICT) to facilitate and enhance research, teaching and learning (Divine Word University, 2012). Students and staff are already using ICT tools such Moodle as a Course Management System especially in the undergraduate programs (Daniel, 2014) and students are using computers on an average of three to five hours each day (Hambrua & Bangui, 2011). While the use of ICT in DWU may be relatively new, in many other countries, ICTs have become deeply rooted in educational settings with their use having fostered qualitative changes in how teaching is approached

(D'Angelo & Wooley, 2007; Pros, Tarrida, Del Mar Badia Martin, & Cirera Amores, 2013).

This study explored one of these ICT tools, specifically the PowerPoint, and its role in teaching and learning at DWU. The purpose of this study was to investigate a class of undergraduate students' perception of learning with and without PowerPoint. This study is important for educators as it will provide some insight into how students' view learning in an ICT enabled environment. The study findings will also contribute to knowledge on teaching and learning in higher education in Papua New Guinea, specifically the role that ICT tools play in PNG universities in shaping students' attributes for the workforce.

### **PowerPoint in higher education**

Before the arrival of PowerPoint, many lecturers, to emphasize particular points, used written material presented on a chalkboard, whiteboard or transparencies on an overhead projector. However, with the launch of PowerPoint by Microsoft in the early 1990s, the software has been installed on no fewer than one billion computers with an estimated 350 PowerPoint presentations being done each second across the globe (Parks, 2012). The use of PowerPoint presentations as an interactive learning tool has had a significant role in interactive ICT teaching and learning in tertiary education settings (Pros et al., 2013) throughout the world and is known today as 'PowerPoint pedagogy' (Hill, Arfoed, Lubitow, & Smollin, 2012).

As quality of instruction and interactive classrooms become key factors for student motivation (Sogunro, 2015), teachers have adopted the use of PowerPoint as a teaching and learning aid in the classroom (Craig & Amernic, 2006; D'Angelo & Wooley, 2007; Kinchin, 2006). Its use has become so common that students in higher education institutions expect the teacher to present using PowerPoint. Its role in higher education continues to draw debate but it must be made certain that the PowerPoint is not one of those mild means of facilitating what educators have always done; rather, it is something that has a significant effect on how educators engage with their students (Craig & Amernic, 2006).

### **Literature review: PowerPoint as a teaching and learning tool**

A number of studies have looked at the impact of PowerPoint pedagogy in the teaching and learning settings and there is still debate about its effect on student learning. Frey and Birnbaum (2002) suggested that the use of PowerPoint did affect students' perceptions of the lectures and the person delivering the lecture. Specifically, students favored PowerPoint lectures and thought of lecturers who used them as more organized. Students also felt that they took notes better, their notes were more organised, easier to understand, and useful for study for exams (Frey & Birnbaum, 2002; Susskind, 2005).

Burke and James (2008) argued that students in the contemporary business classroom may view PowerPoint as a 'novel stimulus' and these perceptions of

novelty are related to students' self-assessment of learning. This means that the degree of novelty that undergraduate business students associate with PowerPoint-based teaching, significantly relates to their perceptions of PowerPoint impact on their cognitive learning and classroom interaction (Burke & James, 2008). D'Angelo and Wooley (2007) suggest that students maintained the perception that modern teaching methods including PowerPoint and videos are effective in increasing their learning but there may be differences in students' perceptions based on the students' course. They found that, overall, students seem to have mixed reactions to technology, hence, indicated that instructors who wish to involve students may need to rethink how and why they are using technology (D'Angelo & Wooley, 2007).

Apperson, Laws and Scepanky (2008) stated that students in a university setting may also prefer the use of the PowerPoint technology because of its structure or components. They say that students preferred PowerPoint in the classroom because of the use of key phrase outlines, pictures and graphs, slides to be built line by line, sounds from popular media that support the pictures or graphics on the slide, color backgrounds, and to have the lights dimmed. Hill, Arfoed, Lubitow and Smollin (2012), Isseks (2011) and Weimer (2012) support this by saying that one of PowerPoint's strengths is that it is presentation software that can use colours, bullet point text, pictures and videos on a slide with animation and transitions. PowerPoint use in the classroom has become widespread and is expected by students. Sometimes if a class started with PowerPoint lectures, and then stopped, student motivation declined after PowerPoint stopped being used (Susskind, 2005).

Others researchers disagree and argue that the software's strengths are also the source of potentially detrimental influences on the classroom environment by encouraging passivity, oversimplifies the course material and limits digression (Hill et al., 2012; Isseks, 2011; Weimer, 2012). Isseks pointed out a PowerPoint presentation conveys to students that there are only two types of information: things we need to know (what is on the slides) and things we do not need to know (everything else). Thus, facts travel from the teacher, to the PowerPoint slide, to the students' notes with little or no opportunity for discussion, analysis, or evaluation. Hill et al. (2012) pointed out that while the PowerPoint had strengths, it promoted passivity and encouraged a tendency for dependency on the teachers' slides. Wecker (2012) also called this the 'speech suppression effect' where certain students' retention of oral information was lower with slides than without slides.

Savoy, Proctor and Salvendy (2009) studied the quality of information retention and performance in students, comparing traditional ('chalk and talk') lectures and lectures presented with PowerPoint. They found that even though PowerPoint is faster and clearer than writing using a chalkboard, it does not necessarily improve retention. While teachers can place pictures in PowerPoint to help students recall ideas or explain concepts, this may also be detrimental to the students learning. Bartsch and Cobern (2003) found that students performed worse on quizzes when PowerPoint presentations included non-text items such as pictures and sound effects. They reported that participants were shown

PowerPoint slides that contained only text, contained text and a relevant picture, and contained text with a picture that was not relevant, the students performed worse on recall and recognition tasks and had greater dislike for slides with pictures that were not relevant.

Although the PowerPoint's use in many educational settings is still debated, its role in higher education in PNG as a teaching and learning tool, on its own or in combination with other teaching methods, has been sparse.

### **Methodology**

The study adopted a phenomenological approach, as similar studies relating to perception of students and ICT in higher education have been carried out using this approach. The phenomenological method interprets an experience by listening to the different 'lived experiences' of the participants (Bound, 2011). Bound stated that this methodology looks at the experience of the participants and their perception, perspectives and understanding of a particular situation. Phenomenology, as a methodology, has been used to explore factors that influence adoption of e-learning within higher education (King & Boyatt, 2014) and adoption of instructional technology for teaching and learning purposes (Tuttle, 2012).

The key question of this study was: *What was the learning experience of students who had PowerPoint removed as a learning guide?* In order to look at this, two constructs were identified as key to understanding this question:

- perception of learning style with the use and non-use of PowerPoint
- perception of PowerPoint dependency in learning.

### **Construct 1: Perception of learning style with the use and non-use of PowerPoint**

As students enter higher education institutions, there is a shift in their learning environment in terms of social groups, technology, teacher attitudes, infrastructure and learning style (D'Angelo & Wooley, 2007; King & Boyatt, 2014). One of the factors influencing learning includes ICT use, especially the use of PowerPoint. Students may perceive this to be a novel item with ease of handouts (Burke & James, 2008; Craig & Amernic, 2006) and feel this helps them retain information and study (Frey & Birnbaum, 2002) during each semester. However, others might feel it is not interactive and hinders their learning ability (Savoy et al., 2009).

In this construct, the researcher examined whether a change in PowerPoint provision would change students' learning style. In the first semester, students were taught in the classroom using PowerPoint. After classes, the PowerPoint slides were uploaded onto the DWU course management system – Moodle. Students were then able to access two or three PowerPoint presentations each week which were posted on Moodle over the period of 14 weeks. There were web links and reading materials also posted on Moodle by the teacher. In the second semester, again for 14 weeks, the teacher taught the students using

PowerPoint, however, the PowerPoint slides was not uploaded onto Moodle, with only web links and reading materials being posted on Moodle. The teacher did not provide PowerPoint slides as electronic or hard copy to the students. While the academic environment (one teacher, teaching style, number of teaching hours and number of students) mostly remained the same, the absence of the PowerPoint in the second semester (except for the teacher's classroom presentation) was the major difference between the first and second semester.

Having gone through a semester where there was no PowerPoint provided, students were asked about their experiences of their learning styles and if it differed or changed over the semester in relation to the provision or not of the PowerPoint slides.

### **Construct 2: Perception of PowerPoint dependency in learning**

Students in higher education institutions are encouraged to adopt andragogical style of learning (Thompson & Deis, 2004). These andragogical skills include 'effective planning and organization, manifestation of currency of knowledge of content, use of modern technology, and instructor's embracing personality attributes' (Sogunro, 2015); and where learning is seen as a 'iterative, dynamic process of change, dependent on the self-efficacy of the learner to take responsibility for his or her own learning' (Thompson & Deis, 2004).

While the first construct looked at the students' learning style, the second construct looked specifically as whether the provision of PowerPoint created a tendency for students to become dependent on PowerPoint as a primary source of learning material thus making them learners who were passive and relied too much in the teacher. In tertiary education, 'spoon-feeding' is often referred to as a situation where the teacher acts as a knowledge dispenser for passive students (Chhem, 2000), there is a 'teacher centered style of learning' (Dehler & Welsh, 2014; Wong, 2004) or 'placing lectures online after teaching' (Buddle, 2014). Raelin (2009, p. 407) called spoon-feeding as a 'longstanding historical practice' among American higher education institutions where educational delivery passed on information to captive and passive students. When spoon feeding occurs, Dehler and Welsh (2014) argue that students become adept at collecting and replicating surface knowledge, but many are not progressing beyond that level. In Benjamin Bloom's Taxonomy of Cognitive Domains (Bloom, 1956), collecting and replicating knowledge is a lower form of learning in higher education in contrast to higher forms of learning such as analyzing and evaluating concepts, processes, procedures and principles. Under the second construct, students were specifically asked about their perception of whether providing PowerPoint as a learning aid was considered spoon-feeding or it made them become dependent learners.

### **Design of the study**

To investigate the students' perceptions of PowerPoint use on teaching and learning, this study employed a questionnaire. The participants were asked to complete a survey instrument that focused on provision of PowerPoint use in

the classroom, its provision on Moodle and their learning style. The survey was created using Google Forms and the link sent to students' email addresses. They were asked to access and complete the forms through their email connection and submit electronically. The survey contained ten closed questions with three open-ended questions. To encourage participation and confidentiality of opinions, the survey contained a section for student identification numbers only in addition to questions on the two constructs.

### **Participants**

Purposeful sampling was used to select twenty-three participants. The 23 participants (13 females and 10 males) were students in their final year of their studies in the Faculty of Health Sciences Bachelor of Health Management program (DWU full-time undergraduate degree programs are four years long). In the first semester, students took the unit HM404 Project Planning and Design, (the unit provided PowerPoint as learning aid) while in the second semester, the same group took HM408 Project Monitoring and Evaluation, (the unit did not provide PowerPoint slides to students as a learning aid). Twenty-two of the 23 students completed the survey, which puts the response at 96%. In the first year of their university studies in 2011, they were introduced to PowerPoint use through teaching and learning activities and presentations. Therefore, the use of PowerPoint has featured prominently in the students' accumulation of information and knowledge over a four year period in the university setting.

### **Ethics**

A research ethics application for this study was approved by the Divine Word University' Faculty of Health Sciences Research Ethics Committee (Approval No 3/14).

### **Findings**

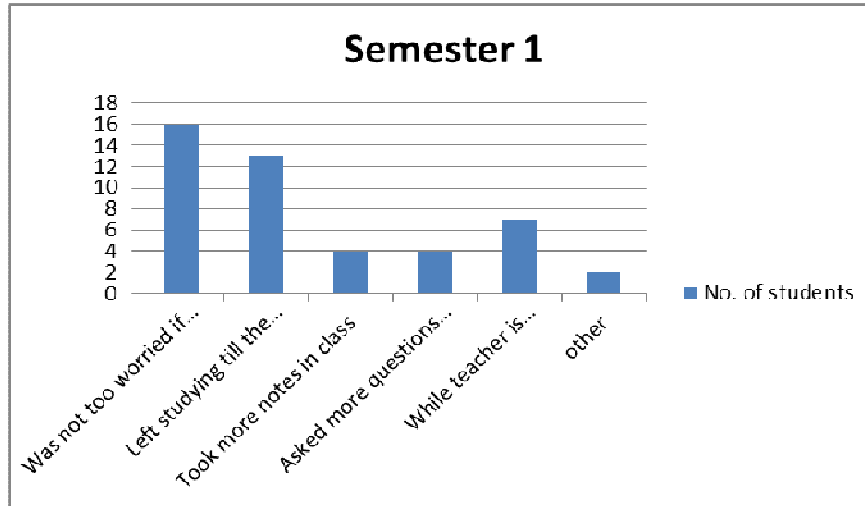
#### **Construct 1: Perception of learning style with the use and non-use of PowerPoint**

##### *i) Attendance, enjoyment and learning style*

In the second semester, while the teacher taught the students using PowerPoint, the PowerPoint were not given to the students or uploaded onto Moodle. The first question: '*Did you, as a student, enjoy learning about the topics with the teachers PowerPoint or without the teachers PowerPoint?*' showed that although 68% of the students enjoyed learning with PowerPoint, 32% (7 students out of 22) said that they enjoyed learning without the teacher developed PowerPoint. When asked if 'attendance was critical to their learning in class without PowerPoint, 100% of the students agree that attendance was critical to their learning. Students also expressed that if they knew that the same PowerPoint used as a teaching material in class, would be uploaded on Moodle, then they could afford to miss that class. Seventy-three percent (16

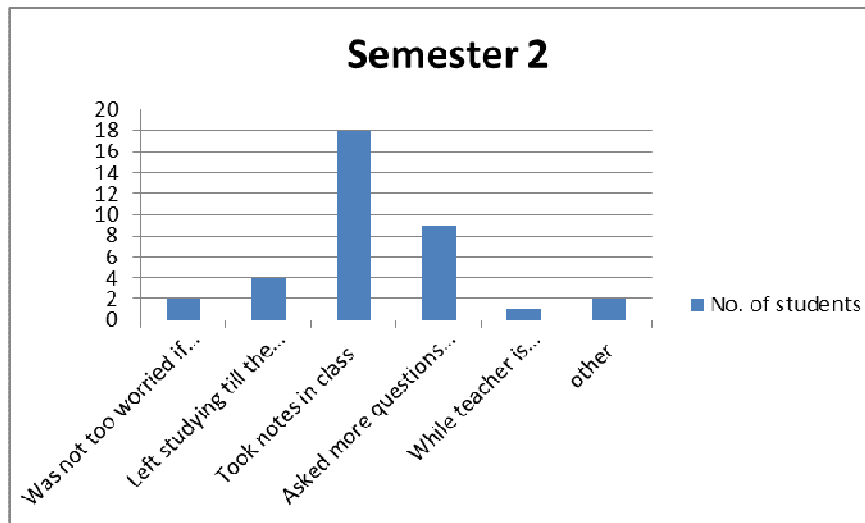
students) said that they were not too worried as the PowerPoint would be on Moodle during the first semester.

Below are two graphs that show students actions over two semesters. The first graph shows what the students did in the first semester when the PowerPoint was provided to them and the second graph shows what they did in the second semester when the PowerPoint was not provided to them.



**Figure 1: Students actions when PowerPoint was provided on Moodle**

The students experiences changed marginally in the second semester, when there was no PowerPoint provided (Figure 2).



**Figure 2: Students actions when PowerPoint was not provided on Moodle**

Only three students felt this new method did not work for them.

One student wrote:

*This method did change my learning style as it influenced me to do more research and to learn on my own. On the other hand it consumed a lot of time as I have to do my own search to understand topics and study terminologies.*

Another student wrote:

*No notes on the Moodle so no knowledge about that particular unit.*

Another student wrote:

*This new method has changed my style of learning by having an added responsibility for me as a student to listen and understand what is being taught and try to put it down on paper in my own words. This method has had both negative and positive impacts on me. On the negative side, I always find it hard to really understand what someone is trying to say when I am not giving my full concentration or paying full attention. In this case, when the teacher is talking and i am trying to copy or write what he is saying I tend to get confused when it comes to actually sitting down and going through what I have written. On the contrary, this method has taught me the skills of listening attentively and taking down the most important notes.*

However the majority of the students(19 students) felt that their learning style had changed to the point that they were doing some things that they did not do in the previous semester when the PowerPoint were uploaded onto Moodle.

One student wrote:

*For the first time, I felt like I was actually learning things. This new method has completely changed my learning style. I feel responsible towards my learning and the urge to explore more on a particular topic. Every lecture felt extremely important and to skip a day's lecture felt like months of being lost on an island. I now read more, borrow more books than anyone on campus (I think) at the library and surf the net more, and its plain 'academic search' and not 'entertainment search' anymore. I find myself effectively participating during class and I am always eager to learn more and know more. I appreciate this learning style because it has made me become an independent learner and thinker where I am not heavily dependent on the lecturer to spoon-feed me with everything.*

Another student wrote:

*It made me to be a good listener and to take important notes only and try to understand while writing notes. Summarizing was one of the important tools that I tried to master.*



## ii) Use of other sources for research and learning

The students were asked: *Before this semester, I, as a student, did research utilising other sources such as the internet or borrowed books?* In response, 73% (n=17) of the student said that they were using other sources such as the internet, borrowing of library books. However, 27% (n=6) said that they had not even utilized other sources of information but depended entirely on the teacher-PowerPoint as their main source of learning for the whole semester.

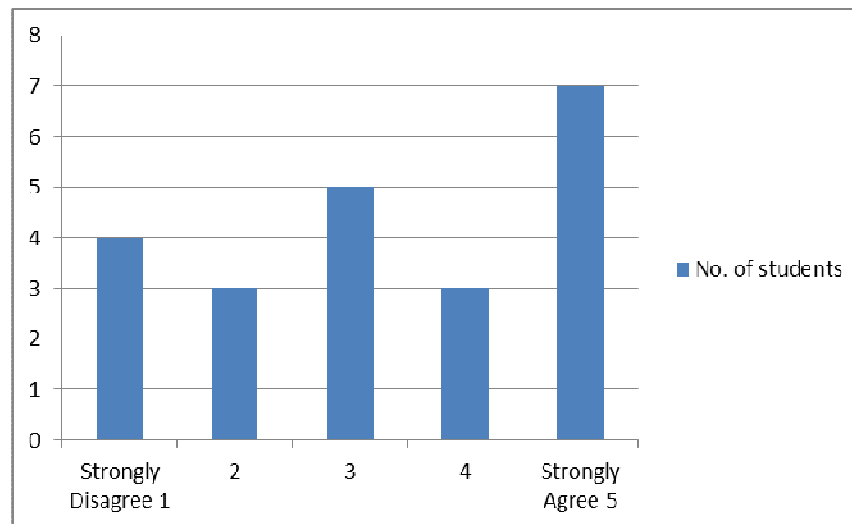
## Construct 2: Perception of PowerPoint dependency

### i) Student perception of PowerPoint encouraging dependency

Students were asked the following question:

*Some academics have this term called 'spoon feeding'. This basically means that the student is only dependent on the teacher and whatever the teacher says, the student follows this as the truth without doing his/her own research by borrowing more books on the topic; browsing the internet or reading journals. Do you think uploading of the teacher's PowerPoint onto Moodle is seen as spoon-feeding the student?*

Figure 3 shows the responses of the students to the question.



**Figure 3: Student views on whether or not uploading PowerPoint slides on Moodle is 'spoon-feeding' students**

Then they were asked why they agreed or not with the provision of PowerPoint. The students' answers fell into three distinct categories: PowerPoint as learning aids, PowerPoint making students become lazy and, maximizing ICT and teacher responsibility.

Two students said that the ICT infrastructure was already in place and so should be maximized to its full potential. They wrote:

*Due to the use of intranet, the Moodle is to be utilized and that is the expected platform where the students can get their notes from.*

*I strongly disagree because before introducing Moodle to DWU, lecture notes were still provided as hand-outs for students to study. So, it's still the same idea using a different method of dissemination.*

Two other students said they strongly disagreed with the statement that PowerPoint encouraged spoon feeding. They said that it was not spoon feeding but that the teacher had a responsibility to provide the PowerPoint to the students. They wrote

*No not spoon feeding, the lecturers have a responsibility towards students' learning. They must upload the PowerPoint because that's their responsibility for helping the students.*

*It depends on how a student chooses to educate himself/herself. Reading more information apart from the PPT provided by the teacher will show that a student is serious about his or her education.*

The next set of answers from the students (5 students) who described PowerPoint as a teaching aid and also should be provided to them as something that they can use as a learning aid outside of class times.

One student wrote: \

*I think uploading of the teacher's power point on Moodle is not spoon-feeding but an aid that could help clear students questions on a certain topic of discussion in class. It is a simplified version of what is available on the internet or search engines. Meaning to say, most times students get confused when it comes to extracting information from the internet. There are a lot of different types of discussion on a certain topic and it is sometimes confusing for the student when doing research on a certain topic.*

Another student wrote:

*The notes uploaded to Moodle should be used as a reference guide when doing further readings on the topic of study. I strongly disagree because I as a student without notes have gone off track while doing further readings on the topics that I tried to increase my knowledge on. I always use PowerPoint notes as a guide to do my research and it also helps reduce wasting time on reading materials that are not in line with the topic of study.*

About half of the students (n=12) swayed to the idea of PowerPoint in presentation and as a learning aid encouraged students to become lazy and too dependent on the teacher manufactured PowerPoint slides. Responses included:

*Because students are not fully utilizing their mind capacity but rather depending on the lecturer's own perception on how things are around this broad globe. Thinking out of the box without lecturers' notes would build a healthy mind set*

*Because the student is given everything as it is, it is more like someone else doing the research for him/her and she/he is relaxing*

*All notes uploaded onto Moodle are kept by students for late assessment use only and not for reading or doing further research*

*1. Students won't attend classes because lecture notes are already available on Moodle and students will access them easily later. It doesn't matter whether they understand the content or not.*

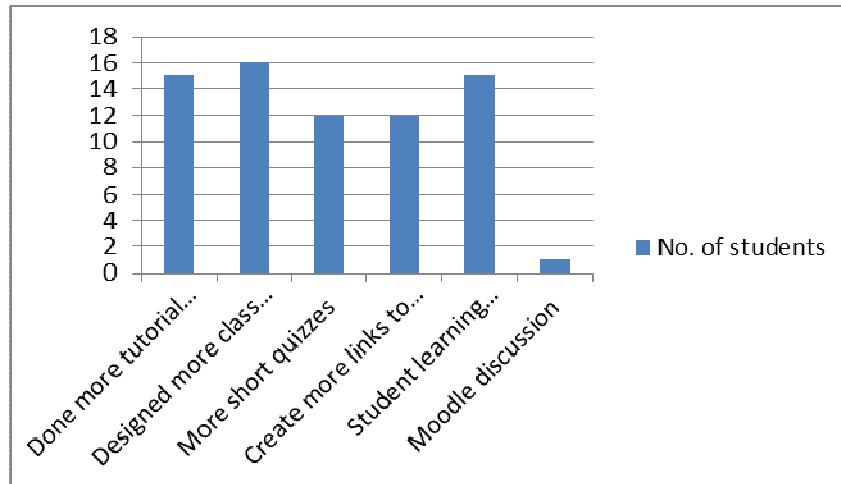
*2. Students will lose concentration in class during lecture time because they think they will read and understand in their own time.*

*3. With less concentration and fewer questions being asked, lecturers would actually think the students understood what's being presented. The quality of learning drops because students just become plain lazy*

*Because students depend strongly on the lectures uploaded to Moodle they become are lazy and don't do further research by reading books, browsing the internet etc.*

**ii) Improvements to a setting where there is no PowerPoint**

Students then were asked that if the method (not providing lecture PowerPoint on Moodle) were to be continued in the coming semesters, how it could be done better to improve the learning experience for the student. Figure 4 represents a summary of the students' responses.



**Figure 4: Students views on ways to improve unit delivery**

Students also identified other areas that could be improved. Five of the students responded by saying that, during lectures, the teacher should give adequate time for the students to copy what is written on a PowerPoint slide before moving to the next slide. One student said that all PowerPoints could be uploaded onto Moodle one week before the exam. Other students suggested the new strategy to start much earlier than Year 4.

The student wrote:

*I think that it is a good learning strategy and I suggest it can start with students from year one and through to their final year rather than start with 2nd, 3rd or 4th because it take time for us as students to adapt to such a new learning strategy that can affect our performance.*

Another student wrote:

*As a paperless policy university everyone depends entirely on the PowerPoint slides given in class and provided on Moodle but with this changing trend it would enable students to do more research rather than spoon-fed by the lecturers through PowerPoint.*

And another student wrote:

*The teacher must upload the main key points onto Moodle rather than provide the whole PowerPoint.*

Yet another student wrote:

*If this method is to continue next semester, the teacher should post or email the topic/s that will be discussed in advance so the student can do private research or readings so as to have a fair idea when the teacher is talking in class about a certain topic. In this way the student can ask any questions that arose through their research and during the lecture time.*

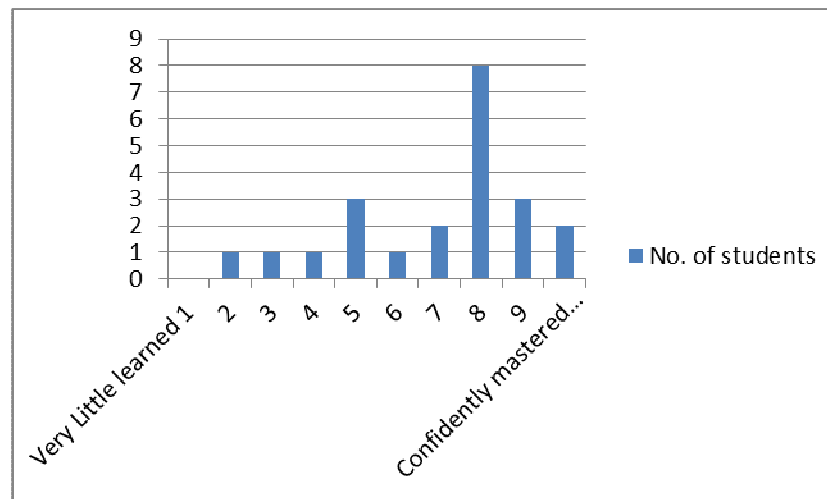
### *iii) Student perception of learning with and without PowerPoint*

In the first semester of their studies in their final year (14 weeks), the students were taught using the PowerPoint and also as a learning tool for themselves. The PowerPoint slides were uploaded onto Moodle for students to access and download. In the second semester (also 14 weeks), the teacher used PowerPoint in class but did not upload them onto Moodle for the students to access. Students were then asked use a Likert scale to show their mastery of the subject in both semesters.

The teacher asked students to respond to the following statements.

*In the first semester (with PowerPoint) you learnt about HM404 Project Planning and Design. On a scale of 1-10, with 1 as very little learned and 10 as confidently mastered the unit, state your level of mastery of the Project Planning and Design.*

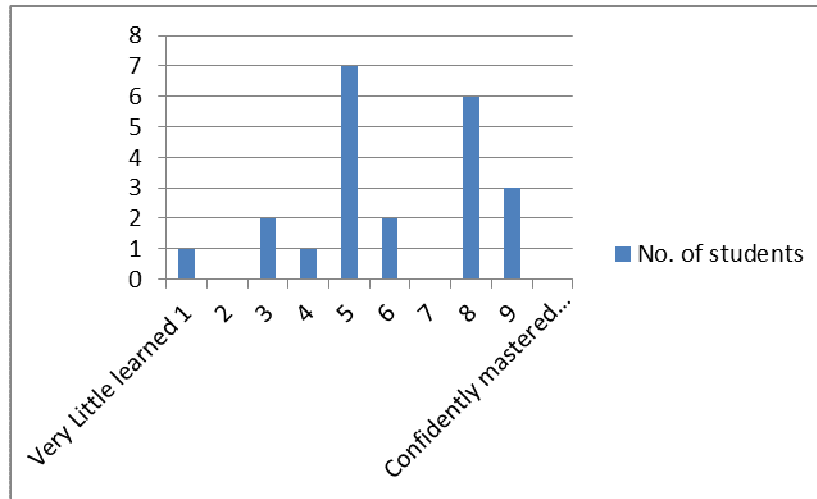
Figure 5 shows the students responses to the statement above.



**Figure 5: Student views on learning effectively when PowerPoint was provided on Moodle**

*In the second semester (without PowerPoint) you learnt about HM408 Project Monitoring and Evaluation. On a scale of 1-10, with 1 as learnt very little and 10 as confidently mastered the unit, state your level of mastery of the Project Monitoring and Evaluation.*

Figure 6 shows the students' responses to the statement above.



**Figure 6: Student views on learning effectively when PowerPoint was not provided on Moodle**

### Discussion

The key question of this study was: What was the learning experience of students who had PowerPoint removed as a learning guide? It can be seen from the findings that, although DWU has embraced ICT in teaching and learning, especially the use of PowerPoint, this group of students have mixed assumptions of its role in teaching and learning use. While some students began to take a new way to become more active in the way they learnt the concepts in the classroom, others felt that there needed to be more input from the teacher. In view of the first construct, some students began to become more active and self-directed in the way they learned.

### Construct 1: Perception of Learning Style with the use and non-use of PowerPoint

#### *Building better attendance and engagement levels*

In this construct, the students identified changes to their learning pedagogy from the first semester. While many students may not have enjoyed the experience of having no PowerPoint provided to them, it was observed that their attendance levels increased, more questions were asked in class and they began to take notes. The actions that they took in the first semester such as leaving the PowerPoint idle up unit assessment time or doing something else while the teacher was teaching or even not asking questions, began to decrease. Some students' attitudes have remained the same but there was definitely a shift in the culture of learning by PowerPoint as can be seen by some of the responses. There was an improvement in independent learning and research by some students through the use of the Internet, library and other means outside of the classroom and better concentration in class as reported by the students.

### ***Application of basic academic skills***

It has also emerged from the research that, when the core learning strategy of the PowerPoint was removed, students needed to apply basic academic skills. These basic skills such as effective note taking, listening, formulating better questions, carry out independent research, use of correct grammatical questions when asking questions and evaluating ideas were some of the skills they have not been actively utilizing because of the convenience of the PowerPoint. The basic academic skills involved in making the learner become more autonomous and independent in the learning environment are somewhat underdeveloped and even misunderstood. For example, one student claimed that without availability of the PowerPoint on Moodle, '*it consumed a lot of time as I have to do my own search to understand topics and study terminologies*'.

The teacher wanted the students to learn more about the concepts themselves by doing more research and reading outside of the classroom but students thought otherwise. Other students in this group still tried to copy word for word from the PowerPoint. Other key academic skills such as how to identify key terms and concepts from lectures or summarizing notes and paraphrasing ideas are skills the students were using when the PowerPoint was removed. They had been using these sparingly in the course of the four years in DWU.

Pasilabban (2006), in his study of teaching and learning in the context of higher education in Papua New Guinea using a case study approach to the lecturer's experience at Divine Word University, identified these and said that many students who entered university did not adequately master basic academic skills before entering university. It seems that teaching students skills at 'how to learn' at the university level needs to be actively pursued in a more formal and structured manner. When they know how to learn, they can apply basic skills required at the university level therefore increase their self-efficacy of learning (Sogunro, 2015) and have positive attitudes towards PowerPoint as a learning aid (Susskind, 2008). This in turn may improve their engagement levels of the class with no PowerPoint.

### ***Encouraging more interactive classes***

Although some students began to change their learning style by taking more notes during lectures, this might not mean that learning is taking place. Hill *et al* (2012) noted that classrooms in which students take notes from PowerPoint instead of actively engaging with material are little different from movie theaters; both are arenas of passive entertainment rather than active knowledge construction. Moreover, Hill *et al* say that even though the PowerPoint presentation may capture student attention, it could discourage deep reflective engagement among students and the teacher. Hill, *et al.* (2012), Isseks (2011) and Weimer (2012) write that one of the strengths of the pedagogy of PowerPoint is that it is presentation software that can use colours, bullet point text, pictures, and videos on a slide with animation and transitions, however, it

its potential downfall is when students become disengaged from the teacher and concentrate more on the PowerPoint.

Apperson, et al. (2008) pointed out that the PowerPoint should not be a substitute for effective instructions and is most valued when used as a stimulus for elaboration, explanation and discussion in classrooms and could be used together with effective supplementary notes as hand-outs which should not be a replica of the actual PowerPoint (Kinchin, 2006). The findings of this research support Apperson et al. and Hill et al. in that classes should be more interactive and increase the use of complimentary items such as learner guides, web-links on Moodle, interactive tutorial classes and reflective learning.

### ***Compliance to ICT Policies***

The HM year four students have, over a period of four years, become accustomed to a culture where they expected teachers to use PowerPoint in teaching, which they would then upload onto Moodle. The results of this group show that students have become accustomed to the use of ICT tools as shown that 73% (n=16) of students expressed that they were not worried if they miss class because they could access Moodle later. Thirty-two percent (n=7) admitted that when the teacher was teaching, they were doing something else. When the students were asked if they felt they mastered the content of the unit with the PowerPoint provided, 73% (n=16) scored between 6 to 10 while in a unit without PowerPoint provided to them as a learning guide/aid, 50% (n=11) of students scored between 6 to 10.

Students also expected the teacher to upload PowerPoint as a learning support material onto Moodle. Again this demand for electronic copies of PowerPoint is encouraged by policies of the University such as the *DWU Printing and Paperless Policy of 2012*, *DWU ICT Policy of 2006* and the *DWU Teaching and Learning Policy of 2014*, which promote the use of ICT to encourage interactive and motivated learning in students. It should be noted that this may also lead to a situation where the teacher feels compelled to upload the notes onto Moodle in compliance with policy rather than his/her philosophy on student learning. Hill et al. (2012) called this 'career pragmatism versus pedagogical commitment' where the teacher, in order to get good end-of-semester evaluation results foregoes his/her philosophy of learning for purpose of being seen to comply with policy. ICT policies encourage teachers and students to use ICT facilities on campus. Many undergraduate lecture rooms in DWU have seats facing the front of the room with a data projector projecting onto a screen that faces the seats. With a large number of students, this design almost beckons a lecture to be accompanied by PowerPoint.

### **Construct 2: Perception of PowerPoint dependency**

As students are encouraged to adopt andragogical skills to learn in a university (Sogunro, 2015) their learning experiences may not be the same. Some may become better learners as they build their self-efficacy for learning through different teaching and learning situations in university. Other students may



retain or adopt learning strategies that inhibit their learning styles for various factors (Thompson & Deis, 2004; Tuttle, 2012). Some may even become inefficient as learners and become dependent on other students or learning strategies including the use of PowerPoint.

### ***Discouraging laziness***

Even though close to half (n=10) of the students agreed or strongly agreed that uploading of PowerPoint was not 'spoon-feeding', 55% (n=12) students pointed out that PowerPoint uploaded on Moodle encouraged students to be lazy and depended on their lecturers for all their learning. When comparing their perception of mastering content of a unit in the first semester (with PowerPoint as learning aids), the results were skewed towards the right (highest number of students at level 8/10) while in the second semester, the results were in the middle (the highest number of students at level 5/10). This suggests that they would have preferred learning with PowerPoint in teaching and also PowerPoint having been made available as a learning aid.

However, the students also realized the impact of dependency of PowerPoint. Fifty-five percent (n=12) stated that the students became too dependent on the teacher- manufactured PowerPoint slides as learning aids. It is interesting to note that only two of the students refer to 'I' or 'me' being too lazy, while the rest of the 12 refer to '*students*' being too lazy. Referring to other '*students*' rather than themselves, may reflect common knowledge and consensus among the students of this behaviour of being lazy to 'go the extra mile' in doing extra research apart from the PowerPoint. Pros *et al* (2013) says that when students access/download the PowerPoint or receive it from the teacher outside of class times, they must perform operations such as filtering, contextualization and attribution of meaning of content which has been already a 'distillate' of contents covered in class. Pros *et al* go on to say that their only remedy is to memorize the notes. By doing so, students may only attain the lower levels of the cognitive domain in the Bloom's taxonomy (Bloom, 1956) such as knowledge and comprehension levels as the PowerPoint is only a fraction of what is covered in class or could be gained if the student did their own research. This basic cognitive skill level includes behavior such as memorizing and recalling of facts, terms, basic concepts and answers which can be gleaned from the PowerPoint. It can be seen that when students were not provided the PowerPoint, many exhibited examples of self-directed learning. Students with higher level of self-directed learning ability are likely to exhibit higher level of self-efficacy and higher level of effort regulation towards learning and performance (Sogunro, 2015). These examples of self-directed learning are similar to what Thompson and Deis (2004) describe as 'learners taking responsibility of their learning' and Dehler and Welsh (2014) point out as 'removing the teacher as the center of learning.'

### ***Removing watered-down learning***

Some students still wanted the teacher to upload the teaching PowerPoint with one students saying its provision was '*an aid that could help clear students*

*questions on topics of the discussion* or *'as a reference guide'*, and *'students could only look at the topics that were discussed'*. Pros et al (2013) say that when the teacher tries to replace well-articulated oral discourse with the display of contents via PowerPoint, there is a probable loss of information and context. This, some researchers say, is when students are subjected to bullet point information on the slides, complex explanations that have been watered down to just one or two lines (Buddle, 2014; Hill et al., 2012; Pros et al., 2013; Weimer, 2012). On the other hand, the students demand for the PowerPoint to be uploaded on Moodle could be an indicator of lack of strong ongoing oral discourse in the classroom between the teacher and the students. It should also be noted too that the PowerPoint and oral discourse in the classrooms are in English, the second or even third language (Baptist, 2012) for many of these students thus, it may be a limiting factor in the level of participation and interaction in the classroom (Pasilabban, 2006). Teacher attitudes may play a role in how the teacher uses ICT tools such as PowerPoint. Pasilabban (2006) also reflected on the role of teachers and how they viewed their students: *'It seems that most of us do not treat them as thinking adults but as young learners to be nurtured, if not 'spoon-fed', throughout their academic lives.'* Pasilabban goes on to say that, even though teachers wanted their students to behave as young adults, *'some of us still do not trust them to do so'*.

#### ***Greater oral discourse needed***

Students in this study expected teachers to make good use of the ICT- enabled learning environment which included posting lecture PowerPoint on Moodle. However, they also acknowledged that the uploading of PowerPoint onto Moodle led to learner dependency, if the same notes presented in the classroom PowerPoint were the ones uploaded on Moodle. If students knew that the content presented in class would be same as that in handouts then they would not bother attending lectures or to take notes whilst in class (Craig & Amernic, 2006; Weimer, 2012). This consistently happened in the first semester. However, in the second semester, the teacher removed the core teaching strategy of the PowerPoint as a teaching aid to supplement the teacher-students interaction in the classroom. This meant that the students were taught with the aid of a PowerPoint but this PowerPoint was not supplied to the students as a post-lecture learning aid. This changed strategy did several things: Firstly, it promoted greater oral discourse between the teacher and the student. Secondly, it encouraged greater class attendance and made students became more participatory in class discussions with multiple questions asked. Thirdly, there were more requests for the teacher to stop midway between slides and explain concepts with more examples. This was seen by the teacher as an example of students thinking about what they were learning when PowerPoint was being presented in class. This suggests that a well-articulated oral discourse should be the primary teaching strategy in the classroom with the PowerPoint as complementary teaching and learning aid. Teachers should also incorporate their rich workplace and relevant life experiences to augment course discussion which in turn could encourage student's sharing their personal experiences and enliven the class energy as well as affect students attendance whether or not the PowerPoint are posted online (Burke & James, 2008).

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### **Limitations**

The researcher was also the teacher who taught the participants over two semesters. This could have affected responses leading to a bias view of the constructs. However, familiarity with one teacher over two semesters allowed the students to see the impact of one change (no PowerPoint given to them) in a semester therefore they could make qualitative judgments on their style of learning in relation to the provision of the PowerPoint.

This study looked at only one class of 23 students in one particular department out of 12 departments in DWU thus the result may not be representative of the 1,000 undergraduate full time students. However, having passed through four years of learning in an ICT influenced setting, and having been taught by various teachers from the Health Management Department and other departments, the 23 students are well aware of the teacher-student teaching and learning strategies that involve the use of ICT among the student population and how it influences their learning and that of their peers too.

### **Conclusion**

This research highlights practices that shape students' learning in an ICT enabled environment and argues for more attention to be given to understanding how ICT tools such as PowerPoint and Moodle play a role in Higher Education in Papua New Guinea Universities. The PowerPoint, as an ICT tool has an influence on student's self-efficacy in learning at university. The findings suggest a need for processes to be in place, which are guided by ICT policies to encourage a systematic and structured process for students to learn how to learn in an ICT influenced setting. Teachers should also be mindful that although learner autonomy means a reshaping of the view that the university learner is responsible for learning, teachers should not fail in their responsibilities as primary agents on fostering the development of learner autonomy within the classroom context. This means greater emphasis should be placed on developing interactive lecture rooms that incorporate PowerPoint as a tool of learning and not as a sole learning aid.

Students in this study have mixed perceptions of the use and non-use of PowerPoint as a learning guide based on their experience of a change in a semester. Their experiences, as expressed in this study, show that providing teacher prepared PowerPoint to students as a learning guide has an impact on university students' learning ability and capability.

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### Author

**Mr Kingston Namun** hails from Manus Province and is a lecturer in the Department of Health Management in the Health Sciences Faculty of DWU. He worked in an NGO setting for five years before entering DWU in 2011. He holds a Master of Health Promotion Degree from the Curtin University of Technology in Western Australia and has a Bachelor in Communications Arts (Journalism) from DWU. His research interests are in the areas of health administration, communication, advocacy, health project design and use of ICT in health settings. Email: knamun@dwu.ac.pg