

A Task-Technology Fit View of Learning Management Systems Impact on Teaching at a Primary School in Belize

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Abstract

The way in which teachers throughout Belize provide classes has changed dramatically since the beginning of the global coronavirus pandemic in March of 2020. Schools nationwide were shut down and online learning became the new norm. This paper uses McGill, T. J., & Klobas, J. E. (2009) previous research paper A task Technology Fit view of learning. As well as McGill, T., Klobas, J., & Renzi, S. (2008) The Relationship between LMS use and Teacher Performance: The Role of Task-Technology Fit as a benchmark to study the impact that the use of LMS has on teachers and their productivity and efficiency. A TTF model was created based on previous literature to answer the main research question. A quantitative study was conducted in order to obtain data relating to the Perceived Impact of LMS on Teaching. The results showed that task technology fit (TTF) has direct influence on the teacher's perspective of the LMS on their performance. Along with the Expected consequences of LMS use which like perceived impact on teaching are positively impacted by the (TTF) of the LMS. The level of consumerization attitude in the end has no real control on the impacts of LMS on the teachers performance but reveals that there is room for improvement in terms of the LMS used at the primary school.

Keywords: Task Technology fit (TTF), Learning management system (LMS), Education, Developing countries.

Introduction

Management Information System (MIS) is the study of people, technology and organization and the relationship among them (Laudon & Laudon, 2016). In this research, a primary school in Belize has been utilizing Google meet and Whatsapp, in order to add value to the institution. The use of these information systems has allowed the primary school to become more technologically inclined by increasing communication between lecturers and students especially during the ongoing quarantine that has been implemented due to COVID 19.

The main purpose of this research is to measure the success of Google meet and Whatsapp, at a primary school in Belize and find ways in which the systems can be improved to increase the perceived net benefits of the students attending the primary school. Also if teachers have any recommendations for a LMS that the school can adapt.

This Primary school has been implementing the use of Google meet, Zoom and Whatsapp, for a few months now due to COVID 19 global pandemic, as a result, it is vital to determine its value and find out if the information system is successful for such an institution. This research can be useful to the management of the institution since it will provide actual data on the teacher's perspective of Google meet and Whatsapp, and alert them on the performance of the systems.

The study at the primary school was intended to analyze how successful and efficient the Information systems were, to find ways how it can be improved to help students in their learning journey and also possible recommendations for other LMS to be implemented. The basic research method that was utilized for this study was questionnaires to gather information from the teachers which was administered via an online platform. The data collected will be represented using tables and histograms. These will aid the discussion section where the findings of this research paper will be presented. Furthermore, the structure of this study is as follows; a literature review, methodology, hypothesis, data results, conclusion and limitations.

Literature Review

Task Technology Fit

The internet has given the entire world access to an unprecedented amount of information that is widespread to the point where it creates numerous challenges for those seeking accurate information that is relevant to analyze and make high-quality decisions. Decision support systems (DDS) provide computer-mediated assistance to help consumers, businesses and governmental organizations organize and analyze data to make decisions (Erskine et al., 2019). A subset of DSS, referred to as Spatial Decision Support Systems (SDSS), have been developed to aid decision-makers working with spatial data. Spatial Decision Support Systems provide the capabilities to input and output geospatial data, supply analytics capabilities unique to geospatial data, and allow complex spatial representations to be presented. The 200 subjects that participated in the study proved that when individuals had more understanding of user perceptions of task-technology fit and geospatial reasoning ability led to greater decision-making performance (Erskine et al., 2019).

The internet has also become a tool for the business-to-consumer aspect of e-commerce which creates opportunities for businesses to reach out to consumers in a very direct way and create electronic markets (Klopping & McKinney, n.d.). This study concluded that the technology acceptance model and task technology fit combined is a more effective model for the workforce and users. For each of these potential tasks that a website may serve, the developer should assess how well the site fits these needs. To assess fit the developer should determine if product information is sufficiently detailed, if the information is

obvious, accurate, and easy to find, and if the site is current, readable, and understandable (Klopping & McKinney, n.d.).

Technology enables employees to stay close to their local situations while engaging in global activities critical to their company's sustainability (Gebauer et al., 2010). A simpler version of the technology-to-performance model, referred to as the task technology fit model, found moderate empirical support for the direct links between task and technology characteristics and user-perceived task technology fit. The Task technology fit concept is highly relevant to explaining and predicting mobile information systems success. The study concluded that communication is better suited than structured data processing to support situations of high interdependence given the higher degree of media-richness, situations of distraction require careful consideration of the design of mobile applications in terms of functionality and user interface (Gebauer et al., 2010).

Task technology fit concepts are intended to provide guidance for and understanding of how best to match a tool with a problem. Channel expansion theory enhances media richness theory by theorizing that media do not have fixed characteristics but can be perceived differently based on experiential factors (Zigurs & Khazanchi, 2008). Use of the internet to support learning and teaching is growing exponentially as more and more educational organisations are recognising the potential that it offers (Study of satisfaction and usability of the Internet on student's performance, 2011). The survey distributed to students pursuing their post-graduate degrees in management and computer applications showed that to attain improvements in the students' performance, the decision-makers have to consider the fit between the tasks requirements and the functionalities of their internet systems. When there is a fit, this would create a positive perception among the students in terms of the usefulness and satisfaction of their internet systems and therefore, promote higher levels of usage among them (Study of satisfaction and usability of the Internet on student's performance, 2011).

Task Technology Fit in Developing Countries

To conceptualize how task technology fit affects developing countries, researches must be conducted. Amina Tariq and Shahriar Akter explored and analyzed the contribution of mHealth in enhancing the performance of the health workers and its alignment with existing workflows to guide its utilization (Tariq & Shahriar Akter, 2011). Studies in the context of mobile technologies have shown that performance expectancy, task technology fit, social influence, and facilitating conditions have significant effects on user adaptation but most importantly, that there is no generally accepted definition or standard for task technology fit it needs to be extended, modified or integrated with different theories and constructs based on its study context.

Nigeria Universities have also been making strides to incorporate and integrate technology into their operations for a more improved and developed organization in regards to digitization, dissemination and preservation of academic information resources (Omotayo & Haliru, 2020). The data was collected via questionnaire, with 402 copies being distributed and 379 fully completed questionnaires, giving a 94% response rate. More males (57.2%) than females (42.8%) participated in the study with the majority (62.9%) in the age bracket 16–20 years. The Faculty of Science had more representation (40.0%) than the other two faculties (Omotayo & Haliru, 2020). All the students were using DLs, while the majority (60.2%) used a weekly basis. Task characteristics, technology characteristics, individual characteristics (attitude and computer self-efficacy), as well as task technology fit are factors that influenced use of digital libraries at the universities. These findings further corroborate the usefulness of the task technology fit model in predicting use of technology in the academic environment.

“Mobile learning in higher education: A comparative analysis of developed and developing country contexts” provides insights on the most popular mobile technologies among university students in one developed and one developing country, students' perceptions towards mobile learning, and

the challenges associated with its use. Collecting data through questionnaires, showing that a country's background is a significant determinant of mobile learning use. Students in developing countries are keen to use mobile technologies for learning purposes even though the digital gap and the poorly developed infrastructure in developing countries seem to frustrate students with the integration of mobile learning.

Education is perceived to be the most important aspect in alleviating poverty and stimulating economic growth in developing countries. E-learning is facing many challenges in developing countries with drop-out rates higher than face-to-face or classroom based learning (Seven major challenges for e-learning in developing countries: Case study eBIT, Sri Lanka, 2008). The questionnaires physically distributed in Sri Lanka revealed that the major challenges for e-learning in a developing country are student support, flexibility, teaching and learning activities, access, students academic confidence, localization of content and attitudes. It shows how the individual student's previous academic qualifications must be reviewed to ensure course requirements and preparatory courses for students are up to date and will make for the best education (2008).

As online learning continues to make its way into the academic world, it is increasingly being studied as it represents the technology application in the education field. Online learning gives people who are far from main cities and cannot afford to go to universities in countries like Yemen an opportunity to get an education (Aldholay et al., 2018). It investigates the effects of task technology fit on the relationship between real use and performance as well as among user satisfaction and the effect on performance, based on the direct and validated effects of real usage and user satisfaction on performance (Aldholay et al., 2018). The research showed that compatibility is extremely crucial when it comes to satisfaction and actual use of online learning, and facilitating the relationship between inclusive quality and user contentment. It also gives the Yemeni government a foundation to make initiatives in the higher education sector to create an environment that fits with student values, lifestyles and tasks, in which students are more likely to use online learning to enhance their academic professionalism and ultimately the quality of their working life (Aldholay et al., 2018).

Task Technology Fit Learning Management System

A learning management system is an information system that facilitates e-learning and is widely used in higher education (McGill & Klobas, 2009). Task-technology fit is one factor that has been shown to influence both the use of information systems and their performance impacts. Task-technology fit has a positive influence on expected consequences of use showing that the better the task-technology fit the more positive the anticipated consequences of use of a system (McGill & Klobas, 2009). Many universities use learning management systems across campuses to increase administration efficiency, there are still significant barriers to the effective use of learning management systems, especially for teaching and learning purposes (Steel & Levy, 2009). Technology itself does not create quality learning; it is the access to relevant and timely learning opportunities that are designed by the teacher and offered via technology (Steel & Levy, 2009). The case studies of Jack, Jules, Kara, Luke, Simon and Tulula concluded that the extent to which the learning management system meets (or does not meet) requirements will depend directly upon the individual teacher concerned. In this study, in some instances, there was a fairly close fit while in others there were mismatches that caused tensions and could only have been overcome with extensive additional programming (Steel & Levy, 2009).

Learning management systems self-efficacy is the which faculty members believe they have confidence in their capabilities in using LMS to accomplish their work tasks. The study administered surveys to four medium-sized-universities in the Midwestern region of the United States (Behaviour & Information Technology, 37(4), 311-319, 2018). The findings concluded that not only does learning management systems technology and organizational support impact faculty-perceived benefits of integrating technology but also that organisational support defined in this case as training and the encouragement of software usage has a bigger impact on technical support than learning management systems self-efficacy

(Behaviour & Information Technology, 37(4), 311–319, 2018). Another study also concluded that task technology fit has a direct impact on instructors' perceptions of the impacts of the learning management systems on their performance. Good task technology fit can lead to increased utilization and increase performance benefits, poor task technology fit can result in instructors needing to spend more time on use to circumvent problems and this in turn may result in negative impacts on performance (Mcgill et al., 2008).

Learning management systems provide tools and functions like course management tools, online group chats and discussions, documents, grading and course evaluations to support teaching and learning (Nafsaniath Fathema et al., 2015). Learning management systems designers and university policy makers should concentrate more efforts on quality improvement such as user-friendliness, easy accessibility and reliability (Nafsaniath Fathema et al., 2015). The study concluded that universities should improve and update the learning management system so that it can support the users more efficiently. The information system department within an organization is a provider of products and service providers that assist in converting data into information (Pitt, Leyland F et al., 1995). Despite an information system organization having the traditional goal of building, maintaining, and operating the information delivery systems, the information it can provide relevant to the demand is the most important role to fulfill Pitt, Leyland F et al., 1995).

Task Technology Fit Learning Management System in Developing Countries

As time and technology advances Sub-Saharan countries have been an increasing adoption and use of various learning management systems in higher education. The proper application of LMS has the potential to widen access, reduce cost, and to improve the quality of education (Mtebe & Raisamo, 2014). Sub-Saharan countries have not been exposed to many ICT solutions creating low confidence levels towards using technology. The implementation model for Sub-Saharan countries can be compared to Tanzania. Ellen Kalinga, R. B. Burchard Bagile, and Lena Trojer (2017) Who all researched Tanzanian secondary schools' education revealed that the Tanzanian education system has to undergo a substantial transformation, underscored by the growing application of new information and communication technology. They suggested Tanzania can make use of the few present ICT resources to support and improve teaching and learning functions to improve performance and acquisition of knowledge by using e-Learning Management. When evaluating the e-learning systems quality in higher education in developing countries the key factors of evaluation are course development, learner support, assessment, user characteristics, institutional factors and overall performance (Kennedy Hadullo et al., 2017).

Distance education refers to the education with a separation in time or space or both between the instructor and the student and is easier and cheaper to run (R Bhalalusesa et al., 2013). E-learning allows distance education to be conducted smoothly through. The most prominent type of e-learning used in distance education is online learning. The e-learning learning management systems provide a good platform for the lecturers to make sure that the students continue with their learning wherever they are. The Open University of Tanzania has been involved in the development of e-learning over the past seven years. The results of the questionnaires showed that the internet connectivity is one of the major challenges with the others being the lack of training or awareness of moodle, lock of learning materials, traditional paperwork culture and high cost and lack of funding (R Bhalalusesa et al., 2013).

As the adaptation of learning management systems continues to grow in developing countries, students are faced with different challenges and expectations. An electronic survey sent out proved that even though students have cell phones they prefer accessing learning management systems on laptops or desktop computers including screen size, processing, power, portability, usability, powersave, wireless connectivity and convenience into consideration. Though a preference for laptops and desktop computers might be prevalent, access to these devices may not be available as well as reliable internet which causes a problem in developing countries. It also showed that students need assignments, announcements,

resources, course outlines and chat rooms should be given priority and the learning management system must be optimized for mobile access (Ssekakubo et al., n.d.). A study that set to use analytics from the moodle learning management system proved that that number of downloads, login frequency, time spent in the LMS had no impact on students' performance but being active in discussion forms and interaction with peers did (Imani Mwalumbwe & Mtebe, 2017).

Methodology

The main purpose of this research is to measure the impact of using an LMS for teaching. The research will answer the main question with the help of the TTF model shown in figure 1.

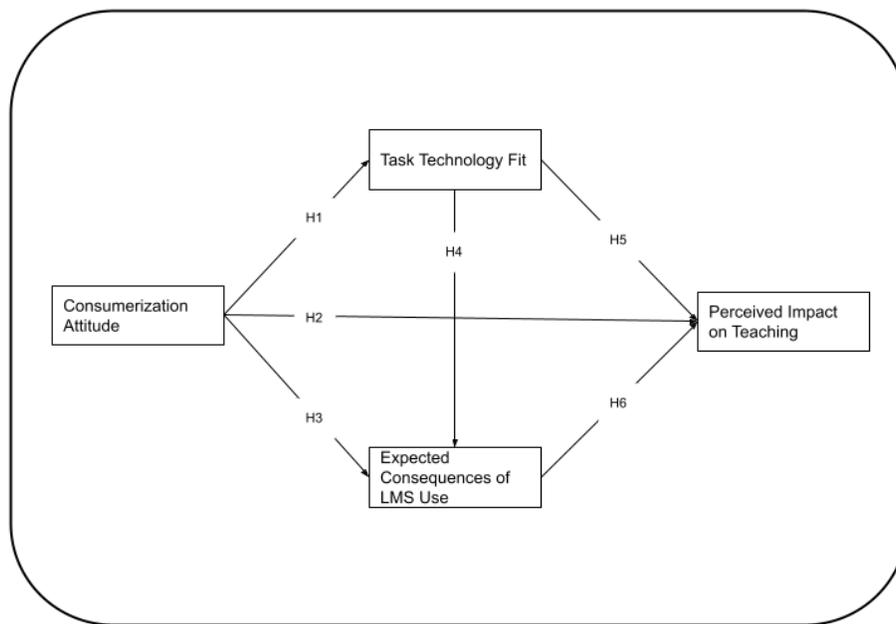


Fig.1: TTF Model Teachers

The model in Fig. 1 illustrates the relationships that were hypothesized in order to solve the main question of the research. The model was developed with the help of previous research and examples found in previous literature.

McGill, T. J., & Klobas, J. E. (2009) used a similar model to evaluate the effect that LMS had on students. As such it is given that previous literature measured the impact through the perspective of students. In this research the impact will be measured through the perspective of the teachers. Therefore ultimately using the TTF model to answer the same question from a different perspective, the teacher's perspective.

The TTF model for teachers consists of three different approaches with defined relationships that ultimately measure the impact on teaching. The three different approaches include consumerization attitude, task technology fit and expected consequences of LMS use. These three approaches have

interlinked relationships among them through hypothesis as well as direct relationships to the main question. The following subsections will explain each hypothesis illustrated in Fig. 1.

H1: Consumerization attitude will negatively influence perceived task-technology fit.

Consumerization refers to the specific impact that consumer-originated technologies can have on organizations. Attitudes are the way someone views or thinks about something. Therefore, consumerization attitudes are interpreted as the specific impacts that consumer originated technologies create from a specific perspective. While task technology fit is the degree to which a technology assists a person in carrying out their tasks. This hypothesis explains the relationship between consumerization attitude and task technology fit. Through this hypothesis the relationship between the two states that the way the teachers already perceive the LMS, whether helpful or destructive, will negatively impact the degree to which the LMS can actually help them.

H2: Consumerization attitude will negatively influence perceived impact on teaching.

Consumerization attitude also has a direct relationship to the perceived impact on teaching. Through this hypothesis it is believed that the impact on teaching will be a negative one. Again, the consumerization attitude of the LMS would be deemed as destructive from the teachers perspective in order to have a negative impact on teaching and for this hypothesis to be true.

H3: Consumerization attitude will negatively influence expected consequences of LMS use.

Given that the previous hypotheses are deemed true. The third hypothesis and final consumerization attitude hypothesis in the model would imply that the expected consequences of LMS use would be negatively influenced by consumerization attitude. Meaning that if the perceived impact on teaching and the task technology fit are negatively influenced by consumerization attitude it would only be natural that the expected consequences of LMS use are also negatively impacted.

H4: Task–technology fit will have a positive influence on expected consequences of organizational LMS use.

Hypothesis 4 can be described as the positive relationship between TTF and expected consequences of organization LMS use. Meaning that the TTF will have a positive impact on the expected LMS use for the organization. Since TTF refers to the degree to which the LMS can help the teachers perform well excluding the attitudes that the teachers may have towards the LMS. This hypothesis relies on the fact that LMS are created to help and positively impact teaching and that therefore the relationship between these two concepts will be positive.

H5: Task–technology fit will have a positive influence on perceived impact on teaching.

Moving on TTF once again is expected to positively impact, in this case, perceived impact on teaching. This Hypothesis like the previous one is based on the fact that LMS are created to positively impact the learning environment rather than negatively. It also excludes the attitudes that teachers may have towards the LMS and directly assumes that the LMS will have a positive impact because of its purpose.

H6: Expected consequences of LMS use will positively influence perceived impact on teaching.

The final hypothesis describes the relationship that exists between expected consequences of LMS use and the perceived impact on teaching as a positive one. As mentioned in the previous hypothesis the nature of

LMS leads us to believe that the impact it will have on teaching will be positive. One because it was created for this purpose and two it revokes the attitudes that teachers may have towards them.

In a nutshell the model seeks to explain that the use of LMS will always impact teaching positively regardless of the consumerization attitudes. This is because the ultimate goal of an LMS is to facilitate learning and teaching through the use of technology and therefore it cannot go against its original purpose when used in the correct manner.

Participants:

The participants of this study were teachers from the lower, middle and upper divisions of a primary school in Belize. The teachers have been using different LMS (WhatsApp and Google Classroom) to provide online learning since the start of the coronavirus global pandemic in March of 2020.

Procedure:

The study was conducted during the semester. Teachers of all levels (lower, middle and upper) at a primary school in Belize were targeted. Permission was requested from the school's board of directors to survey the teachers. Upon receiving permission a link to the online survey was sent via email to the school's administration to be forwarded to the teachers. The survey took approximately 15 mins to complete. Completion of the survey was voluntary and all responses were anonymous.

Measurement:

The medium used to measure and collect data was an online survey. The survey was distributed in two categories. One category encompassed teachers from the lower and middle division classes and the second category targeted the teachers from the upper division classes. The division into categories was made in order to collect accurate data. Originally the group was informed by the school that the lower and middle division classes were using a different LMS than the upper division classes. The survey included two main sections.

The first section collected demographic information of the teachers. This included gender, age, highest degree obtained, the level they teach in and the type of LMS they had been using to perform online teaching.

The second section of the survey encompassed questions related to teaching preferences, prior LMS use and the 4 constructs found in the model.

Teaching preferences

This section asked questions relating to the consumerization attitude concept. It asked the respondents about their preferences as it relates to teaching and whether they prefer online or face to face.

Prior Learning Management System (LMS) use

This section as well tackled the consumerization attitude concept of the model. It asked what type of LMS the respondents had been using and for how long. It also asked them how familiar they were with the LMS and if they would continue to use it.

The following three constructs in the model were adapted from McGill, T. J., & Klobas, J. E. (2009) paper on *A task Technology Fit View on learning*.

Task Technology Fit

The TTF section as implied asked questions about the LMS and to what degree it made their teaching job more easy.

Expected Consequences of LMS use

Under this section the respondents were asked to state the degree to which they believe the use of LMS is positive or negative to their teaching.

Perceived Impact on Teaching

Under this section respondents were asked to quantify the impact that the use of LMS had on their teaching and their productivity as teachers.

The last construct was adapted from (Ifinedo, P., 2018) *Roles of perceived fit and perceived individual learning support in students' weblogs continuance usage intention*.

Consumerization Attitude

The consumerization attitude section allowed the respondents to express their thoughts and views on the LMS that they have been using and whether they would continue using or integrate it to their normal teaching style in face to face classes.

Data Analysis

The data analysis chapter of this research paper will take an applied research approach instead of testing the hypothesis derived from the TTF teachers model. This section will present the results for the different constructs tested in the survey question.

Background Data

Table 1. Background data illustrates that a total of 30 (97%) teachers from the primary school answered the survey. The respondents consisted of 26 females (86%), 3 males (10%) and 1 unidentified person (3%). The age among the teachers ranged between 20 - 50 years. The teachers education level reported that 24 teachers (80%) had achieved an associates degree, 3 (10%) possessed a Bachelor's degree and 3 (10%) possessed a certificate in education.

As mentioned before the survey was divided into two different categories. The lower and middle division category that targeted teachers who only use WhatsApp and the upper division category that targeted teachers who used a combination of WhatsApp and Google Meet. A total of 11 responses were collected under the Upper division category and 19 under the Lower and Middle division category. 100% of the surveyed teachers reported that they had previously used a different LMS from the one they were currently using. This was the outcome for both categories in which the survey was distributed.

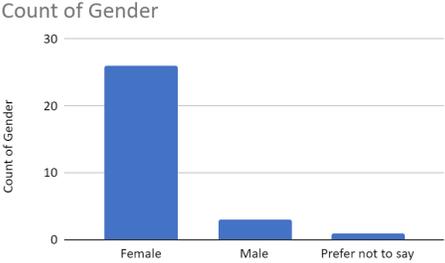
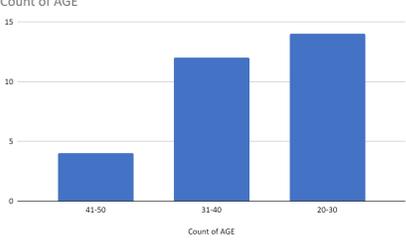
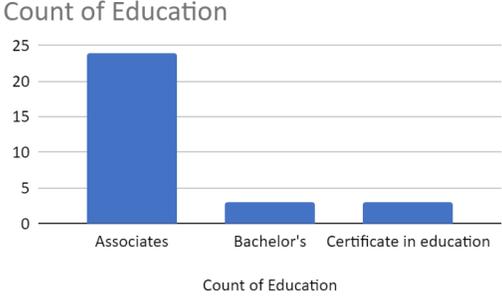
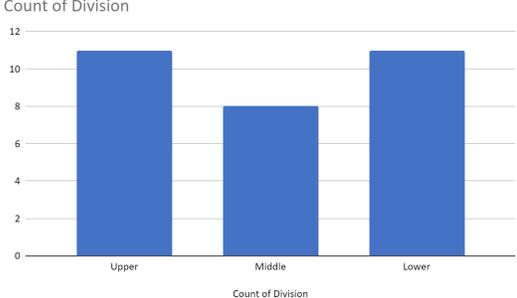
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Table 1. Background Data

Analysis

The histograms in *Table 2. Results* illustrate the average results for the questions used to measure each construct. The survey was created through the online google forms platform. Each question was assessed using a 7 point likert scale ranging from a strongly disagree to strongly agree. This rating scale implies that 5-7 means respondents agree, 4 to express neutrality and 1-3 to express disagreement.

Task Technology Fit

The first histogram under the Middle and lower division section in *Table 2. Results* shows the average response for the TTF construct questions. The histogram states that 16 out of 19 teachers agree with the TTF of the LMS (WhatsApp) that they currently use, 1 out of 19 teachers expressed neutrality and 2 out of 19 of the teachers disagree with the TTF of the LMS that they use.

The first histogram under the upper division section in *Table 2. Results* show the average response to the TTF construct questions. However for this table the teachers use a mixture of LMS to teach (WhatsApp and Google Meets). The histogram reveals that 7 out of 11 teachers are satisfied with the TTF of the LMS mix that they use while 4 out of 11 are not satisfied with the TTF of the LMS mix that they use.

Expected consequences of LMS use.

Histogram number two in *table 2. Results* under the middle and lower division section shows the average response for the Expected consequences of LMS use construct questions. The histogram reveals that 10 out of 19 teachers consider the expected consequences of the LMS that they currently use will be positive, 6 out of 19 expressed neutrality and 3 out of 19 teachers expressed that the expected consequences of LMS use will be negative.

The second histogram under the upper division section in *Table 2. Results* show the average responses for the Expected consequences of LMS use construct. The histogram revealed that 10 out of 11 teachers believe the consequences of the LMS use are positive. While 1 out of 11 teachers expressed neutrality in relation to the expected consequences of LMS use by rating it a 4.

Perceived impact on teaching.

The third histogram in *table 2. Results* under the middle and lower division section shows the average response to the Perceived Impact on Teaching construct questions. The results reveal that 14 out of 19 teachers believe that the LMS has a positive impact on the way they teach, while 5 out of 19 teachers expressed that neutrality in terms of the impact that using an LMS has on the way they teach.

The third histogram under the upper division section in *Table 2. Results* show the average responses for the Perceived impact on teaching construct questions. The results reveal that 8 out of 11 teachers believe that the LMS has a positive impact on the way they teach. While 3 out of 11 teachers expressed that the use of LMS negatively impacted the way they teach.

Consumerization Attitude

The fourth histogram in *table 2. Results* under the middle and lower division section shows the average response for the consumerization attitude construct questions. The histogram shows us that 11 out of 19 teachers have a positive attitude towards the use of LMS and that they believe it can be improved. While 8 out of 19 teachers expressed their neutrality towards the consumerization attitude.

The fourth histogram under the upper division section in *Table 2. Results* show the average responses for the Consumerization attitude construct questions. The histogram shows that 7 out of 11 teachers have a positive attitude towards the use of LMS and 4 out of 11 teachers expressed neutrality.

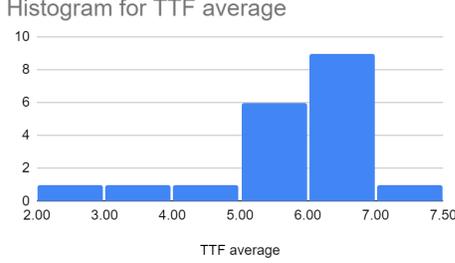
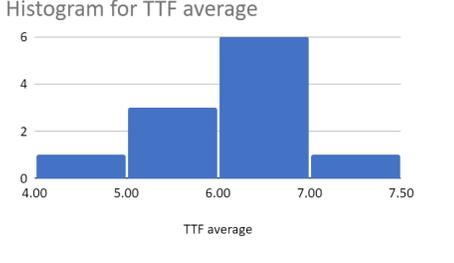
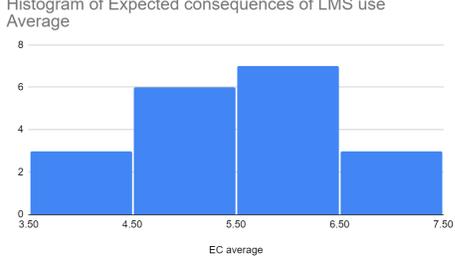
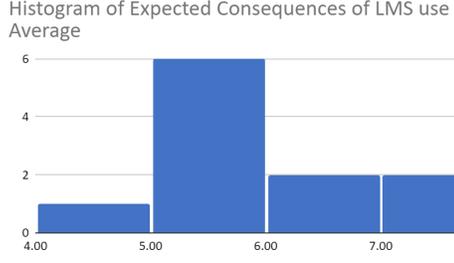
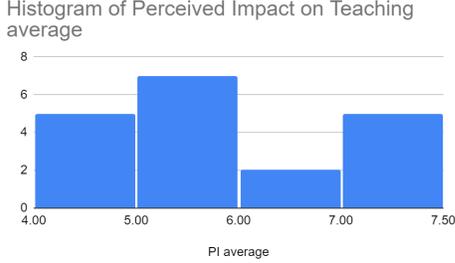
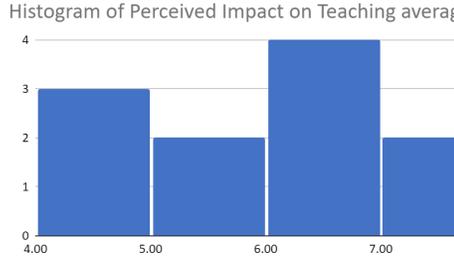
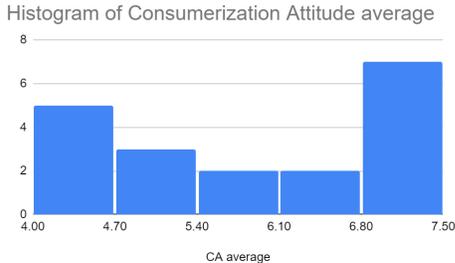
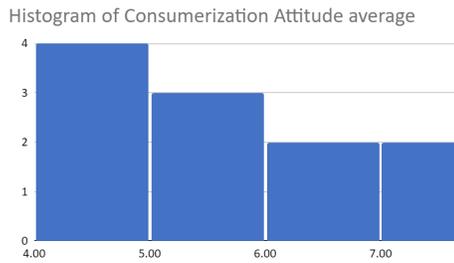
Construct	Middle and lower division (WhatsApp)	Upper division (WhatsApp and Google Meets)
Task Technology Fit	<p>Histogram for TTF average</p>  <p>TTF average</p>	<p>Histogram for TTF average</p>  <p>TTF average</p>
Expected consequences of LMS use	<p>Histogram of Expected consequences of LMS use Average</p>  <p>EC average</p>	<p>Histogram of Expected Consequences of LMS use Average</p>  <p>EC average</p>
Perceived Impact on Teaching	<p>Histogram of Perceived Impact on Teaching average</p>  <p>PI average</p>	<p>Histogram of Perceived Impact on Teaching average</p>  <p>PI average</p>
Consumerization attitude	<p>Histogram of Consumerization Attitude average</p>  <p>CA average</p>	<p>Histogram of Consumerization Attitude average</p>  <p>CA average</p>

Table 2. Results

Discussion

In previous studies *McGill, T. J., & Klobas, J. E. (2009)* it is stated that TTF plays a major role in the successful use of LMS. The study conducted in this research paper applied the TTF model to determine the impact that the use of LMSs has on teaching. Therefore, it is said that this research creates an additional question when compared to *McGill, T. J., & Klobas, J. E. (2009)* study. This question is how the successful use of LMS will impact teaching. The LMSs used by the primary school were divided into two categories. The lower and middle division that use the Whatsapp LMS and the Upper Division that use a mix of Google meets and WhatsApp as their LMSs.

Through the data collected and analysed it is shown that the majority of the teachers (23/30) believe that the TTF has a positive impact on teaching. This can be attributed to the fact that they were already familiar on how to use the systems since the global pandemic had forced them to adopt this distance teaching as of March 2020. While on the other side of the spectrum we have 1 teacher who was neutral about the impacts and 6 who believed that the impact on teaching was negative. This can be attributed to the fact that 100% of teachers expressed to have used a different LMS such as zoom and google classrooms before. Meaning that they are more efficient when using other LMSs than the current ones that the school had limited them too.

The data collected also revealed that a majority of teachers expect the use of the LMS to have a positive impact on their teaching. The expected consequences of LMS use backs up this with a 67% approval of teachers. This can be attributed to the fact that 76% of the teachers under the TTF construct expressed the positive impact on their teaching as well. This means that the majority of the teachers believe that the Expected consequences of LMS use will be positive because they believe the technology is proper and will also have a positive impact on their productivity and efficiency.

Moving on the study examines the perceived impacts that the LMS use has on the teachers. The perceived impact on teaching can be defined as positive since 77% of the teachers reported that there was a positive impact on their teaching with the use of an LMS. The other 17% reported neutrality and 10% reported negative impact on their teachings. As stated in the model the perceived impact of teaching is affected by Expected consequences of LMS use and this is to where we can track the 10% that reported a negative impact. Since 10% expressed that they expect the LMS to have a negative impact on their teaching.

Finally the consumerization attitude construct that asked questions which allowed the teachers to express their thoughts on using a preferred LMS and how that would affect their teaching. Where 60% reported that using their preferred LMS would have a greater impact on their teaching. While 40% expressed neutrality in this section. The key takeaway here is that the 60% who stated that the use of preferred LMS would have a greater positive impact on their teaching can be traced to the fact that 100% of the teachers have used a different LMS before and therefore they would have a lot of options to choose from. While for the remaining 40% that expressed neutrality it can be inferred that they are content with the LMS that they are currently using and the impact it has on their teaching. Another important takeaway from this section is that no one reported that using another LMS would have a negative impact on their teaching. This means that the teachers have room for improvement in terms of choosing an LMS and that they are also content with using the current LMS.

All in all the research revealed that the perceived impact that the use of LMS has on teaching at the primary school is positive. However there is room for improvement. This can be done by implementing the use of more advanced LMS systems. Nevertheless it must be remembered that the institution studied is a primary school and therefore it may not be able to adapt more advanced LMS because the teachers may lack knowledge on the operation of these systems. In addition to this the students may also have difficulties adapting and accessing these types of LMS since they are advanced and they may lack both training and knowledge.

Conclusion

The research revealed that the TTF view of the LMS has a positive impact on the teaching at the primary school. This was expressed through the positive feedback on the TTF construct, Expected consequences of LMS Use construct and perceived impact construct. However the Consumerization attitude construct points towards the future of LMS use in the school. This construct revealed that there is room for improvement in terms of selecting a different LMS. This comes as a result of the teachers being previously exposed to other types of LMS, such as Zoom and Google classroom.

It can be concluded that currently the impact that the LMS has on teaching at the school is positive. It was also demonstrated that the LMS use can be adjusted to better fit the teachers and therefore further increase the teachers' productivity levels and efficiency levels. However the fact the subject of the study was a primary school leads the study to infer that further implementation of advanced LMS can not happen since the teachers may lack knowledge on how to use them. Even if the teachers had the required skills to operate these advanced LMS they would also have to consider the students who may have a hard time adapting and even learning how to use these systems. Another constraint they would face is limited finance to pay for these types of advanced LMS.

Therefore it is recommended that the school abides to the current LMS that they are using since it has proven to have a positive impact on the teachers teaching ability. As it currently is, the LMS is adding value to the institution since it is the only way they can continue to provide their services to the students.

Limitations

A major limitation faced during the study was sample size of the subjects in the study. The study was conducted at a primary school with a substantial staff in the country. 30 out of 31 teachers participated in the study. However this sample size is still small and therefore limits study generalizability. This limitation arises as part of the time limitation that was also present during the study. The data collection started after the theoretical part of the research approximately a month before publication. The sample size could have been broadened by including another school but due to time constraints it was unable to be realized.

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Appendix

Items used to measure construct

Background Information

Gender: Male Female

Age: 20 - 30, 31-40, 41-50,51-60, >60

Degree: Associates, Bachelor's, Masters, PhD, MD, Other

Faculty: FST, FMSS, FEA, FHS

I have used the following LMS's: Moodle, Google Classroom Other: List all

Teaching Preferences Face to Face Preference

I prefer teaching face to face than online

I am more effective teaching face to face than online

Students learn more in my face to face classes than online

I would want to teach some online courses after the University resumes face to face teaching.

I would want to teach all my courses online after the University moves back to face to face teaching.

I would not want to teach any online courses after the University moves back to face to face teaching

Prior LMS Use

Number of semesters using Moodle

I used Moodle to facilitate teaching face to face classes (prior to online delivery)

I have taught classes utilizing an LMS other than Moodle

How many semesters have you taught using your choice of LMS

I used my choice of LMS to facilitate teaching face to face classes (prior to online delivery)

I plan to continue using Moodle to enhance my teaching after we return to face to face teaching.

I would like to continue using my preferred LMS to enhance my teaching after we return to face to face teaching.

1. Task–technology fit

Moodle fits well with the way I like to teach online.

Moodle is compatible with all aspects of my online teaching.

Moodle is easy to use.

Moodle is user friendly.

It is easy to get Moodle to do what I want it to do.

Moodle is easy to learn.

It is easy for me to become more skillful at using Moodle.

New features of Moodle are easy to learn.

Do you think the output from Moodle to the students is presented in a useful format?

Can you provide accurate information to your students with Moodle?

Can you provide up-to-date information to your students with Moodle?

Can you provide information students need in time using Moodle?

Can you provide information that seems to be just about exactly what your students need with Moodle?

2. Expected consequences of LMS use

Using Moodle will help me to accomplish my online teaching more quickly.

Using Moodle will improve my online teaching performance.

Using Moodle will increase my online teaching productivity.

Using Moodle will enhance my effectiveness as a teacher while teaching online.

Using Moodle will make it easier to complete my teaching tasks while teaching online.

Using Moodle will give me greater control over my teaching tasks while teaching online.

Overall, I think that Moodle will be useful in my ability to teach online.

Using Moodle will improve the quality of my online teaching.

3. PERCEIVED IMPACT ON TEACHING

Perceived impact on learning

Moodle has a large positive impact on my effectiveness and productivity as an online teacher.

Moodle is an important and valuable aid to me in my online teaching.

I teach better online with Moodle than without it.

4.1 Consumerization Attitude - Perceived fit / Expected Performance improvement

If I could choose my own Learning Managements System...

PIF_1 ...it would fit well with teaching online.

PIF_2 ...it would fit well with helping me to be efficient in teaching online.

PIF_3 .. it would be compatible with my online teaching. .