

**“MODULE CODE/ COD Y MODIWL: LCDB7003
QUALITATIVE RESEARCH”**

RESEARCH PLAN & REFLECTIVE ESSAY

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First part (Research plan)

Abstract

This research proposal aims to investigate the implementation of Information and Communication Technology in universities (higher education), and its role in the teaching and learning process. This paper also examines the impact of ICT on students' performance and achievements. Through a qualitative method research, based on interviews, observation and documents review.

I. Introduction

Nowadays, Information and communication technology systems have become indispensable in each one's life; they play a major role in the human being's development in every context. It has become an important source of innovation in many sectors across the globe. Especially in education sector. The implementation of ICT in education has revolutionized teaching and learning processes. It maximizes students learning potential, by enabling them to be more independent and self-regulated. It also allows them to access a variety of unlimited information 24/7, regardless the user's physical location (Castells, 1999, in Claro and others, 2011). Students are also able to create multimedia contents and share them with the world through social media and digital platforms, which enhances learning outside the classroom.

The government and education Institutions are increasingly investing in the acquisition of hardware and computer network infrastructure, order to meet educational technology goals (Anderson & Becker, 2001). Those who fully invested in ICT have recorded a noticeable advancement in the application of ICT for the improvement of teaching, learning, research and development methods. However, it remains unclear how ICT influences students' performance and achievements.

Even though ICT has, an impact on teaching, corporate training, as well as research and development, the purpose of this paper is to focus on the impact of ICT on students' performance and achievements. Many researches have been conducted to answer this question, on theoretical and empirical levels. However, there are two major challenges faced by these studies.

The problem statement

The first one is that, there is the difficulty of defining students' performance. The common approach used by most researches is linking students' performance to their grades. However, other researchers, claiming that students' performance does not only depend on their grades, but rather on their skills, competences, and what they learned during their program, criticized these studies.

The second challenge is that ICT are progressing and changing constantly, and it is difficult to separate their impact from their environment.

Based on the two research gaps, this research proposal is going to investigate the implementation of ICT in higher education, and its impact on students' performance and achievements.

Objectives

- 1) Analyze the adoption of ICT by universities
- 2) Define the link between ICT and students' performance and achievements
- 3) Determine the impact of ICT on universities and students \

Research questions

The overall purpose of this study is to develop a framework, in order to provide a better understanding of the relationship between ICT and students' performance, through an in-depth literature review.

This research is guided by three main themes:

Question one; does ICT have an impact on students' performance.

Question two; does ICT have an impact on students' achievement.

Question three; how does ICT impact learning and teaching process?

II. Literature review

1. Previous studies & researchers

Recently, the use of ICT has been a center of interest of all education institutions. Even though, it remains in its initial stages in developing countries due to limited and high cost infrastructure (Aribamikan, 2007), ICT has improved the efficiency and effectiveness of teaching and learning processes in all levels. However, one puzzling question is, how does ICT impact students' performance and achievements? As mentioned in the above section, previous studies failed to prove a clear and realistic impact of ICT on students' performance in higher education. This section discusses the findings from previous studies regarding the implementation of ICT in higher education, and its impact on students' performance.

For instance, Goolsbee and Guryan (2006), claimed that the use of ICT had no measurable impact on students' achievement. In the same context, Trucano (2015) reported that the use of ICT could increase enjoyment but there has not been any significant gains in terms of students' academic performance and learning outcomes. On the other hand, some researchers such as Agarwal and Day (2000) show that the creative use of ICT gives the opportunity to larger classes to interact with each other into small classes. Polly (2011) stated: "Technology has been shown to positively influence student learning when students explore technology-rich tasks that simultaneously require them to use higher-order thinking skills (HOTS), such as analyzing or evaluating information or creating new representations of knowledge" (Polly, 2011: 12-14). Another study conducted by Balanskat, Anja, Roger and Kefala (2006) confirms that the implementation of ICT in higher education has a significant impact on developing thinking skills, teamwork, independent learning and competencies. Moreover, 86 % of instructors in Europe state: "students are more motivated and attentive when ICT facilities are used in class. Not only ICT has a strong motivational effect and positive effects on behavior, communication and process skills, but also students feel greater responsibility for their own learning when they use ICT, working more independently and effectively". Some researchers such as Iqbal, & Ahmed (2010), Hameed (2006), Amjad (2006), Khan, and Shah (2004) affirm that every education institution and every country should highly invest in the implementation of ICT and robust systems, in order to improve the learning and teaching processes.

In a similar study that was established by Sari and Mahmutoglu, the authors claim that, in order to create a change in the teaching and learning methods, it is heavily recommended to make students

Self-dependent and active in terms of learning, rather than passive. Through an effective use of Information and Technology systems.

According to a report published by the United Nations Educational, Scientific and Cultural Organization Institute of Statistics, “governments and university managements globally have heavily invested in adopting of information technology in their education systems. Overall, numerous attempts, both theoretical and empirical, have been made in a bid to evaluate the impact of ICT adoption in the education system” (UNESCO, 2013).

Based on the above studies, it is clear that there is a confusion in terms of the relationship between students’ performance and the use of ICT. There are mixed results, some show there is a positive impact but some others prove that there is no measurable impact. Our research aims to examine the consequences of implementing ICT based education, and investigate the exact relationship between these two variables (ICT and students’ performance), also whether or not the use of ICT could impact student’s performance and achievements.

To be able to answer those questions, it is necessary to define the different terms that are related to our topic.

2. Definitions of terms

ICT stands for “Information and Communication Technologies” that refers to “technologies which provide access to information through telecommunications. It is similar to Information Technology (IT), but focuses primarily on communication technologies. This includes the Internet, wireless networks, cell phones, and other communication medium”. ICT “Information and Communication Technology- or Technologies, is an umbrella term that includes any communication device or application, encompassing: radio, television, cellular phones, computer and network hardware and software, satellite systems, as well as the various services and applications associated with them, such as videoconferencing and distance learning. ICT are often spoken of in a particular context, such as, ICT in education, health care or libraries” (Abe & Adu, 2007).

ICT (information and communications technology is “an umbrella term that includes any communication device or application, encompassing: radio, television, cellular phones, computer and network hardware and software, satellite systems and so on, as well as the various services and applications associated with them,

such as videoconferencing and distance learning”. “ICTs are often spoken of in a particular context, such as ICTs in education, health care, or libraries” (Abe & Adu, 2007). In Wikipedia it is defined as: “Information and communications technology (ICT) is often used as an extended synonym for information technology (IT), but is a more specific term that stresses the role of unified communications and the integration of telecommunications (telephone lines and wireless signals), computers as well as necessary enterprise software, middleware, storage, and audio-visual systems, which enable users to access, store, transmit, and manipulate information. However, it is not restricted to the computers or the internet alone. It ranges from the use of FM radio to satellite for communication.” (UNESCO, 2002).

E-learning

Even though it is usually associated with corporate training and university education, “e learning can be involved in all levels. It uses an information network (the Internet), an Intranet (LAN) or extranet (WAN), for course delivery, interaction, evaluation and facilitation. It generally refers to learning using internet (a browser, such as Firefox, Chrome or Internet Explorer) or electronic devices. It is also called online learning or web-based learning” (Aribamikan, 2007).

Blended learning

Blended learning refers to the combination of traditional learning (classroom learning) with e-learning (web-based learning). Students for instance, can either use printed or online material; they can also have monitoring sessions with teachers online or in the class. “Blending was prompted by the recognition that not all learning is best achieved in an electronically-mediated environment, particularly one that dispenses with a live instructor altogether. Instead consideration must be given to the subject matter, the learning objectives and outcomes, the characteristics of the learner, and the learning context in order to arrive at the optimum mix of instructional and delivery methods” (Asiabeka, 2010).

Distance learning

Distance learning is a form of learning which is characterized by the separation of the learner and teacher in time and place. The learning and teaching methods are provided through web-based platforms. Occasional face-to-face meetings can be arranged to allow the learner and teacher to interact with each other (Asiabeka, 2010).

3. ICT advantages

Over the last few decades, ICT has changed the face of education. Information and Communication Technologies have become a priority in both education and training. However, not all countries have achieved the same progress in term of the adoption of ICT in higher education. Some countries have witnessed a significant use of ICT to develop teaching and learning process. Whereas, some other countries are still in their initial stage of the implementation of ICT, due to the limited infrastructure and high cost of ICT access.

As mentioned above, ICT can be used to support traditional learning and teaching methods, to help transitioning students from passive to active learners. Galea (2002) stated: “there are two main reasons behind increasing the use of ICT in education in the UK; Firstly, ICT can change the lesson’s pace. Children in modern society need to develop their potentials and skills that enable them to take full advantage from the new opportunities that ICT offer. Secondly, there are groundswells of interest in academic researchers in the UK, in how can technological enhance the quality of teaching and learning in schools, and so help learners to achieve better outcomes” (Galea, 2002).

4. Impact of ICT on students’ performance and achievement

It is strongly believed that ICT can enhance education, by transforming teaching and learning process from being teacher-dominated to student-focused, which will enable students to develop their communication, problem solving, thinking and reasoning skills and their creativity. Though, because there is a very limited data to support this belief, ICT is still not seen considered central in the teaching and learning process.

ICT and students’ achievement

Most of studies failed to prove the positive impact of ICT on students’ achievements, claiming that it is difficult to measure students’ achievement. However, most studies linked the positive impact of ICT on students to their appropriate use, to complement the instructor’s existing pedagogy. It has shown that “Computer Aided Instruction” has improved students’ performance in “multiple choice” and “standardized testing”, reading and math skills.

Generally ICT are seen to be more effective when the goal of their use in education is clear

ICT and students' performance (is there a direct effect.)

The relationship between ICT and students' performance has been the center of interest of many researchers, trying to determine the benefit of ICT in classrooms. These studies can be divided to two bodies of literature, the first one focuses on the impact of using computers in teaching and learning methods. However, due to the ongoing growth of internet, literature is now focusing on the role of online activities in education, including digital platforms, electronic devices, the use of vlogs etc. In this literature, some researchers show that there is no strong evidence about the impact of ICT on students (Angrist and Lavy, 2002; Banerjee et al., 2004; Goolsbee and Guryan, 2002; Kirkpatrick and Cuban, 1998). Whereas some others demonstrate, that ICT has a positive impact on students' performance and achievement (Kulik, 1999; Sosin et al., 2004; Fushs and Wossman, 2004; Talley, 2005; Coates et al., 2004).

ICT has an impact on students' achievement

Based on a meta-analysis study conducted by Kuliks (1994), students who used Computer Aided Instruction, scored higher and learned more in less time, compared to those who did not use computers.

Sosin et al. (2004) "constructed a database of 67 sections of introductory economics, enrolling 3,986 students, taught by 30 instructors in 15 institutions in the United States of America during the spring and autumn semesters of 2002. They found significant, but low, positive impact on student performance due to ICT use. Nevertheless, they showed that some ICT seems to be positively correlated to performance while others are not".

Fuchs and Woessman (2004) used "international data from the Program for International Student Assessment (PISA). They showed that while the bivariate correlation between the availability of ICT and students' performance is strongly and significantly positive, the correlation becomes small and insignificant when other student environment characteristics are taken into consideration".

A study conducted by Attwell & Battle (1999) in the United States, on the difference between having a computer at home and school performance only, the study was based on a sample of 64,300 students; the results showed that students who use home computers for learning purpose had higher scores in reading and math.

Li et al. (2003) claimed: “First, web-based instruction presents information in a non-linear style, allowing students to explore new information via browsing and cross-referencing activities. Second, web-based teaching supports active learning processes emphasized by constructivist theory. Third, web-based education is enhanced understanding through improved visualization and finally, the convenience, it could be used any time, at any place”.

ICT does not have an impact on students’ achievement

Coates et al. (2004) surveyed students at three different institutions, from face-to-face and online programs in economics major. Results report that; “The students’ score in the Test of Understanding College Level Economics (TUCE) given at the end of the term is used as the measure of learning outcomes. After taking into account selection bias and differences in student characteristics, they report that the average TUCE scores are almost 15% higher for the face-to-face format than for the online format” (Coates et al, 2004).

A similar study conducted by Anstine and Skidmore (2005) based on a survey of two groups of on-campus and online courses students. One group in statistics, and the other one in managerial economics. Results report that; “after taking into account student characteristics and selection bias, students in the online format of the statistics class exam scored 14.1% less than in the traditional format, whereas, for the managerial economics class, the test scores within both formats were not significantly different” (Anstine & Skidmore, 2005).

Another study done by Terry, Lewer and Macy (2003) of 240 students from three programs, on-campus, off-campus and hybrid (blended learning), based on their final score. The results report “predicted exam scores for students in the online courses were significantly less than those of students in the on-campus and in the hybrid formats. However, with the comparison of exam scores between students in the hybrid and students in the on campus classes there was no significant difference” (Lewer and Macy, 2003).

In the same context, Brown and Liedholm (2002) surveyed two groups of students, in face-to-face and online programs, taught by the same teacher. It is reported, “That exam scores, after taking into account differences in student characteristics, were approximately 6% higher for the on-campus format than for the online format. They attribute the relatively better performance in the on-campus classes to the benefit of in-person teacher-student interactions, and attribute the relatively poorer performance of the students in the online class to the lack of self-discipline

necessary for successful independent learning in the online environment” (Brown and Liedholm, 2002).

According to Leuven et al. (2004), there is no evidence that the use of ICT in education, particularly higher education, has a positive impact on students’ performance, in fact, according to some studies, ICT has a marginal negative effect on students’ achievements (scores). According to this approach, ICT can be used in leisure time, for instance online gaming, or to enhance communications channels.

5. Why mixt results?

To explain this mixt results discussed in the literature, Fuchs and Woessman (2004) present two approaches;

the first one states that ICT can enhance education, by making the learning process less dependent on the instructor, this gives students’ the opportunity to become active learners rather than passive ones. ICT also facilitates the access to information 24/7 and increase learning through communication outside the classroom.

The second approach states that ICT can be a source of distraction for students, especially if found at home, this can divert them from learning, due to online games and chat rooms for instance. Moreover, ICT based instructions limit students abilities in terms of, creativity, problem solving and high order thinking. In fact, ICT can even decrease students’ performance and negatively affect their achievements, if not used appropriately.

In order to understand the relationship between ICT use and students’ performance, we will rely on two alternative research strategies. The first one analysis the impact of ICT students’ achievements, based on different traditional explanatory factors. The second one given by the economic literature and suggests that organizational change is the key explanation of ICT performance (Sharpe, 2004).

6. Student performance: indirect effect

It is difficult to measure students’ performance. Economics literature suggests using a model based on “educational production function”. This model aims to evaluate the link between the educational inputs, such as “characteristics and attitudes of the teachers, physical resources committed in the universities, the teaching organization, the rate of students framing, etc.” and

students' performance, taking into consideration other inputs, such as "socio-economic origin, characteristics and attitudes of the students" (see e.g. Hanusek, 1996, Jaag, 2006; Lazear, 2001; Krueger, 1999).

In this section, we are going to discuss the relationship between educational environments, students- teacher's characteristics and students' performance.

Students' characteristics

A large body of literature focuses on the relationship between, students' socio-economic characteristics, such as gender, age, family structure, family status, geographical area, etc. and their educational performance.

A study conducted by Pozo and Stull (2006) prove this approach. "The students who come from underprivileged socio-economic environments have worse school performances than the less underprivileged students" (Conger et al., 1997; Haveman and Wolfe, 1995; Wilson, 1987).

Bratti et al. (2007) Bratti et al. (2007) show that "the differences in student performance can be explained by the differences between the areas in economic terms of structures, regional leisure, type of institutions and the individual characteristics of the students (family and social characteristics)".

In finance course, Didia and Hasnat (1998) found that age has a significant influence on performance, as a measure of maturity. This was the same fact that Reid (1983) showed in his study in economics field, where age was also a significant variable; older students performed better than younger ones.

Jaggia and Kelly-Hawke (1999) made a comparison between school's input and family background to see if this two variables have any influence on students' performance. They found that family background had a great impact on students' achievement.

Educational environment

This section focuses on the role of education input in students' performance based on "education production functions" (Hanusek, 2003; Glen, 2006; Glewwe et al., 2004, Glewwe and Kremer, 2006; Todd and Wolpin, 2003). The assumption was, the more institutions invest in the physical environment of education, the more students perform better. For instance, researchers such as Krueger (1999), Angrist, and Lavy (2004) provide an evidence of the positive impact of small size

classes on students' performance. "They controlled variation in instruction, lecture material, and topic coverage by using the same instructors. Their results were statistically significant showing that small class size had a positive impact on student performance". A study done by Raudenbush and Willms (1995) in England in Mathematic course showed that a reduction in students from 25 to 16 student had a positive impact on their performance.

Investing in the implementation of CT is considered as a form of physical investment to improve higher education.

Teachers' characteristics

This section focuses on the impact of teachers' characteristics on students' performance. Many studies have been conducted to prove the relationship between teachers' characteristics and students' achievements;

- ✓ An empirical study conducted by Rivkin et al. (2005) in the United States found that "teachers in their first or second year of teaching are associated with lower student performance in Texas, but teacher education and qualification have no systematic relationship with performance".
- ✓ A study conducted by Clotfelter et al. (2003) suggest "positive impacts of teacher experience and teacher license test scores on student achievement in North Carolina".

Recent studies show the importance of investing in ICT effectively in order to transform teaching and learning process, as it helps shifting from teacher's-centered learning to student's-centered learning

Basic effects of ICT on the teaching process

- Has an edit effect in terms of quality of student work and practical examples through visualisation;
- Improves poor handwriting and languages skills through word processing;
- Equalises individual differences and has particularly dramatic effects for students with special needs;
- Facilitates self-pacing with increased capacities to deal with individual learning styles as students can work at the pace and intensity suitable to their needs;
- Enables collaborative learning with little indication of the isolated learner;
- Encourages use of peer coaching and peer reviews;
- Develops communication skills and awareness of different audiences;
- Has impact on resource-based learning and access to real world information through the Web;
- Increases information reliability and accuracy adding to authenticity of learning tasks, with realistic and up-to-date information;
- Increases student motivation through hands-on activity, visual representations and improved modes of presentation;
- Encourages independent learning and individual preferences for process, layout, style and format;
- Gives students more control;
- Allows students to produce high quality multimedia products;
- Changes teacher practices, planning tools and assessment rubrics;
- Increases opportunities for classes to evolve and for student experiences to shape outcomes;
- Has motivated students to commit to learn and to participate in learning activities;
- Has improved students' quality of work and has given them the confidence to perform enhanced learning tasks;
- Has allowed students to learn independently, which has enabled more work to be completed, and
- Has enhanced achievement due to the reinforcement and practice that ICT has afforded.

ICT and student performance: “an enormous lack of organizational change”

The link between ICT and students’ performance depends on the role and nature of these technologies. ICT is a general-purpose technology. Therefore, its use should be determined and specified to meet students’ needs (Antonelli, 2003; Ben Youssef, 2008). ICT can significantly bring positive changes to teaching and learning process. It provides the opportunity for flexible learning, regardless the time and location. Taking advantage of this opportunity, an organizational change in the higher education system is needed.

In the past years, economic literature has shown that “technological change, on its own, does not lead to any change in economic performance. Among the most popular explanations of this paradox – huge investment in ICT without any economic performance – the complementarity thesis seems to be the most accepted nowadays” (Greenan and Mairesse, 2004). Researchers agree that a use of new technologies requires an organizational change. Therefore, higher education needs a new organizational design as well, at the level of the whole system,

Sah and Stiglitz (1986) state “Organization is defined as the way decision-making units are structured within an institution (here universities or higher education institutions), the way the decision-making power and skills are distributed and the type of information and communication structures in place. Thus any change in the distribution of power, skills, and information or in the lines of communication constitutes an organizational change” (Sah and Stiglitz, 1986).

According to Downes (2001), there are four levels of using ICT in classrooms:

- ✓ “ Level 1: ICT skills are added into the school programme through a separate ICT subject, while teacher practices in other subjects remain unchanged;
- ✓ Level 2: ICT skills are integrated into teachers’ daily work with some teachers’ pedagogical practices and classroom behaviour remaining the same, while the practices of others change more radically;
- ✓ Level 3: ICT is transformative at the classroom level as it changes content as well as pedagogy (what students learn as well as how they learn it);
- ✓ Level 4: ICT is transformative at the system level leading to changes in the organisational and structural features of schooling” (Downes, 2001).

Most of institutions are currently in level one and two, particularly the ones with limited infrastructure. Whereas, institutions are expected to be in level four and five, for a better students' performance. In fact, ICT can either have a positive or negative impact if introduced without organizational change.

ICT allows students to shift from “individualist to collaborative learning”. Collaboration is a fundamental skill, which is highly searched in the job market. Therefore, it is important to enhance the learning of this kind of skill. This can be done through different methods, such as co-writing or sharing resources.

ICT provides also a personalized learning. Due to personal mobile phones, personal computers and individual access to resources and information. Considering this, while introducing ICT in higher education, can lead to an increase in students' performance.

In this section, we tried to summarize a range of literature bodies, on ICT implementation and students' performance and achievement. ICT seems to have a significant impact on learning and teaching process, due to the different opportunities it provides to both, students and teachers. However, there are contradictory results in this regard. We can differentiate three main arguments; First, is related to the use of ICT by institutions and students. Since ICT is a form of General Purpose Technology (GPT), its impact on students' performance depends on its appropriate use. Second, the positive impact of ICT on students' performance is related to the organizational change in higher education. Investing heavily on technology equipment is not sufficient if this is not associated with a change in the organizational side.

Third, students' performance is not only dependent on their curricula or their knowledge of a specific topic, their performance is rather related to acquiring new skills and competencies, such as collaboration, team building and project management. That the job market requires.

III. Methodology

The purpose of this qualitative research study is to examine the impact of ICT on students' performance and achievements.

Qualitative research studies “provide a complex, holistic picture with a detailed view of the topic” (Creswell, 1998, p. 17). Therefore, “the research questions should be open ended, evolving, and non-directional” (Creswell, 1998, p. 99). This qualitative study sought addresses the following question: What is the impact of Information and Communication Technology on students' performance and achievements?

ICT facilitates learning and teaching process, it gives the opportunity to wild and various access to information, it enhances interaction between students and teachers. Therefore, this research study provides insight into a small, but relevant, sample of teachers' perceptions about the impact of ICT use on students' performance and achievements. The findings of this study will contribute in improving students' performance, through the appropriate use of ICT in teaching and learning process.

In order to examine the impact of ICT on students' performance, the data will be gathered from different sources, such as, interviews, review documents and classroom observation.

A qualitative method is used as it gives the opportunity to be highly involved with the participants, for an in-depth understanding technology and methodology used by teachers and students.

In this study, participants have been selected and explained the purpose of the research. A classroom observation has been conducted through writing notes. Students' work and grades, as well as teachers' lessons' methodologies were viewed. Then, participants were interviewed and recorded. Afterwards, the data was collected, managed, analyzed and interpreted.

The research study was addressed to six teachers who taught business, economics and English literature. The choice of these teachers was based on their capability of technology use in their teaching methodology. Teachers were asked to sign the “Institutional Review Board informed consent”, the purpose of this form was to clarify the different procedures, risks and benefits, confidentiality and the purpose of the study. It was also agreed to protect the participants' data and anonymity.

The classroom observation was relevant as it allowed the researcher to witness closely students' interaction and engagement with ICT tools, observe their work and completion of their project and record information properly. During interviews, teachers explained their ICT based teaching

methodology and its impact on students' learning. Interviews included twelve "open-ended questions". There was the possibility to ask more questions as the interview progressed.

In this study, data was coded and highlighted with different colors. The codes were:

"Engagement, work completion, expectations, communication with teachers, differentiation, and access to materials".

To examine the impact of ICT on students' performance and achievements. The researcher analyzed the data that was collected from different sources, such as "field notes, observations, lesson plan documents, viewing student assignments, and interviews".

1. Findings

The ongoing growth of ICT has influenced all sectors including education. The use of technology has shifted teaching and learning process, from being teachers-centered to becoming students-centered. Teachers described themselves as facilitator instructors rather than traditional instructors.

"Student Engagement"

A key sign of student's effective learning is their level of engagement. The use of ICT in classrooms enabled students to be more engaged, with each other and with their teachers.

Mrs. Smith State:

"They really were much more actively taking on this learning. They wanted to do it. They wanted to participate. They wanted to create whatever it was we were doing". She continued: "My affirmation is when I look around the classroom right now every student is engaged. They are all engaged in the learning and taking it seriously whereas before students would shut down the minute you give them an assignment to do that was challenging. They would not actively participate. They really are more engaged; they are learning; they are taking away and when they are done, they have a project they are proud of. When they are done they are excited and definitely more invested."

Mr. Johnson said:

"Even with partner work after sharing a laptop, I see more engagement. Even if it's just working in a very slow pace they are getting something done instead of just putting their head down and saying, I am bored....It keeps kids more engaged and active in their learning instead of just staring at a piece of paper or listening to someone... there's fewer kids off task."

During the classroom observation of Marketing course, it has been noted that students start focusing the moment the task is assigned to them. They separate into groups, they sit next to their partners and divide the task between the group members, some do laptop research, others do electronic devices research and some others take notes and do analysis.

In addition to students being engaged, they looked independent that the teacher did not have to redirect them. They also looked very enthusiastic and motivated.

Mr. Gubta said:

“I think they are completely excited. There is so much more motivation. Some of the kids are resistant to paper-pencil work. Those kids are more motivated to be on the computer. They might need more verbal reminders to stay on the computer and remain on task but getting them through the resistance of even just starting a project is much more relevant than starting with paper [and] pencil.”

Degree of complete work

Due to the high level of student's engagement, the quality of complete work was outstanding within the timeframe that was agreed on between teachers and students.

Mrs. Jannetta affirm:

“Every single student this year in all my classes turned in every single assignment. That is unheard of! I am proud of that...The thing that is different is technology use...I have given out – well they have earned – more A is...they all did acceptable work and then went beyond. It is like teaching gifted and talented to all levels. I have mastery learning. If they do not have everything on there from the rubric, I have them give it back to me. I do not accept it unless it is 100% or has all the rubric items.”

It has been observed that students looked proud of the quality of work they delivered, due to ICT use that allow students to create high-tech, professional, and sleek projects and documents. It has also been witnessed during a task about a Marketing plan for a chosen company, that students took only an hour to deliver sophisticated professional presentations, with creative slides. Moreover, students were able to present their work in front of their classmates proudly, they also answered on each other's questions successfully. There was a group of four students, who lost their work in the last minute, because they did not save it, they asked for extra fifteen minutes to create another one. This reflect students' ability to deal with challenging situations and solve problems.

Ms. Jackson explained:

“The software allows the students projects to look polished and professional with both their ideas and their brain work. Not only do students get a refined project or document, but also the computer knowledge and application behind it as well. Ms.” She continued, “when you look at the significance of their projects now in the technology that they’re using, it goes up in my classroom and they are proud of it. They are excited to share about it. They show it to their parents. It’s definitely more professional, the work we are getting from them.”

Communication with Teachers

In addition to the university’s software to communicate with students, for instance Moodles or Blackboard, teachers always make sure to provide their emails to students in their first session, some also provide their contact details in case of emergencies. Teachers communicate with students by emails, either via the university’s platform or via personal emails. In order to remind them about assignments, school events, or to clarify questions.

Mrs. Suraya said:

“I send email updates once or twice a week to students about homework and other classroom happenings. Emails give students a direct line to their teacher in a nonthreatening environment.”

Ms. Suraya said:

“I feel like the kids feel valued. They feel like, ‘I can ask my teacher anything’ and she will respond. It is on a variety of different levels. Sometimes it’s ‘what’s due tomorrow?’ or ‘I don’t understand this’ or ‘can you help me think about ideas?’ I use it probably a great deal and before, [students had laptops] not so much. I always had kids who emailed me but it was much more sporadic and now it is [a] much more consistent basis. I probably get six or seven student emails over the weekend.”

It has been observed that teachers keep monitoring their students through the University’s software; they can also upload any kind of supporting documents to help students in their assignments.

The finding of this research reveals that ICT plays an important role in students’ performance. It has a positive impact on their learning behavior, either inside or outside the classroom. It keeps students engaged and interact with each other as well as with their teachers. It also has a positive

impact on the quality of their work. This can be related to three factors; student choices and options within assignments, unlimited access to materials, and the laptop computer serving as “assistive technology”.

Student Choice and Options within Assignments

The access to Information and Communication Technologies have given more opportunities to produce assignments students. Students have multiple choices in doing assignments; however, they do not have a choice not to do it. In many subjects, students have options which topics to choose. Teachers do also involve students to contribute with suggestions and opinions regarding assignments, in order to improve the quality of learning.

Mr. Hagan said:

“Students have choices in what they do, but they do not have the choice not to do assignments.”

She continued: She elaborated by saying, “Giving something [assignments] some structure so kids have an idea what to do but then really letting them play with their strengths.”

Ms. Amanda confirmed that, “It’s a lot more organized chaos, a lot more learning, a lot more opportunities for every student to shine and pick their interest when they have choice.”

Access to Materials

Thanks to ICT the access of information has become wilder, various and unlimited, in different areas and specialties. Mr. Hagan explained that, “I did not have to limit my projects based on the resources or books I had in my classroom because students had access to unlimited information, research, and materials all over the Internet. Some of my recent projects could not have been completed without the use of technology because the research and pictures the students needed were too contemporary. The reports that the students needed were so current that the reports were only published online.”

This allows students to complete their work effectively; it makes it more reliable as they can have access to different sources and materials. It also have a positive impact on students’ critical thinking and analyzing abilities.

Laptop Serving as Assistive Technology

Laptop or computer is an ICT learning tool that can be customized according to students' needs. Mrs. Jannetta explained, "The laptop offers multiple ways of visual representation for students that need more explanation or clarification of directions." Students, who struggle with focusing issues, can also use their headphones while doing their work, to avoid any sort of distraction. Mrs. thinks that, "It's important for kids that struggle with attention because if they have the words right in front of them and the headphones on, it helped them focus so that somebody else's pencil sharpening or whatever does not distract them from what their assignment is".

Laptops enable students' to apply their personal learning style and techniques as well. Teachers also encourage students' to use Google-calendar, to help them be organized, which can be saved electronically. Instead of using papers that can be lost anytime.

2. Discussion

This research study support the idea that ICT have a positive impact on students' performance along with achievements. By having access to various and unlimited source of information and materials, students become self-centered instead of teacher-centered. Teachers are there just to facilitate the learning. Students get the opportunity to obtain a wild knowledge 24/7, this gives the chance to teachers to learn from their students as well. Thanks to ICT, students learn also soft skills that the job market highly require, such as teamwork, collaboration, problem-solving, innovation, etc. Ms. Hagan says:

"They need 21st century skills. They are going to be working on computers, using software programs [in the workforce. Their supervisors will say, hey can you create this for me?' but then they do not tell you what software program to use or how to use it. You got to do a lot of problem solving and figuring things out for yourself."

Computers offer students the opportunity to progress and grow in their academic as well as professional career.

3. Limitations

The research study examines the impact of ICT on students' performance and achievement. However, there were couple of limitations in the study. First, the sample was small and much specified, to "computer-literate teachers". Meaning, teachers who do not acquire technological skills, may find it challenging to interact with students, inside or outside the classroom. Therefore, the analysis resulted from this study cannot be generalized on all teachers' perception on the impact of ICT on students' performance and achievement.

4. Recommendations for Further Research

This study can lead to a larger study, where the researcher can also interview students, and get their perception towards teachers' use of ICT. In addition, how does ICT impact their level of engagement with each other as well as with their teachers, and whether or not ICT helps them improve their soft and hard skills. The study can also compare the impact of ICT on students' performance in different areas.

Second part (Reflective essay)

Qualitative study is usually based on small and specified sample. It is “Rich, in-depth detail is possible (e.g. participants can elaborate on what they mean) Perceptions of participants themselves can be considered (the human factor) Appropriate for situations in which detailed understanding is required Events can be seen in their proper context / more holistically”. Since all previous studies conducted on the impact of ICT on students’ performance and achievements were contradictory and immeasurable, it was more suitable to rely on a qualitative method in this research, to be able to be involved and a part of the analysis. Most of the researchers that have been elaborated regarding this topic were quantitative. Based on the previous researchers and literatures the impact of ICT on students’ performance and achievement cannot be measure and do not only depend on one factor, there are many variables that interfere when it comes to ICT use and impact. Therefore, the researcher believes that it was more suitable in this research study to elaborate a qualitative method, in order to provide a better in-depth understanding of the use of ICT and its impact on students, through one-to-one interviews and classroom observation. A quantitative method is not able to provide a detailed explanation of why does ICT have an impact or not on students, and how. A quantitative method could provide us with an answer on whether or not ICT has an impact on students’ performance and achievement or not, but the purpose of this research study, is not only to find an answer on this question, but to also provide an explanation and interpretation of why does ICT have an impact on students’ performance and how. In other words, quantitative method can only provide answers on Can what / to what extent, but cannot always explore why or how. However, qualitative method gives access to only a small limited group. Whereas, quantitative method gives the opportunity to the researcher to reach a larger sample sizes that usually makes the conclusions from quantitative research generalizable. Quantitative method also provide statistical methods mean that the analysis is often considered reliable Appropriate for situations where systematic, standardized comparisons are needed.

Generally, Qualitative research is known to focus on the quality of things, their nature and the way they are described. It usually involves the view of the researcher. The analysis is based on the researcher interpretation. Whereas, quantitative data focuses on the quantity of things – how many?

What are the statistical patterns? It is generally based on numbers, and their analysis involves counting or quantifying these to draw conclusions.

The point here is that, it would have been ideal if the researcher combined both quantitative and qualitative methods, in order to add a greater accuracy and more credibility to the obtained results from the study, and strengthen the finding and implications.

I personally would choose to use mixt method in my research. As I believe that, both methods complete each other. Quantitative method will give me the opportunity to reach a larger sample of groups, and qualitative method will help me understand the research topic in depth. Qualitative method requires strong critical and analytical skills. Whereas, quantitative method requires mathematical statistical skills. As I acquire all the required skills, mixt method would be more suitable for me.

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