# TECHNOLOGICAL SELF- EFFICACY AS A CORRELATE TO STUDENTS' ACADEMIC PERFORMANCE IN THE FEDERAL POLYTECHNIC ILARO

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**ABSTRACT**

This study was carried out to examine the relationship between students' technological self-efficacy and their academic performance in the Federal Polytechnic, Ilaro. The study is descriptive in design and employs survey method with the use of questionnaire to gather data. Three research questions were raised from which the questionnaire was developed to gather data. The population consists of students from the five schools/faculties in the Federal Polytechnic, Ilaro, Ogun State. A total of 150 students were randomly selected from the five schools as the sample size. Data collected were analyzed using simple frequency and mean method. The result indicates that technological self-efficacy has a great influence on students' academic performance and perseverance in higher education. New technologies provide public accessibility to a vast variety of educational resources and learning opportunities. It is therefore recommended that Policy Makers should see technology use in education as a cure-all for the decline in the current educational system. To this end, Information and Communication Technology (ICT) courses should be included into students' curriculum at every level of education. This will help increase the technological self-efficacy of students.

**Keywords**: Self-Efficacy, Technological Self-Efficacy, Students, Academic Performance.

## 1.0 INTRODUCTION

Academic success has a great influence on a student's self-esteem, motivation, and perseverance in higher education. Poor academic performance or high failure rates may result in unacceptable levels of attrition, reduced graduate throughput and increased cost of education. Technology is a recent marvel in our everyday life that has taken off. The introduction of Information and Communication Technology (ICT) is promoting efficiency in all areas of human activities. Technology allows the most difficult tasks to become seamlessly easy and more efficient. In education, technology has allowed the dissemination of knowledge to be dispersed instantly and it allows for quicker and more effective communication. Also, technology has allowed students to be engaged and learn in ways that they never have in a classroom setting before. (Harris et al, 2014).

When we look at the simple things we do today, they are based on technology. Technology simply refers to use of science-based knowledge to get a solution to something or for practical applications and purposes. It may be the everyday activity or something in the industry. Whenever we use scientific knowledge to achieve something we want, then it means we are using technology (https://www.rappev.com, 2018). In recent time one of the major tools instrumental to student's success is Technology. However, it may sometimes increase failure rate if not well managed. Students' ability and assurance to understand and utilize technology may go a long way to increase their success rate. Technology thus is largely identified with the hardware of production or technical artifacts. Stewart provided probably the broadest definition of technology by including all skills, knowledge and procedures required for making, using and doing useful things. Technology in her definition therefore includes the software of production – managerial and marketing skills, and extended to services – administration, health, education and finance. Smillie describes this broader definition of technology as the science and art of getting things done through the application of skills and knowledge.

Technological self-efficacy has a great influence on students' academic performance and perseverance in higher education. (Valli et al, 2014). New technologies provide public accessibility to a vast variety of educational resources and learning opportunities. Technology integration in education can enhance learning and teaching. The term "self-efficacy" refers to your beliefs about your ability to effectively perform the tasks needed to attain a valued goal. Self-efficacy does not refer to your abilities but to how strongly you believe you can use your abilities to work toward goals. Self-efficacy is not a unitary construct or trait; rather, people have self-efficacy beliefs in different domains, such as academic self-efficacy, problem-solving self-efficacy, and self-regulatory self-efficacy. Stronger self-efficacy beliefs are associated with positive outcomes, such as better grades, greater athletic performance, happier romantic relationships, and a healthier lifestyle (Maddux and Kleiman 2019).

Self-efficacy is certainly worth having because as Henry Ford famously put it, whether you believe you can or you cannot, you are right. Self-efficacy plays a major part in determining our chances for success; in fact some psychologists rate self-efficacy above talent in the recipe for success. We need to pay special attention to self-efficacy when setting goals to make sure that our efficacy beliefs are in line with our aims and not working against them (Schunk 2001). Self-efficacy refers to perceived capabilities for learning or performing behaviors at designated levels. Self-efficacy can influence choice of activities, effort, persistence, and achievement. People acquire information about their self-efficacy for a given activity from their actual performances, vicarious experiences, forms of persuasion, and physiological symptoms. In educational settings, students have goals and varying levels of self-efficacy for learning. As they engage in a task they acquire skills and evaluate their learning progress. Perceptions of progress sustain self-efficacy and motivation and promote learning. Students' self-efficacy is influenced by such contextual variables as goals, social models, rewards, social comparisons, and forms of feedback. Self-efficacy has been shown to predict student motivation and achievement across a variety of content areas (Schunk 2001).

Technological self-efficacy (TSE) is the belief in one's ability to successfully perform a technologically sophisticated new task. This is a specific application of the broader and more general construct of self-efficacy, which is defined as the belief in one's ability to engage in specific actions that result in desired outcomes. Self-efficacy does not focus on the skills one has, but rather the judgments of what one can do with his or her skills. Traditionally, a distinguishing feature of self-efficacy is its domain-specificity. In other words, judgments are limited to certain types of performances as compared to an overall evaluation of his or her potential (Wikipedia, 2018). Internet self-efficacy refers to the confidence in one's capacity to sort out and execute Web activities required to deliver given accomplishments. Past Web experience is absolutely identified with Internet self-efficacy (Eastin & LaRose, 2000). People with high attitudes toward PCs have higher Internet self-efficacy, contrasted with those with low attitudes toward PCs. Preparing is accommodating in the change of learners' Internet self-efficacy, particularly for those with higher dispositions toward PCs, and those with low PC tension (Torkzadeh & Dyke, 2002). Students with high Internet self-efficacy have better information searching skills and learn superior to those with low Internet self-efficacy (Tsai & Tsai, 2003)

In the light of the above, the study was carried out to examine technological self-efficacy as a correlate to students' academic performance in the Federal Polytechnic, Ilaro.

### 1.1 Statement of The Problem

Students use personal computers, hand-held electronic tablets, the Internet, and other technologies to research, create, collaborate, communicate, and acquire critical thinking skills. These 21st century competences are all necessary for entry into the workforce. To harness the power of information technology to enhance classroom instruction and ultimately increase student learning outcomes, it will be necessary to examine the role technology self-efficacy and attitude toward technology use play in driving students' personal use of technology to cross over into the educational setting. This study therefore investigates the relationship between students' technological self-efficacy and their academic performance.

### 1.2 Objectives of The Study

The objectives of this study is to:

1. Identify the technological tools (both hardware and software) that students use for learning and how frequently they use them.

2. Determine the level of students' technological self-efficacy in Federal Polytechnic, Ilaro.

3. Determine the extent to which students' technological self-efficacy impact on their academic performance.

### 1.3 Research Questions

The following research questions guided this study.

1. What are the technological tools (both hardware and software) that students use for academic purpose and how frequently do they use them?
2. What is the level of students' technological self-efficacy in the Federal Polytechnic, Ilaro.
3. To what extent do students' technological self-efficacy impact on their academic performance?

## 2.0 METHODOLOGY

A descriptive survey research design was adopted for this study. The population used comprised of students in all the five Schools/Faculties in the Federal Polytechnic, Ilaro, Ogun State. 30 students were randomly selected from each School, giving a total sample size of 150 students from all the five Schools. Questionnaire was the main instrument used to gather data for the study. The questionnaire was design on a 4-point Likert scale with – Strongly Agree (SA), Agree (A), Disagree (D) and Strongly Disagree (SD) as the options from which respondents were asked to choose.

For the purpose of analysis, values were assigned to the four options provided in the instrument as follows: Strongly Disagree = 4 marks, Agree = 3 marks, Disagree = 2 marks and Strongly Disagree = 1 mark. Mean method of analysis was used to analyze the data collected. A total of 144 copies of questionnaire administered were retrieved by the researchers. The data collected were analyzed using Percentage and Mean methods.
In making decision about the mean value, the score of the options on the questionnaire were added as SA + A + D + SD (4 + 3 + 2 + 1) = 10. This is then divided by 4 which gave 2.5. A minimum of 2.5 score was set as standard for acceptability. Hence any research question with score below the set standard (2.5) was rejected.

## 3.0 RESULTS

**Research Questions 1:** What are the technological tools (both hardware and software) that students use for academic purpose and how frequently do they use them?

**Table 1.1:** Technological tools (both hardware and software) that students use for academic purpose.

| S/N | QUESTIONNAIRE ITEM | | | | | | |
|---|---|---|---|---|---|---|---|
| 1 | Which of the following technological tools (hardware) do you use for academic purpose? | Smart phone | Laptop/ PC | Tablet/ iPad | All | None | Total |
| | Figure | 81 | 36 | 23 | - | 4 | 144 |
| | Percentage | 56 | 25 | 16 | - | 3 | 100 |

Source: Field Survey, 2019

Table 1.1 which sought to know the technological tool (hardware) that students use for academic purpose, shows that 56% of the respondents use smart phones for academic purpose, 25% use Laptop, 16% use Tablet/iPad while 3% use none. This signifies that 97% of the sample size use technological tools for academic purpose.

**Table 1.2:** Technological tools (both hardware and software) that students use for academic purpose**.**

| **S/N** | **QUESTIONNAIRE ITEM** | | | | | | |
|---|---|---|---|---|---|---|---|
| 2 | Which of these internet facilities do you have access to? | Pre-paid Data | School Wi-Fi | Cyber cafe | Others (specify) | None | Total |
| | Figure | 99 | 29 | 12 | - | 4 | 144 |
| | Percentage | 69 | 20 | 8 | - | 3 | 100 |

Source: Field Survey, 2019

From Table 1.2, it shows that 69% of the respondents use their personal paid internet facility for academic purpose, 20% use the Polytechnic Wi-Fi facility, and 8% make use of internet facility at the commercial cyber café while 3% had no access to any internet facility. This indicates that 97% of the respondents make use of the internet for academic purpose.

**Table 1.3:** Technological tools (both hardware and software) that students use for academic purpose.

| **S/N** | **QUESTIONNAIRE ITEM** | | | | | | |
|---|---|---|---|---|---|---|---|
| 3 | Which of the following search engines do you use for academic purpose? | Google | Research gate | Wikipedia | All | None | Total |
| | Figure | 36 | 11 | 14 | 78 | 5 | 144 |
| | Percentage | 25 | 8 | 10 | 54 | 3 | 100 |

Source: Field Survey, 2019

Table 1.3 shows that 97% of the respondents make use of the search engines like Google, Research gate, Wikipedia, etc. for academic purpose.

**Table 1.4: Frequency of students' technology usage**

| **S/N** | **QUESTIONNAIRE ITEM** | | | | | | |
|---|---|---|---|---|---|---|---|
| 4 | How often do you use these technological tools for academic purpose? | Daily | Weekly | Monthly | Others (specify) | Not at all | Total |
| | Figure | 96 | 28 | 16 | - | 4 | 144 |
| | Percentage | 66 | 19 | 12 | - | 3 | 100 |

Source: Field Survey, 2019

Table 1.4 was used to show how frequent the respondents make use of these technological tools. 66% of the respondents make use of them daily, 19% make use of them on weekly basis, 12% on monthly basis while 3% of the respondents do not use these technological tools at any time.

Research Question 2: What is the level of students' technological self-efficacy in the Federal Polytechnic, Ilaro.

**Table 2: Research Question 2 – Level of students' technological self-efficacy.**

| S/N | QUESTIONNAIRE ITEM | SA | A | D | SD | Total | Mean | Remark |
|---|---|---|---|---|---|---|---|---|
| 5 | I operate computer very well and effectively for learning and research purpose. | 26 | 91 | 17 | 10 | 144 | 3.0 | Accepted |
| 6 | I use smart phone efficiently for learning and research purpose. | 114 | 17 | 9 | 4 | 144 | 4.5 | Accepted |
| 7 | I use Tablet/ipad phone efficiently for learning and research purpose. | - | 55 | 76 | 13 | 144 | 2.3 | Accepted |
| 8 | I have the necessary ICT skills to use technological tools for academic purpose. | 47 | 76 | 21 | - | 144 | 3.1 | Accepted |
| 9 | I can use any of these tools for browsing and downloading educational materials efficiently. | 40 | 82 | 12 | 10 | 144 | 3.1 | Accepted |
| | **Average Mean** | | | | | | **3.2** | **Accepted** |

Source: Field Survey, 2019

Table 2 was used to seek information on the level of students' technological self-efficacy. A average mean of 3.2 was recorded which shows that majority of the respondents had a high level of technological self-efficacy, which means they were competent in using technology for academic purpose.

Research Question 3: To what extent do students' technological self-efficacy impact on their academic performance?

**Table 3: Research Question 3 – Impact of technological self-efficacy on students' academic performance.**

| S/N | QUESTIONNAIRE ITEM | SA | A | D | SD | Total | Mean | Remark |
|---|---|---|---|---|---|---|---|---|
| 10 | Technological self-efficacy allows me to study independently. | 87 | 36 | 12 | 9 | 144 | 3.4 | Accepted |
| 11 | Technological self-efficacy helps me to give and receive learning materials with class group. | 101 | 39 | 4 | - | 144 | 3.7 | Accepted |
| 12 | As a student, technological self-efficacy helps me a lot for my research work. | 101 | 39 | 4 | - | 144 | 3.7 | Accepted |
| 13 | Using instructional technology in the classroom makes it easier for me to learn and understand. | 121 | 15 | 8 | - | 144 | 3.8 | Accepted |
| 14 | Technological self-efficacy makes learning more interesting and exciting for me. | 125 | 13 | 3 | 3 | 144 | 3.8 | Accepted |
| 15 | I usually do well in technology-based courses and Computer Based Test and Examinations (CBTE) because of my technology self-efficacy. | 131 | 8 | 5 | - | 144 | 3.9 | Accepted |
| 16 | I get more tasks accomplished quickly because of my technological self-efficacy. | 131 | 9 | 4 | - | 144 | 3.9 | Accepted |
| 17 | My technological self-efficacy improves my academic performance generally. | 132 | 8 | 4 | - | 144 | 3.9 | Accepted |
| 18 | My technological self-efficacy has positive impact on my academic performance. | 132 | 8 | 4 | - | 144 | 3.9 | Accepted |
| | **Average Mean** | | | | | | **3.8** | **Accepted** |

Source: Field Survey, 2019

Table 3 was used to seek information on the extent at which student's technological self-efficacy impact positively on their academic performance. An average mean of 3.8 was recorded which shows that students' technological self-efficacy has a positive impact on their academic performance.

## 4.0 DISCUSSION OF RESULTS

Research Question one was used to gather information on which technological tools (both hardware and software) were available to students for academic purpose and how frequent they make use of them. It was discovered that 97% of the students make use Smartphones, laptops and iPads for learning and research purposes. 97% of the students also make use of internet facilities for academic purpose. They make use of these technological tools very often as it was gathered that 85% of the students make use of technological tools (hardware and software) daily and weekly. This affirms the opinion of Fletcher (2006) that students of all ages interact with instructional technology daily within the classroom. Students use personal computers, hand-held electronic tablets, the Internet, and other technologies to research, create, collaborate, communicate, and acquire critical thinking skills. Technology usage is increasing in other demographics as well. In less than one year, smartphone ownership and use has increased 6% among Americans over age 18 (Smith, 2015).

The data collected from research question two which sought to know the level or extent of students' technological self-efficacy shows the average mean of 3.2. This denotes that students have a high level of self-efficacy in using technology especially for academic purpose. Prensky (2001) suggests 21st century students are different from previous generations of students due to their total immersion in a digital culture. Surrounded by video games, cell phones, computers, the Internet, and other technologies, these students "think and process information fundamentally differently from their predecessors" and are "native speakers" of the digital language (Prensky, 2001). These 21st century competences are all necessary for entry into the workforce (Spires, Lee, & Turner, 2008).

Research question three was used to seek information on the extent at which student's technological self-efficacy impact positively on their academic performance. An average mean of 3.8 was recorded which shows that students' technological self-efficacy has a positive impact on their academic performance. In assertion to this, the U.S. Department of Education's 2010 National Education Technology Plan (NETP) outlines bringing "state-of-the art technology into learning to enable, motivate, and inspire all students, regardless of background, languages, or disabilities, to achieve. It influences the power of technology to provide personalized learning and to enable continuous and lifelong learning. Also, Students with high Internet self-efficacy have better information searching skills and learn superior to those with low Internet self-efficacy (Tsai & Tsai, 2003).

## 5.0 CONCLUSION AND RECOMMENDATION

### 5.1 Conclusion

Technology has permeated all aspects of life, education being no exception Technology use is no longer limited to home, school, or work. Technology is a powerful tool with the ability to change the educational landscape. The arrival of mobile devices has created omnipresent computing, facilitating an increase in the time students and adults spend working with technology. Taking multitasking into consideration, students' daily interaction with some form of technology increased to over 10 hours and 45 minutes. Technology usage is increasing in other demographics as well. In less than one year, smartphone ownership and use has increased 6% among Americans over age 18. Technology has therefore become an integral part of current national and local educational goals.

### 5.2 Recommendations

Based on the findings, the following recommendations were made:

- Policy Makers should see technology use in education as a cure-all for the decline in the current educational system. To this end, Information and Communication Technology (ICT) courses should be included into

students' curriculum at every level of education. This will help increase the technological self-efficacy of students.

- Institutions of higher learning should provide viable ICT Centers and internet facilities for students within the campus to facilitate e-learning among students.
- Parents should help their wards in higher institutions to get an affordable technological tools which will go a long way to improve their learning attitudes.
- Students at all level should embrace technology; knowing fully well that technology has become an integral part of current national and local educational goals.

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