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ICT AND LEARNING SKILLS INTEGRATION: THE MEDIATING EFFECT OF LEARNING ENVIRONMENT

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ABSTRACT

The goal of this research was to determine if the learning environment plays a role in the relationship between ICT integration and learning skills. In this quantitative study, a descriptive correlational survey was used as a strategy. The Pearson correlational coefficient, regression, and mediation analysis were utilized to determine if the learning environment had a mediating effect on the relationship between ICT integration and learning skills. In a public school in Surallah South Cotabato , two hundred and twenty-five (225) pupils from the twelfth grade with a topic in Filipino only took part in the study. The learning environment preferences scale, study skills assessment, and teaching and learning with technology: efficacy of ICT integration in schools were used to collect data for the study. Students have a high level of study skills, ICT integration, and learning environment as a result of this research. Each variable had a significant relation, indicating that the learning environment's mediating influence on the relationship between ICT integration and learning skills was only partially mediated.

KEYWORDS: ***ICT, integration, learning skills, learning environment, mediating effect, Philippines***

INTRODUCTION

One of the challenges confronting the Department of Education was the Philippines' poor performance in the Organization for Economic Cooperation and Development's (OECD) Program for International Student Assessment (PISA) in 2018, with the Philippines finishing last among 79 countries in the reading category and second to last in the science and math categories.

The 10th grade had average mastery on the 2018 National Achievement Test (NAT), whereas the 6th grade had low mastery. Today's culture, according to Kiboss, Joel, et al. (7), places considerable emphasis on students' accomplishment on both local and national assessments. This serves as a motivator for all DepEd employees to work together to make "Education for All" a reality.

Perez (1) suggests that students who are having difficulty understanding the thoughts, ideas, and words in the text they are reading should focus on their learning skills in order to make their learning activity clearer and faster. Because learning is frequently associated with the classroom, where competition is common while improving learning skills through a variety of methods or strategies.

Students can easily understand difficult topics and concepts when ICT and learning skills are integrated. They have increased learning, investigative, and questioning skills, as well as a greater interest in new material, and have stronger retention of information that they can apply to solve problems. Its integration is a feeling for all the features of the learning system. (Kiboss, Joel, et al. 7).

In the classroom, students should be encouraged to participate and take responsibility for their learning. It helps in comprehending the relationship between effort and achievement, which is crucial for determining one's life's purpose. The significance of their relationship with student skill progress was investigated in this research. Filipino instructors, students, and school administrators are also asked to have access to training and seminar services. The curriculum for the Filipino program is being gradually updated to meet the demands of the students. It also determined where and how much effort is

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required to improve the student's academic and linguistic skills.

OBJECTIVES

This research aims to discover the relationship of integration of ICT and learning skills in learning environment.

METHODS

The 225 respondents were all from a private and public secondary school that focuses on the development and enhancement of students' abilities, particularly in the field of education. The study's participants were chosen through stratified random sampling, with 15 people chosen from each grade 12 section. Because it was the only school with a broad secondary curriculum with specific topics in technology and economic education, this institution became the researcher's starting point.

Meanwhile, linear regression was used to examine the relationship between student engagement and other variables. This study used adapted questionnaires to reveal important information that would aid in the study's conduct. To demonstrate the three research variables, the instruments were divided into three parts. In each section, participants were asked to reply to statements and descriptions.The mean was used to get and determine the level of learning competence, ICT integration, and learning

RESULTS AND DISCUSSION

The statistical data on the level of learning skills is shown in Table 1. All eight learning ability markers received excellent results. It obtained a total score of (x = 3.75 SD = 0.60) from the eight indicators, indicating that it has a high overall level and that pupils are always aware of the learning skill. Time

A descriptive correlational survey was used in this study. Its purpose was to investigate the link between two or more variables. The association between two variables, whether extremely high, high, low, or very low, was presented using the descriptive correlation method. The mediating impact of the learning environment on the relationship between ICT integration and learning skills was the variable in this study.

environment. The Pearson-r correlation was used to evaluate if there was a significant relationship between the integration of ICT in learning skills and the learning environment, as well as the relationship between the learning environment and learning skills.

Meanwhile, linear regression was used to determine the significant relationship between the independent variable, learning skills and ICT integration, the dependent variable, and the learning environment. It's a tool for figuring out how two variables are related. The Sobel z test was used to examine the effect of each variable in this study's mediation analysis. It might be used to test the hypothesis that the relationship between learning skills as an independent variable (X) and ICT integration as a non-independent variable (Y) has a mediating influence on the third variable, according to Sobel (290). If X and Y have an indirect link, then Y was the learning environment.

management and procrastination are at the top of the list, followed by attention and memory, learning and recording aids, test approaches and anxiety, information organization and processing, motivation, and behavior, seventh reading, and key concept selection, and finally writing.

Table 1
Level of Learning Skill

Indicator	Mean	SD	Level
Reading and Selecting the Main Idea	3.84	0.66	High
Time Management and Procrastination	3.78	0.70	High
Organizing and Processing Information	3.77	0.64	High
Writing	3.76	0.69	High
Study Aids and Note-Taking	3.72	0.66	High

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Motivation and Attitude	3.72	0.66	High
Test Strategies and Test Anxiety	3.71	0.62	High
Concentration and Memory	3.67	0.69	High
Overall	3.75	0.60	High

According to Didarloo and Khalkhali, students effectively managed time and procrastination for learning, as well as concentration and memory (3). The acquired mean for time management and procrastination was higher than for other study abilities, according to Nourian et al. (64) in the study.

The statistics findings on ICT integration are shown in Table 2. Its overall mean is high (x = 3.64, SD =.52), implying that it was always visible to students. ICT integration has progressed significantly.

The first aspect is the efficacy of ICT integration for student learning, followed by the effectiveness element of ICT integration in public school teaching and learning, and finally students' perceptions of technology-based teaching and learning. ICT integration efficiency can be described as high.

Table 2
Integration of ICT

Indicator	Mean	SD	Level
Effectiveness of ICT Integration for student's learning	3.81	0.69	High
Effective elements in ICT integration in teaching and learning in public schools	3.56	0.56	High
Student's perception of ICT Integration in Teaching	3.54	0.53	High
Effectiveness of ICT Integration	3.64	0.52	High

The three stages of ICT integration obtained high levels of integration, according to the study. There is a high level of ICT integration, according to the statistics provided. The integration of ICT into learning is defined by Ghavifekr and Rosdy (188) as a global shift to replace traditional teaching and learning techniques.

The data for the learning environment are shown in Table 3. Its overall mean was high (x = 3.84, SD =.61), indicating that it is constantly visible to students. Also receiving high marks were the five markers of the learning environment. The teacher's role comes first, followed by the student's role, the classroom activities and environment, the assessment technique, and finally the course content and learning perspective

Table 3
Learning Environment

Indicator	Mean	SD	Level
Role of Instructor	3.87	0.68	High
Role of Student	3.86	0.64	High
Classroom Atmosphere/Activities	3.85	0.64	High
Evaluation Procedures	3.81	0.62	High
Course Content/View of Learning	3.80	0.64	High
Overall	3.84	0.61	High

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Table 4.1 shows the study's statistical data, which confirmed the link between ICT integration and learning skills. At the 0.05 level, each measure of ICT integration has a p-value of p0.000, indicating that there is a strong relationship between these three variables and learning skills. The research findings are comparable to those of Basri et al. because most students are already using modern technologies (7). The use of ICT in the classroom has the potential to improve student's learning skills. At the 0.05 level, learning proficiency (r =.622 **), ICT Integration efficacy for student learning (r =.664 **), and efficacy aspects in the integration of ICT in teaching and learning in public schools (r =.683 **) are all significant with a p-value of p 0.000.

Overall, at the 0.05 level, the learning skill and the effectiveness of ICT integration had (r =.756 **) with a p-value of p0.000. Statistical results only corroborate that each skill study had a positive and substantial connection with each ICT integration and with the total study, with R-values ranging from r =.511 to r =.756, p 0.000.

Table 4.1
Analysis of the Relationship of ICT Integration and Learning Skills

	Student's perception of ICT Integration in Teaching	**Effectiveness of ICT Integration for student's learning**	**Effective elements in ICT integration in teaching and learning in public schools**	**Effectiveness of ICT Integration**
Time Management and Procrastination	.511**	.581**	.598**	.651**
	.000	.000	.000	.000
Concentration and Memory	.568**	.625**	.651**	.709**
	.000	.000	.000	.000
Study Aids and Note-Taking	.537**	.622**	.592**	.675**
	.000	.000	.000	.000
Test Strategies and Test Anxiety	.593**	.647**	.661**	.731**
	.000	.000	.000	.000
Organizing and Processing Information	.558**	.609**	.634**	.692**
	.000	.000	.000	.000
Motivation and Attitude	.553**	.513**	.567**	.623**
	.000	.000	.000	.000
Reading and Selecting the Main Idea	.570**	.585**	.577**	.665**
	.000	.000	.000	.000
Writing	.562**	.573**	.607**	.668**
	.000	.000	.000	.000
Learning Skills	.622**	.664**	.683**	.756**
	.000	.000	.000	.000

*** p<0.01 *p<0.05*

The statistical results of the study are presented in table 4.2, confirming the association between ICT integration and the learning environment. The learning environment and ICT integration had a substantial link, with the same p-value of p 0.000 being significant at the 0.05 level.

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Table 4.2
Analysis of the Relationship of ICT Integration and the Learning Environment

	Student's perception of ICT Integration in Teaching	Effectiveness of ICT Integration for student's learning	Effective elements in ICT integration in teaching and learning in public schools	Effectiveness of ICT Integration
Learning Environment	*.611***	*.628***	*.681***	*.736***
	.000	*.000*	*.000*	*.000*

*** p<0.01 *p<0.05*

According to research by Syahid et al., the learning environment has a substantial link with ICT integration. (2) efficiently integrates ICT into the planning, selection of teaching materials, methodologies, and strategies to evaluate the learning environment. Meanwhile, the findings of the study contradict Ghavifekr and Rosdy's (183) findings, which claim that there is no significant association between ICT integration in the learning environment and classroom control when ICT integration is used in teaching and learning.

Because of Canough's research, students' perceptions of technology-based teaching and learning are related to the learning environment in such a way that they recognize ICT integration as an important tool in the classroom and structure the learning environment around it (20). As a result, Ho disregarded the research, arguing that no link occurred between ICT integration and the learning environment.

The statistical results for each learning skill are revealed in table 4.3, with R-values for time management and procrastination (r =.662 **), concentration and memory (r =.733 **), learning and recording aids (r =.690 **), test strategies and test anxiety (r =.755 **), information organization and processing (r =.786 **), motivation and behavior (r =.719 **), reading and main idea choice (r =.767 **), and writing (each learning skill has a positive and important relationship with the total learning environment, as can be observed.

According to the findings, the learning environment had a substantial relationship with learning capability, with a p-value of 0.000 being significant at the 0.05 level. The findings were like those of Nisar et al. (217), who found that secondary teachers must be specialists in the learning environment for students to develop their learning skills. According to George's research, the learning environment has a large and effective impact on the performance of learning skills (54).

Organizing and processing information is already a part of the learning environment that Guo skillfully organizes using the productive methodology described in Stronge et al.'s According to Nagler, motivation and behavior, reading and selecting the core concept, and writing are not lost in the learning environment because these learning abilities contribute to effective teaching and are already part of a teacher's job (169). As a result, Ho dismissed the findings, claiming that there was no link between the learning environment and learning skills.

Table 4.3
Analysis of the Relationship of Learning Environment and Learning Skills

Indicator	Learning Environment
Time Management and Procrastination	.662**
	.000
Concentration and Memory	.733**
	.000
Study Aids and Note-Taking	.690**
	.000
Test Strategies and Test Anxiety	.755**
	.000
Organizing and Processing Information	.786**
	.000

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Motivation and Attitude	.719** .000
Reading and Selecting the Main Idea	.767** .000
Writing	.798** .000
Learning Skills	.825** .000

*** p<0.01 *p<0.05*

The regression of the variables in the three criteria connected to the acquisition of the mediator effect is shown in Table 5. As a result, ICT Integration (X) in the Learning Environment (M), ICT Integration (X) in Learning Skills (Y) and Learning Skills (Y) in the Learning Environment (M) are all significantly correlated without any symbol of change, implying that the learning environment plays a partial mediating role in ICT integration and learning skills.

As a result, it means that learning skills can be improved through ICT integration, but only after an effective learning environment has been created.

Table 5
Results of Regression of Variables on the Three Criteria Relating to the Acquisition of the Mediating Effect

	Estimate	S.E.	C.R.	P	Label
OMEE	.266	.025	10.583	***	
e1	.168	.016	10.583	***	
e2	.096	.009	10.583	***	

Thus, a high-quality learning environment has a mediating influence on the relationship between ICT integration and skills. It should be noted that ICT integration has increased by 0.86 units, and it is also said that each unit increase in ICT integration of 0.38 boosts learning skills. Furthermore, each unit increase in the learning environment corresponds to a 0.58 increase in learning skills.

			Estimate	S.E.	C.R.	P	Label
X	<---	Y	.864	.053	16.259	***	
M	<---	Y	.375	.059	6.331	***	
X	<---	M	.576	.050	11.423	***	

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To research the integration of ICT in learning skills in the learning environment is significantly connected without any indication of change, indicating that the learning environment has partial mediation (mediating effect). in terms of ICT integration and learning abilities. According to Gacicio et al. (10) research, the learning environment influences the association between ICT integration and learning skills.

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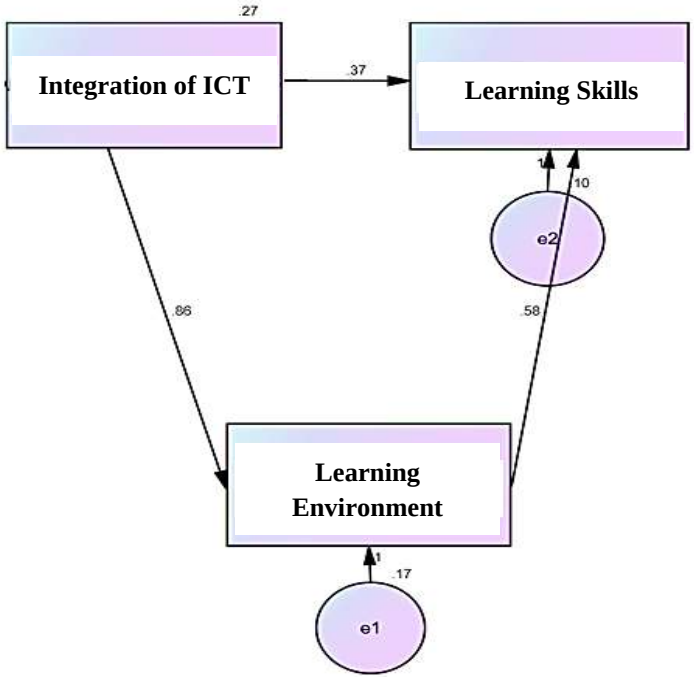
As a result, Ho's claim that there is no substantial association between the integration of ICT and learning skills and the mediating influence of the learning environment is refuted in this study. According to the findings, most schools receive extensive support in using ICT in the classroom to improve students' learning skills



The relationship between the learning environment and learning is an essential mediation because it demonstrates how to mentally assist students in their use of ICT and development of learning abilities, according to research explanation by Owusu-Agyeman et al. (55). Learning skills and ICT integration act as mechanisms in the learning environment, according to Nhon et al.'s findings.

CONCLUSION

The researcher noticed that the three components had a strong association with one another during this research. Students with excellent study skills, such as time management and procrastination, attention and memory, study aids and recording, test strategy, and test anxiety, have been identified through research.

Reading and main idea selection, writing, and ICT integration, specifically in the effectiveness of ICT integration for student learning, second in the effectiveness element of ICT integration in public schools, and third in students' perceptions of technology-based teaching and learning.

Researchers should focus their efforts on this direction in the future. Data was collected only in public schools with modular and digital learning modes in the new normal of education due to the COVID-19 outbreak, which constrained the learning environment. Nevertheless, the research might be conducted in other public and private schools as a recommendation. Because the acquired level of each variable is high, more research is needed to determine how to raise the levels, which will aid teachers and students, especially Department of Education leaders, in developing curriculum, programs, and seminars to further develop students' learning skills using ICT integration.

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