Relationship Between Factors Affecting ICT Integration and Level of JHS Teachers Understanding on ICT in Zamboanga City

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Abstract
The study aims to identify the factors affecting the integration of ICT and the level of understanding among JHS Teachers in select National High School in Zamboanga City for school year 2021-2022. The study utilized the Descriptive Quantitative Correlational Design and revealed, the relationship between the factors affecting ICT integration and level of understanding of teachers in select JHS in Zamboanga City was moderately correlated, and can be seen, that the factors such as availabiltity of resources, teacher competencies and the relevant training attended, revealed to be moderately affected. Moderately influenced the teachers' level of understanding on ICTs integration in the teaching-learning process, in terms of microsoft office and internet apps.

Keywords: Teachers Technological, ICT Integration in Teaching-Learning Process.

Introduction
In the age Information Communication Technology (ICT), the teaching-learning process entirely depends on how information is being delivered through more advance construct and approach. Hence, teachers are tasks to prepare their students to be globally competent, and abreast to the new form of learning. Information skills have undoubtedly become the key competencies for students facing global competition. Teachers have been asked to perform the novel and vital task of integrating ICT into instruction. According to Olander (2017) computer-related technologies lead the way for educators to remodel their pedagogical approach in order to attract learners who are ever more diverse, globalized, and digitally savvy. Olander further added that Internet World Stats (2017), an international online database monitoring global internet usage estimated that there are approximately 1.966 billion internet users across the continent.

As of June 2016, 55.1% of the world's population has internet access. Last 2019, the International Telecommunication Union (ITU) estimated about 3.2 billion people, or almost half of the world's population, would be online by the end of the year. A huge percentage of internet users were students, who are familiar with today's technological trends, such as the use of podcast, blog, and the list goes on. It is an unavoidable fact that students have been accessing information through the use of ICT since the outbreak of the COVID 19 crisis, the World Health Organization (WHO) in 2020 have pass a resolution and/or mandate for the lockdown of schools, no face to face classes, and for some areas were place under quarantine to prevent the spread of the virus, as this predicament started in China and has spread throughout the world, and in the Philippines as of November 6, 2021 accounted for 2,797,986 Active Cases; 2,716,524 Recovered Cases and 44,085 Deaths (WHO,2021)

To reduced the risk of infections, therefore, online instructions and assessment became a necessity in all public and private schools throughout the country. In the Philippines, according to Purcell (2018), only 3 percent of teachers in high-poverty schools agreed that students have the digital tools they need to effectively complete assignments while at home, compared to 52 percent of teachers in more affluent schools. One important aspect of this problem was that more than 70 percent of public schools do not have sufficient broadband to allow most of their students to engage in digital learning activities at the same time.

This poses a great challenge to the researcher, as a public school teacher to determine the level of understanding of ICT as a tool in teaching, the teaching-learning process among Junior High School (JHS)

in Zamboanga City as this innovative tool are reported to be insufficient that imperils the teachers to improve their methods in teaching, this became the barriers among teachers teaching using ICT the lack of systematized knowledge, not only in integration of programs and resources but on how to use the ICT properly within the class. Different research on improving teaching strategies is presented in the World Wide Web (www) in teaching JHS. The focus of the study is to investigate the factors affecting the integration of ICT and level of understanding of teachers in the teaching-learning process.

Statement of the Problem

The study aimed to identify the factors affecting the integration of ICT and the level of understanding among Junior High School Teachers in select National High School in Zamboanga City for school year 2021-2022. Specifically, this study aimed to answer the following questions:

1. What are the factors affecting ICT integration in teaching-learning process in terms of support for education;
   1.1 Availability of Resources;
   1.2 Teachers Competencies;
   1.3 Relevant Training Conducted?
2. What is the level of teachers understanding on ICT in terms of;
   2.1 Microsoft Office;
   2.2 Internet Apps?
3. Is there a significant relationship between the factors affecting ICT integration and level of understanding of teachers?

Scope of the Study

The study focused on identifying the relationship in the level of understanding of teachers in the integration of ICT and the factors affecting its implementation in the teaching-learning process among JHS Teachers in select National High School in Zamboanga City. The study covered those junior high school teachers in all subject areas from Grade 7 to 10 for school year 2021-2022.

Research Design

The study utilized the Descriptive Quantitative Correlational Design to measure the level of understanding among junior high school teachers in select national high school in the integration of information communication and technology as well as noting for the significant relationship between the factors affecting ICT integration and the level of teachers understanding in Zamboanga City for school year 2021-2022.

Population Sampling technique

The researcher utilized the Probability Sampling Technique, and using the Slovin's Formula to reduce the number of populations to the desired number of respondents to be included in this study. This was done by using the lottery method based from the official list provided by the Human Resource Designate Teacher of the select junior high school. The subsequent table shows the number of teachers in a select junior high school for school year 2021 - 2022 as seen in table 1.

Table 1 : Population Distribution of Respondents

Subject Area	Number of Teachers	Sample Size
English	40	23
Filipino	34	20
Mathematics	38	22
Science	42	24
Araling Panlipunan	34	20
Technology and Livelihood Education	48	28
MAPEH	33	19
Edukasyong sa Pagpapakatao	19	11
Total	**288**	**167**

Instrument

The researcher's made instrument was used comprising of structured questionnaire checklist for assessing and evaluating the level of understanding among JHS Teachers and the factors affecting the integrating of ICT in the teaching-learning process in terms of support for education. The questions formulated with 4-point Likert Scale, that consist of three parts such as; the demographic profile, factors affecting the integration of ICT in the teaching-learning process, and level of understanding among JHS teachers in the integration of ICTs in select national high school in Zamboanga City.

Ethical Consideration

The researcher secured a written consent from all respondents ascertains that all information will be dealt with strict confidentiality. The disclosure of respondent identity was based on their permission if they are not willing to disclose identity. The respondents will be informed that if they feel that there are issues which should not be recorded, then the audiotape will be switched off. The ethical aspect of research was followed very strictly in this research. Hence, the researcher sought approval of the respondents to allow the researcher to present in the other forum or fora.

Data Gathering Procedure

A letter was handed to Dr. Roy C. Tuballa, CESE, OIC-Office of the Schools Division Superintendent, Department of Education (DepEd) Zamboanga City. Upon approval, the survey commenced in select JHS in Zamboanga City. The researcher secured a written informed consent signed by the respondents who demonstrated their willingness to participate in the study, and that they understood the content, purpose and its significance in the teaching-learning process. The researcher gave the google link questionnaires to the JHS teachers in getting their responses. The researcher retrieved responses through google spreadsheets.

Data Analysis

Problem 1: What are the factors affecting ICT integration in teaching-learning process in terms of support for education?

Table 1.1: Factors Affecting ICT Integration in Teaching-Learning Process on Availability of Resources

	Availabilty of Resources	*Mean Score*	*Description*
1.	*Desktop computer*	*2.97*	*Moderately Affected*
2.	*Laptop*	*2.74*	*Moderately Affected*
3.	*Computer laboratories*	*3.02*	*Moderately Affected*
4.	*Access to Internet/website environment.*	*2.81*	*Moderately Affected*
5.	*Projectors*	*2.86*	*Moderately Affected*
6.	*Televisions*	*2.91*	*Moderately Affected*
7.	*Multi-link headphones*	*2.48*	*Fairly Affected*
8.	*Digital camera*	*2.54*	*Moderately Affected*
9.	*Webcams*	*2.59*	*Moderately Affected*
10.	*Audio recording software*	*2.57*	*Moderately Affected*
11.	*Telephones*	*2.72*	*Moderately Affected*
12.	*Mobile phones*	*3.09*	*Moderately Affected*
13.	*Electricity*	*3.29*	*Highly Affected*
14.	*Alternative Power supply (Generators)*	*2.72*	*Moderately Affected*
15.	*Video equipment*	*2.68*	*Moderately Affected*
16.	*Multimedia products*	*2.67*	*Moderately Affected*

17.	Calculators	3.01	Moderately Affected
18.	Electronic textbooks	2.47	Fairly Affected
19.	License software for Microsoft Office	2.58	Moderately Affected
20.	Printers/photocopiers/fax machines	3.07	Moderately Affected
	Average Mean Score	2.79	Moderately Affected

Legend:
3.26 – 4.00   Highly Affect   1.76 – 2.50   Fairly Affect
2.51 – 3.25   Moderately Affect   1.0 – 1.75   Poorly Affect

The table 1.1 shows that Availability of Resources in the school as factors affecting ICT integration in teaching-learning process among JHS teachers in select National High School in Zamboanga City was Moderately Affected with an average mean score of 2.79. This implied that JHS Teachers feels that the availability of ICT resources in the school was not adequate and did not meet their needs. Teachers have a little issues on the access of these ICT resources. As it is evident on the results itself, were majority of the listed resources are moderately affected to be evident in the school except for Electricity which obtained the highest score and interpreted as Highly Affected with the mean score of 3.29. The other resources with next highest scores are the Mobile Phones with the mean score of 3.09; and the Printers/photocopiers/fax machines with the mean score of 3.07, but interpreted as Moderately Affected, meaning teachers viewed it as not enough or insufficient with the number of teachers and the number of students, these available resources cannot meet the needs of the entire population, which make them also feel inacdequate to performed or integrate ICT in their teaching-learning process. There were few evidence that teachers viewed as Fairly Affected to those resources presented on the table, such as; Multi-link Headphones with mean score of 2.48; and Electronic Textbooks with mean score of 2.47. Those are the resources teachers claimed to be negative in the school.

Table 1.2: Factor Affecting ICT Integration in Teaching-Learning Process on Teacher Competencies

	Teacher Competencies	Mean Score	Description
1.	Familiar with computer functions	3.16	Moderately Affected
2.	Familiar with computer terminology	3.08	Moderately Affected
3.	Using of different operating system	2.90	Moderately Affected
4.	Using of e-mail	3.23	Moderately Affected
5.	Working with Multimedia	2.99	Moderately Affected
6.	Using available computer hardware	2.93	Moderately Affected
7.	Participating in online discussion	3.07	Moderately Affected
8.	Writing general computer programs	2.46	Fairly Affected
9.	Using word processing software.	3.05	Moderately Affected
10.	Using database software	2.71	Moderately Affected
11.	Using spreadsheet software	2.92	Moderately Affected
12.	Using statistical software.	2.56	Moderately Affected
13.	Using ICT skills in developing and presenting information	3.01	Moderately Affected
14.	Setting up websites	2.43	Fairly Affected
15.	Troubleshoots simple software computer problems	2.49	Fairly Affected

16.	Installing software	2.60	Moderately Affected
17.	Ability in and understanding of fundamental computer operations and concepts	2.84	Moderately Affected
18.	Using of different instructional packages.	2.70	Moderately Affected
19.	Clear understanding about computer hardware and software	2.77	Moderately Affected
20.	Access the Internet	3.11	Moderately Affected
	Average Mean Score	**2.85**	**Moderately Affected**

Table 1.2 shows that the Teacher Competencies as factors in ICT integration in the teaching-learning process among JHS Teachers were Moderately Affected with an average mean score of 2.85. This implied that the JHS Teachers did not reached the expected ICT skills for them to become competently enough to integrate the ICT program in the teaching-learning process. As it was evident in the results that; Using of e-mail with the mean score of 3.23 as Moderately Affected followed by Familiar with Computer Functions with the mean score of 3.16; and Access the Internet with mean score of 3.11. It was evident in the results as claimed by the teachers to be Fairly Affected, and these are the following: Troubleshoots Simple Software Computer Problems with mean score of 2.49 followed by Writing General Computer Programs with mean score of 2.46; and Setting up Websites with mean score of 2.43. Meaning the teachers can only performed a simple ICT skills for which they are accustomed of doing it, in every day activities in school, but higher level of ICT they claimed to be as fairly observed.

Table 1.3: Factors Affecting ICT Integration in Teaching-Learning Processon Relevant Training Conducted

	Relevant Training Conducted	**Mean Score**	**Description**
1	Basic computer and encoding	2.99	Moderately Affected
2	E - learning	2.96	Moderately Affected
3	LMS (learning management system)	2.99	Moderately Affected
4	Flipped Learning	2.62	Moderately Affected
5	Google Classroom	2.89	Moderately Affected
6	Google Docs	2.83	Moderately Affected
7	Google Drive	2.86	Moderately Affected
8	E-Portfolio	2.84	Moderately Affected
9	All potential online learning platforms	2.84	Moderately Affected
10	Software Installation	2.66	Moderately Affected
11	IT Troubleshooting	2.54	Moderately Affected
12	Cybersecurity	2.60	Moderately Affected
	Average Mean Score	**2.80**	**Moderately Affected**

Table 1.3 shows that the Relevant Training Conducted as factors in ICT integration in the teaching-learning process among JHS Teachers were Moderately Affected with an average mean score of 2.80. This implied that the JHS Teachers viewed to be limited in the conduct of ICT trainings and seminars of the school for the professional development of teachers which makes them successful and confidently with a heart to integrate the ICT program in their teaching-learning process. The first three highest scoring as viewed by teachers are the following; Basic Computer and Encoding with the mean score of 2.99; LMS (learning management system) with mean score of 2.99; and the E – learning with the mean score of 2.96 described as Moderately Affected with all others. The teachers claimed they need this ICT training to be competent to integrate ICTs in their teaching-learning process.

Problem 2: What is the level of teachers understanding on ICT?

Table 2.1: Level of Teachers Understanding on Microsoft Office

	Microsoft Office	**Mean Score**	**Description**

1.	Page setup	2.98	Moderately Level
2.	Comparing and merging documents	2.96	Moderately Level
3.	Creating forms using fields and advanced tools	2.74	Moderately Level
4.	Creating and using templates	2.93	Moderately Level
5.	Sharing and protecting documents	2.88	Moderately Level
6.	Tracking changes	2.50	Fairly level
7.	Creating labels	2.74	Moderately Level
8.	Formatting tables	2.83	Moderately Level
9.	Formatting documents	2.82	Moderately Level
10.	Creating spreadsheets	2.93	Moderately Level
11.	Creating tables	3.05	Moderately Level
12.	Analyzing data	2.68	Moderately Level
13.	Macros	2.28	Fairly Level
14.	Pivot tables	2.26	Fairly Level
15.	Pivot charts	2.28	Fairly Level
16.	Formulas	2.52	Moderately Level
17.	Group data	2.42	Fairly Level
18.	Functions	2.41	Fairly Level
19.	Data validation	2.34	Fairly Level
20.	Creating presentations	3.20	Moderately Level
21.	Creating templates	2.96	Moderately Level
22.	Formatting templates	2.88	Moderately Level
23.	Creating interactive slideshows	2.95	Moderately Level
24.	Inserting, embedding and linking media and data	2.74	Moderately Level
25.	Inserting hyperlinks	2.78	Moderately Level
26.	Inserting and formatting media	2.74	Moderately Level
27.	Linking and embedding video	2.72	Moderately Level
28.	Using the advanced timeline	2.57	Moderately Level
29.	Broadcasting and sharing a slideshow	2.79	Moderately Level
30.	Creating and designing databases	2.14	Fairly Level

31.	Calculating controls		2.18	Fairly Level
32.	Data sorting and filtering		2.25	Fairly Level
33.	Creating advanced queries		2.16	Fairly Level
34.	Establishing relationships and joining lines between tables		2.19	Fairly Level
35.	Using VBA and SQL within Access		2.02	Fairly Level
36.	Using other Office applications with Access		2.14	Fairly Level
37.	Auto reply		2.14	Fairly Level
38.	Configuring email settings		2.15	Fairly Level
39.	Creating, scheduling and delegating tasks		2.13	Fairly Level
40.	Planning meetings		2.19	Fairly Level
41.	Sharing and configuring calendars		2.13	Fairly Level
	Average Mean Score		**2.55**	**Moderately Level**

Legend:

3.26 – 4.00   High Level   1.76 – 2.50   Fair Level
2.51 – 3.25   Moderate Level   1.0 – 1.75   Low Level

Table 2.1 shows that the level of understanding of teachers on ICT in terms of Microsoft Office were Moderately Level with an average mean score of 2.55. This implied that, teachers understanding on the use of the different functions of microsoft office for words, excel, power point, access and outlook were limited and they can not performed other higher functions of it. They only performed the simple functions of microsoft office, which was evident on the results as; Creating Presentations with the mean score of 3.20 as the highest scores obtained. And Using VBA and SQL within Access as the lowest with the mean score of 2.02. This proved that the teachers have a limited knowledge and can performed the simple functions of microsoft office for which they are more openly used in their teaching and learning process.

We teachers should support our students by helping them sharpen their technical skills in Microsoft Office. Discover more technical and professional skills that our students need to succeed after business school in our ebook, in short "Preparing career-ready students". But, how could it be if the teacher itself is not skillful or has a limited know how in Microsoft Office. As what it is evident in the results, the level of understanding of JHS Teachers on Microsoft Office is limited, and they can only perform a simple microsoft office in their teaching-learning process.

Table 2.2: Level of Teachers Understanding on Internet Apps

	Internet Apps	*Mean Score*	*Description*
1.	FB Messenger	3.57	Highly Level
2.	FB Chatroom	3.38	Highly Level
3.	FB Livestream	2.77	Moderately Level
4.	FB Page	3.10	Moderately Level
5.	Zoom Meeting	3.44	Highly Level
6.	ClassIn	2.36	Fairly Level
7.	Microsoft Teams	2.46	Fairly Level
8.	Google Meet	3.03	Moderately Level
9.	Google Classroom	2.86	Moderately Level
10.	Google Drive	2.95	Moderately Level
11.	Google Docs	2.87	Moderately Level

12.	Gmail	3.38	Highly Level
13.	Yahoo Mail	2.84	Moderately Level
14.	Youtube	3.36	Highly Level
15.	Instagram	2.54	Moderately Level
16.	Twitter	2.34	Fairly Level
17.	Chrome Web Store	2.54	Moderately Level
18.	Edmodo	1.87	Fairly Level
19.	Filmora	2.10	Fairly Level
20.	Adobe Premiere Rush	1.90	Fairly Level
21.	Quik	1.75	Lowest Level
22.	LumaFusion	1.76	Fairly Level
23.	CupCut	2.12	Fairly Level
24.	Animated Video Maker (Doratoon's)	1.90	Fairly Level
25.	Adobe Photoshop	2.07	Fairly Level
	Average Mean Score	*2.61*	*Moderately Level*

Table 2.2 shows that the level of understanding of teachers on ICT in terms of Internet Apps were Moderately Level with an average mean score of 2.61. This implied that, teachers understanding on the use of the different internet application are also limited, as it is evident in the results. The highest score is FB messenger with the mean score of 3.57 as Highly Level; followed by zoom meeting with the mean score of 3.44; and FB chatroom as well as gmail with the mean score of 3.38. And the lowest score is the Quick app with the mean score of 1.75 as Lowest Level. This further explained, the teacher knows the simple FB messenger, chatroom, gmail and zoom meeting as their means to keep connected with their students, friends, co-employees and administrations during this time of pandemic, where there is no face to face delivery of instructions and monitoring of classes are accessible for teachers and learners

Problem 3: Is there a significant relationship between the factors affecting ICT integration and level of understanding of teachers?

Table 3: Correlations for Factors Affecting ICT Integration and Level of Teachers Understanding

X	Y	r - value	p - value	Decision	Interpretation
Factors affecting ICT integration in teaching-learning process	Level of Teachers Understanding on ICTs	0.562	0.000	Staistically Significant	Moderately Correlated

Legend:
0.1 – 0.2 Very Low Correlation   0.5 – 0.6   Moderate Correlation   0.9 – 1.00 Very High Correlation
0.3 – 0.4 Low Correlation   0.7 – 0.8   High Correlation

Table 3 shows the relationship between the factors affecting ICT integration in the teaching-learning process and the level of teachers understanding on ICTs. The data was tested @ Sig. level of 0.05. The Computation was run using IBM SPSS Version 20. The computation between the factors affecting ICT integration in the teaching-learning process and the level of teachers understanding on ICTs determined that the r-value was 0.562 and the p-value was 0.000. The Decision Rule was to Reject Ho if the level of significance (0.05) > p-value. Since the findings of the study revealed that (0.05) > p-value (0.000). Therefore, the decision was to reject the Null Hypothesis (Ho). This implies that there was a significant relationship exist between the factors affecting ICT integration in the teaching-learning process and the JHS Teachers level of understanding on ICTs. These were conclusive evidence that the factors such as availabiltity of resources in school, teacher competencies and the relevant training attended as the results revealed to be moderately affected, influence the teachers' level of understanding on ICT integration in the teaching-learning process, as it can be seen in their relationship value of 0.562 as Moderately Correlated.

Conclusion

From the findings of the study, the following conclusions had been drawn:

1. Availability of ICT resources in school becomes the main problem teachers have in the ICT integration, respondents feel they don't cater with enough facilities and/or school ICT resources that can support teachers to apply ICT in their teaching-learning process.
2. JHS Teachers did not reached the expected ICT competence skills for them to become competent enough to integrate the ICT program in the teaching-learning process.
3. JHS Teachers need ICT trainings and seminars for professional development which will make them competent to integrate the ICT in their teaching-learning process.
4. The level of understanding of JHS Teachers on Microsoft Office was limited. Teachers can only performed simple function of microsoft office for which they are openly used in their teaching-learning process. And for Internet Application, the teacher knows the simple FB messenger, chatroom, gmail and zoom meeting as their means to keep connected with their students for delivery of instructions and monitoring.
5. The relationship between the factors affecting ICT integration and level of understanding of JHS in Zamboanga City was moderately correlated, and can be seen in the results, the factors such as availabiltity of resources in school, teacher competencies and the relevant training attended revealed to be moderately affected, moderately influenced the teachers' level of understanding on ICTs integration in the teaching-learning process, in terms of microsoft office (moderately level) and internet apps (moderately level).

Recommendation

Based on the findings of the study, the following recommendations were suggested based on the problems identified in the study as follows:

1. School Head must provide teachers with the necessary ICT resources including hardware and software, and improved their facilities for better integration of ICT in the teaching-learning process.
2. School Head should organized a short training courses/seminar workshop for the teachers in which emphasis should be laid down on the development of ICT competencies in the teaching-learning process. So they will become a better users of it and could enhance student learning as well.
3. Department Head should assigned expert teacher per grade level to provide technical support to teachers, to help solve problems in their use of ICT.
4. Teachers should be open minded towards the new approaches in teaching-learning involving ICT integration. Where training is absent, teachers should prepare themselves by enrolling in private sessions or by self-training. Where support is lacking, they need to find ways to be able to solve problems involving their use of ICT in school.
5. The local authorities should provide the school with high speed internet facility. that need to be made available to the teachers and students as well.

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