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(RESEARCH ARTICLE)

ICT integration attitude and ICT competence of JHS and SHS teachers in teaching: Basis for extension training program development

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Abstract

In the field of modern education, information, and communication technology (ICT) has emerged as a revolutionary instrument, altering teaching, and learning techniques. The use of ICT in educational settings has grown increasingly important, providing new opportunities to improve teaching, engage students, and build digital literacy. This descriptive study determines the ICT integration attitude and ICT competence in terms of ICT knowledge and skills of JHS and SHS teachers as basis for extension training program development. This study also determines the relationship between ICT integration attitude, knowledge and skills. This study utilized the descriptive correlational quantitative research design that aims to explain the relationship between two or more variables. The participants of the study were JHS and SHS public school teachers from Roxas City School for Philippine Craftsmen and Tanque National High School. The questionnaire data was processed, encoded, analyzed, and interpreted using the Statistical Package for Social Sciences (SPSS). The Statistical tools used were Descriptive statistics, mean and Pearson correlation. It found out that the level of ICT integration attitude was very high and has had a highly positive influence on the educational experience. In addition, the level of ICT competence in terms of ICT knowledge and skills was very high which means that the JHS and SHS teachers are highly competent. Moreover, there was a significant relationship among ICT integration attitude, knowledge and skills of JHS and SHS teachers. This relationship emphasizes how teachers' attitudes toward technology, their ability to use ICT tools effectively, and their general ICT expertise are all interconnected.

Keywords: Attitude; Knowledge; Skills; Information and Communication Technology (ICT)

1. Introduction

Education has a significant impact on individuals, societies, and economies by giving knowledge, skills, and opportunities for personal and communal development. Education, as a basic pillar of human growth, includes both formal and informal learning experiences that enable individuals to attain their full potential and make significant contributions to society. Through education, individuals gain critical talents, attitudes, and perspectives that enable them to manage the complexities of the world and actively engage in civic life. (UNESCO, 2015).

The integration of Information and Communication Technology (ICT) in education has become crucial, revolutionizing conventional teaching methods and improving student engagement and learning outcomes. Integrating ICT tools and resources into classroom instruction enables educators to establish dynamic and interactive learning environments that accommodate various learning styles and promote critical thinking and problem-solving abilities. (Smith, J. K., & Johnson, L. M., 2023).

In the field of modern education, information, and communication technology (ICT) has emerged as a revolutionary instrument, altering teaching, and learning techniques. The use of ICT in educational settings has grown increasingly important, providing new opportunities to improve teaching, engage students, and build digital literacy. Teachers'

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competences and attitudes are critical to the successful deployment of ICT in education, particularly at the Junior High School (JHS) and Senior High School (SHS) levels. Understanding teachers' ICT competence and attitudes toward ICT integration is critical for improving the educational experience and preparing students for a technologically driven environment.

Furthermore, teachers' attitudes toward incorporating ICT into their teaching methods can have a substantial impact on the uptake and effectiveness of technology-enhanced learning techniques. As a result, investigating the relationship between ICT integration attitude and teachers' ICT competency in JHS and SHS contexts is critical for promoting educational practices that meet the expectations of the 21st-century learning landscape.

Investigating the correlation between ICT competency and ICT integration attitudes among JHS and SHS educators provides valuable insights into the optimal utilization of technology to enhance teaching methodologies and student learning outcomes. By analyzing teachers' attitudes towards technology integration in the classroom and their proficiency with ICT tools and resources, one can identify areas for enhancement, develop targeted training programs, and foster a supportive environment that promotes innovation and teaching excellence. This study seeks to illuminate the essential role of ICT skills and attitudes in shaping the educational environment and preparing students for success in a progressively digital world.

1.1. Statement of the Problem

The primary purpose of this study was to determine the level of ICT integration attitudes of JHS and SHS teachers in teaching and the level of ICT competence among Junior High School (JHS) and Senior High School (SHS) teachers in terms of knowledge and skills. The study aims to serve as a basis for the extension training program development that enhances teachers' ICT competencies and promotes effective ICT integration in teaching and learning processes in JHS and SHS settings.

Specifically, this study sought to answer the following questions:

- What is the level of ICT integration attitude of JHS and SHS teachers in teaching?
- What is the level of ICT competence of JHS and SHS teachers in terms of ICT knowledge and skills?
- Is there a significant relationship between ICT integration attitude, knowledge and skills of JHS and SHS teachers?

2. Methodology

The researcher employed the descriptive correlational approach as the quantitative data gathering method.

A methodical way to describing and analyzing traits, actions, or events of a particular topic or group is the descriptive research method.

The study was conducted in two schools in the Division of Roxas City, the Junior High School and Senior High teachers' participants were surveyed from two different schools in the areas: Roxas City School for Philippine Craftsmen and Tanque National High School.

In the conduct of study, two groups of participants who were surveyed: Junior High School and Senior High School teachers. The participants included 104 teachers from two schools in the Division of Roxas City. Data were gathered through survey form with 10 questions per category which were answered by the Junior High School and Senior High School teachers. There were three categories the ICT integration attitude, Information and Communication Technology Knowledge and Skills.

The sampling technique was random sampling. The random sampling technique involves examining the entire population (i.e., the total population) and pick randomly the participants; they are the teachers who were in the Department of Education.

A questionnaire was used in gathering the data and it was composed of two parts. Part 1 of the questionnaire was the socio-demographic profile of the teachers-respondents in terms of sex, age, status, highest educational attainment, teacher classification, teaching position and length of service.

Part 2 of the questionnaire contained 30 items, which were research made. This instrument was validated by three experts. The respondents were instruction to indicate their responses on the level of ICT integration attitude of JHS and SHS teachers in teaching and the level of ICT competence among Junior High School (JHS) and Senior High School (SHS) teachers in terms of knowledge and skills based on the following scoring variables:

Scale of Mean	Verbal Interpretation
4.20 – 5.00	Highly Positive
3.40 – 4.19	Positive
2.60 – 3.39	Moderately Positive
1.80 – 2.59	Least Positive
1.00 – 1.79	Not Positive

Scale of Mean	Verbal Interpretation
4.20 – 5.00	Very Competent
3.40 – 4.19	Competent
2.60 – 3.39	Moderately Competent
1.80 – 2.59	Least Competent
1.00 – 1.79	Not Competent

2.1. Sample Size of the Study

The sampling technique was random sampling. The random sampling technique involves examining the entire population (i.e., the total population) and pick randomly the participants; they are the teachers who were in the Department of Education.

Table 1 Distribution of the respondents

Name of school	Total No. of teachers	No. of teachers who surveyed
SCHOOL A	80	57
JHS	64	47
SHS	16	12
SCHOOL B	62	44
JHS	47	34
SHS	15	11
Total	142	104

3. Results, Analysis, and Discussions

3.1. Level of ICT integration Attitude of JHS and SHS teachers in Teaching

When all 104 respondents were taken as a whole group, Table 1 discloses that the grand mean score on the level of ICT integration attitudes of JHS and SHS teachers in teaching was 4.60 mean. Results further implied that integration of ICT of JHS and SHS teachers was “Highly Positive” in teaching practice as perceived by the respondents. According to

Buabeng-Andoh, C. (2012), a teacher's professional development is a central component to the successful integration of computers into classroom instruction.

Table 2 Level of ICT integration attitude of JHS and SHS teachers in teaching as Perceived by the Respondents.

Factors/Variables	Mean	Verbal Interpretation
It is necessary to have knowledge and skills to use ICT tools.	4.93	Highly Positive
Using ICT in my class would make my instruction more interesting for my students.	4.88	Highly Positive
All the teachers should be continuously informed about ICT.	4.83	Highly Positive
Classes will be more efficient when ICT possibilities are implemented.	4.79	Highly Positive
Using educational software can help learners study better.	4.76	Highly Positive
The usage of ICT is important in achieving the aims of the curriculum.	4.68	Highly Positive
ICT improves the quality of education.	4.62	Highly Positive
I love to use audio-visual tools in my class.	4.60	Highly Positive
It is luxurious to use ICT in schools in our country.	4.20	Highly Positive
The usage of ICT restricts the creativity of the students.	3.70	Positive
Grand Mean	4.60	Highly Positive

Legend: 4.20-5.00 = *Highly Positive*; 3.40-4.19 = *Positive*; 2.60-3.39 = *Moderate Positive*; 1.80-2.59 = *Least Positive*; 1.00-1.79 = *Not Positive*

3.2. Level of Competence of JHS and SHS

3.2.1. Teachers in terms of ICT Knowledge

The respondents perceived the grand mean score for the ICT knowledge competence level of JHS and SHS instructors to be 4.44, as indicated in Table 2. The results indicated that the competency level of JHS and SHS teachers regarding ICT expertise was evaluated as "Very Competent" by the respondents. The Junior High School (JHS) and Senior High School (SHS) instructors exhibited a significant degree of skill and expertise in general ICT knowledge. This indicates that the teachers have a robust comprehension and proficiency in effectively employing information and communication technology tools and resources in their instructional activities. The highest mean was 4.81, signifying that teachers exhibited a high level of proficiency in utilizing ICT tools, including laptops, computers, smartphones, projectors, and smart TVs for lesson preparation and delivery. Conversely, the lowest mean was 3.32, indicating that teachers possessed only a moderate understanding of Microsoft Word, PowerPoint, and Excel.

Finding of this study is supported by the claim of Paciente (2022) discovered that ICT educators possessed a highly adequate level of knowledge in ICT, with those with a doctoral degree being especially adept at fulfilling the global demands for technology-driven teaching and learning resources. This underscores the significance of ICT knowledge and abilities for educators in the 21st century, as it facilitates the learning and evaluation of 21st Century abilities and acknowledges ICT's role as a vehicle for cultivating these skills and attitudes in individuals.

Table 3 Level of Competence of JHS and SHS teachers in terms of ICT Knowledge as Perceived by the Respondents

Factors/Variables	**Mean**	**Verbal Interpretation**
I understand how to prepare lessons using ICT tools such as laptops, computers, smartphones, projectors, and smart TVs for presentation and teaching lessons.	4.81	Very Competent
I know how to use a computer/laptop/smartphone to develop classroom resources, teaching materials and evaluation activities.	4.72	Very Competent
I know how to use social networking services such as Facebook, Instagram, Messenger etc. for educational purposes.	4.68	Very Competent

I know how to promote discussions about subject matter, teamwork and sharing of ideas among my students using ICT tools.	4.66	Very Competent
I understand how to use a variety of instructional strategies to meet the diverse learning needs of students through ICT tools.	4.58	Very Competent
I possess adequate knowledge to find study materials and resources online.	4.52	Very Competent
I know a lot of search engines such as Google, Ask.com, Bing.com, Yahoo.com.	4.47	Very Competent
I have adequate knowledge in using online classrooms such as Google meet, Zoom, MS Teams and Skype for the teaching and learning process.	4.41	Very Competent
I know how to solve technical problems during class such as, when projectors, smart TVs do not recognize the computer/laptop.	4.33	Very Competent
I know how to appropriately utilize MS Word, PowerPoint, and Excel.	3.32	Moderately Competent
Grand Mean	4.44	Very Competent

Legend: 4.20-5.00 = *Very Competent*; 3.40-4.19 = *Competent*; 2.60-3.39 = *Moderate Competent*; 1.80-2.59 = *Least Competent*; 1.00-1.79 = *Not Competent*

3.3. Level of Competence of JHS and SHS

3.3.1. Teachers in terms of ICT Skills

The overall mean score for ICT abilities among JHS and SHS teachers, as perceived by respondents, was 4.54, as indicated in Table 3. The results indicated that the respondents perceived the ICT skills competency level of JHS and SHS teachers as "Very Competent." The respondents regarded the ICT competencies of the JHS and SHS teachers as extremely proficient. This outcome indicates that the educators are highly adept at incorporating ICT resources and tools into their lesson plans.
The highest mean was 4.81, signifying that teachers exhibited considerable proficiency in utilizing ICT tools, including laptops, computers, smartphones, projectors, and smart TVs for lesson presentation and instruction. Conversely, the lowest mean was 3.58, indicating that teachers demonstrated only basic competence in creating documents, presentations, and performing fundamental tasks in MS Word, PowerPoint, and Excel.

Finding of this study is supported by the claim of Kasebusha et al. (2022) determined that the ICT competency of educators in two schools in Taguig City was classified as 'Very Competent' for ICT skills and expertise, as well as e-learning platforms including Zoom, Google Meet, and Brightspace. The research revealed that educators exhibited a favorable disposition towards the incorporation of ICT during the nationwide deployment of Blended Learning. (Kasebusha et al., 2022).

Table 4 Level of Competence of JHS and SHS teachers in terms of Skills as Perceived by the Respondents

Factors/Variables	**Mean**	**Verbal Interpretation**
I can create classroom resources, teaching materials and evaluation activities using computer/laptop/smartphone.	4.81	Very Competent
I can plan lessons utilizing ICT technologies such as laptops, computers, smartphones, projectors and smart TVs for presentation and teaching purposes.	4.79	Very Competent
I can implement several instructional strategies to fulfill students' various learning requirements using ICT tools.	4.70	Very Competent
I can use and utilize the different search engines appropriately.	4.66	Very Competent
I can easily find learning materials and resources online that are useful in teaching and learning process.	4.65	Very Competent
I can use social networking sites such as Facebook, Instagram, Messenger etc., for educational purposes.	4.65	Very Competent
I can promote discussions about subject matter, teamwork and sharing of ideas among my students using ICT tools.	4.62	Very Competent

I can address technological difficulties in class such as, when projector, smart TVs fails to recognize the computer/laptop.	4.48	Very Competent
I can utilize online classrooms such as Google Meet, Zoom, MS Teams and Skype for the teaching and learning process.	4.46	Very Competent
I can create documents, presentations, and do basic tasks in MS Word, PowerPoint, and Excel.	3.58	Competent
Grand Mean	4.54	Very Competent

Legend: 4.20-5.00 = *Very Competent*; 3.40-4.19 = *Competent*; 2.60-3.39 = *Moderate Competent*; 1.80-2.59 = *Least Competent*; 1.00-1.79 = *Not Competent.*

3.4. Relationship between ICT Integration

3.4.1. Attitude, Knowledge and Skills

The researcher employed the Pearson-r Correlation to examine the correlations among ICT integration attitude, knowledge, and abilities.

Table 4 indicates a substantial correlation between attitudes toward ICT integration and expertise. The Pearson Correlation coefficient was .574, accompanied with a p-value of 0.000. The p-value was below the 0.05 significance threshold, indicating a significant association between instructors' attitudes towards Information and Communication Technology (ICT) and their knowledge thereof. The study's results demonstrate that instructors' attitudes towards ICT significantly impact their knowledge and proficiency with the technology. This connection highlights the importance of considering educators' attitudes towards technology when assessing their proficiency and performance in utilizing ICT tools and resources in educational settings.

The study (KnE Social Sciences, 2022) demonstrated substantial disparities in scientific educators' proficiency in ICT contingent upon the geographical location of schools and the professional experience of the teachers. A significant discrepancy in ICT expertise existed between urban and rural instructors, with urban educators exhibiting superior ICT proficiency. Moreover, disparities in ICT expertise among science instructors were noted according to their professional experience, suggesting that more experienced educators possessed greater ICT proficiency. The study identified a weak yet favorable association between science instructors' attitudes towards ICT and their proficiency in using ICT tools, underscoring the significance of attitudes in connection to ICT abilities.

A substantial correlation existed between the attitude towards ICT integration and the corresponding skills. The Pearson Correlation coefficient was .552, accompanied with a p-value of 0.000. The p-value was below the 0.05 significance threshold, indicating a significant association between teachers' attitudes towards Information and Communication Technology (ICT) and their skills. The results indicate that enhancing teachers' ICT competency may lead to more positive attitudes about technology integration in the classroom, therefore improving the efficacy of ICT incorporation into the teaching-learning process.

The study by Nazım, Ramazanoglu, and Gücün (2022) A moderate and positive association was identified between teachers' ICT proficiency and their attitudes towards distant education, with 10% of the variance in teachers' opinions being attributable to their ICT skills. This is a substantial correlation between educators' ICT competencies and their perceptions of distance education.

A substantial correlation existed between teachers' proficiency in Information and Communication Technology and their talents. The Pearson Correlation coefficient was .657, accompanied with a p-value of 0.000. The p-value was below the 0.05 significance threshold, indicating a significant association between instructors' Information and Communication Technology (ICT) knowledge and skills. Several parameters indicate a significant correlation between instructors' knowledge and skill in information and communication technology (ICT). The accessibility of ICT resources and support, encompassing technological leadership, ICT utilization, and ICT assistance, can positively influence teachers' ICT competency. The proficiency of instructors in ICT is significantly linked to their effective utilization of ICT in the classroom, with planning and organizational skills exerting the greatest impact. Thirdly, educational attitudes and support for ICT are similarly significant in forecasting ICT proficiency; indeed, these beliefs constitute 30% of ICT competency. In conclusion, the extent to which educators perceive their capability to effectively employ ICT in their instruction is associated with both their general ICT self-efficacy and their classroom application of it.

A notable correlation exists between the proficiency of instructors in Information and Communication Technology (ICT) and several influencing factors. A positive correlation between the two variables, indicating that an increase in ICT

knowledge coincides with an improvement in ICT abilities, serves as a robust indicator (Sitzmann & Ely, 2011). Secondly, a notable correlation exists between enhanced teaching practices and teachers possessing advanced ICT knowledge and skills, as these educators are more inclined to use technology successfully into their instructional methods (Zheng et al., 2016). Thirdly, a notable correlation may be evidenced by educators' confidence and self-efficacy in employing ICT in the classroom, together with their readiness to participate in continuous professional development to augment their ICT competencies. (Knezek & Christensen, 2011).

Table 5 Relationship between ICT integration Attitude, ICT Knowledge, and ICT Skills.

Variables	N	r	p-Value	Remarks
ICT Integration attitude and ICT Knowledge	104	0.574	0.000	Significant
ICT Integration attitude and ICT Skills	104	0.552	0.000	Significant
ICT Knowledge and Skills	104	0.657	0.000	Significant

*Correlation is significant at the 0.05 level (2-tailed).

4. Conclusions and Recommendations

Based on the findings of the study, the following conclusions were drawn:

The perception of JHS and SHS teachers regarding the integration of ICT in their teaching practices. The findings indicate that respondents recognized the incorporation of Information and Communication Technology (ICT) by Junior High School (JHS) and Senior High School (SHS) teachers in the teaching and learning process, suggesting that the utilization of ICT tools and resources has substantially enhanced the educational experience. The significant effectiveness of ICT integration demonstrates that educators have successfully utilized technology to enhance instructional methods, engage learners, and foster a more engaging and dynamic educational atmosphere. This optimistic viewpoint underscores the importance of continuous support and professional development for educators to enhance their ICT competencies and understanding, hence ensuring the enduring success of ICT integration in education. The successful integration of ICT illustrates technology's capacity to significantly improve educational outcomes and foster a more inventive and engaging learning environment for junior and senior high school students.

Respondents indicated that Junior High School (JHS) and Senior High School (SHS) teachers possess a high level of proficiency and expertise in ICT knowledge, demonstrating effective utilization of information and communication technology tools in their teaching practices. This research indicates that JHS and SHS teachers possess a robust understanding of and ability to use ICT into their instructional methods, hence enhancing students' learning experiences. Teachers' perceived proficiency in ICT skills underscores their ability to utilize technology to foster engaging and dynamic learning environments, hence enhancing educational outcomes. Conversely, the perspective that JHS and SHS instructors possess ICT skills suggests that these educators demonstrate a high degree of proficiency and capability in effectively employing information and communication technology tools and resources in their instructional practices. This suggests that educators are adequately equipped to utilize technology to create engaging, dynamic, and innovative learning environments, hence enhancing student engagement, understanding, and academic achievement.

Numerous studies indicate a robust association between the attitudes, knowledge, and skills about ICT integration among JHS and SHS teachers. This association highlights the interconnection between instructors' attitudes towards technology, their proficiency in utilizing ICT tools, and their overall experience in ICT. Favorable dispositions towards ICT correlate with enhanced ICT knowledge and abilities, facilitating instructors' effective integration of technology into their lesson plans. Encouraging a favorable and enthusiastic disposition towards technology among educators can enhance ICT competencies and facilitate more effective integration of ICT in educational settings, as indicated by the established correlation between ICT attitude, knowledge, and abilities. This interwoven relationship underscores the necessity for educators to participate in continuous professional development to enhance their ICT competencies and ensure they are equipped to utilize technology to improve teaching and learning outcomes.

The following recommendations are made in the light of the findings, conclusions.

- Fostering a positive disposition towards technology among educators is essential for effective ICT integration. Educational institutions should cultivate an environment that acknowledges and promotes educators' enthusiasm for technology, as favorable dispositions correlate with enhanced ICT knowledge and proficiency. This favorable climate may facilitate more efficient utilization of ICT in educational environments.

- It is essential to provide continuous professional development programs for teachers in JHS and SHS to enhance their ICT skills and knowledge, as indicated by their stated high level of competency. Workshops, training sessions, and resources should be provided to assist educators in staying abreast of technology advancements and optimal methods for integrating ICT into their pedagogical approaches.
- The interrelation of teachers' attitudes towards ICT integration, their ICT skills, and knowledge underscores the importance of providing them with opportunities for continuous professional development.

In formulating advanced training for JHS and SHS educators, the HRD officer and school administrator will concentrate on producing Comprehensive Training Modules: Develop extensive training modules that encompass the principal features and functionalities of Microsoft Word, Excel, and PowerPoint. These courses must incorporate practical exercises and illustrative examples to enhance teachers' successful utilization of these tools. Secondly, Specialized Workshops: Conduct specialized seminars focusing on specific functionalities of Microsoft Word, Excel, and PowerPoint to enhance teachers' comprehension and proficiency in utilizing advanced capabilities such as data analysis in Excel, document formatting in Word, and multimedia presentations in PowerPoint. Third, employ interactive learning methodologies such as simulations and case studies to engage educators in real-world scenarios that necessitate the application of Microsoft Office technologies. This experiential method can assist students in retaining and applying their knowledge in practical educational settings. Fourth, promote collaboration and information exchange among educators to disseminate best practices and innovative methods for utilizing Microsoft Word, Excel, and PowerPoint in the educational process. Peer learning can foster a conducive environment for skill enhancement and ongoing advancement. Ultimately, integrate practical uses of Microsoft Word, Excel, and PowerPoint into training sessions to demonstrate their effective use in lesson preparation, data analysis, and presentation development. Providing educators with real examples can enhance their understanding and application of these technological tools in instructional settings. By implementing these measures, educational institutions can assist teachers in enhancing their ICT competencies and effectively incorporating Microsoft Word, Excel, and PowerPoint into their pedagogical practices, thereby improving the quality of education and learning experiences in Junior High School and Senior High School environments.

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