

Enhancing Senior High School Students' Research Knowledge and Skills through Coins

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Abstract: Contextualized instruction, as a teaching approach is designed to link the learning of foundational content and skills by focusing teaching and learning squarely on concrete applications in a specific context that is of interest to the students. The primary goal of this study was to determine how contextualized instruction affects the research knowledge and skills among senior high school students. An experimental research, particularly the one-group pretest and posttest design were utilized. A total of fifty (50) Grade 12 students currently enrolled in practical research subject was purposely chosen as the respondents of this study. The results revealed that there was a significant difference in the students' performance in terms of achievement test and research skills. This implies that the use of contextualized instruction is considered a potential approach for teaching research subject. Further investigation was done to determine the effect size using Cohen's D. It was found that out that use of contextualized instruction had a medium and large effect on students' achievement and research skills, respectively. Contextualized instruction can be used as strategy in enhancing research knowledge and skills of the students. Hence, it is recommended that this approach can be adapted to provide a more meaningful and engaging learning experiences in learning research subject and other areas of discipline.

Keywords: Research knowledge and skills, contextualized instruction

1. Introduction

Republic Act 10533 of the Philippines, or the Enhanced Basic Education Act of 2013 provides that the curriculum to be offered shall be contextualized and global and at the same way shall be flexible enough to enable and allow localizing, indigenizing, and enhancing the same based on their respective educational social context (DepEd, 2013). Contextualization becomes the major thrust of the Department of Education. Hence, the process of contextualizing the curriculum is therefore a must, and that contextualized learning resources should be developed so that learners can better understand and attain mastery of competencies (Perin, 2011).

Contextualization refers to the educational process of relating the curriculum to a particular setting, situation, or area of application to make the competencies relevant, meaningful and useful to the learners (Torres, 2015) as cited by Olivera (2021). As Moltz

(2010) mentioned, contextualization is a form of “deep learning” which aims to make the learning process profound, objective, and meaningful through placing the target language in a vivid and realistic situation. Contextualization is an incredible technique steering learners’ interest in exploring the content in a meaningful and relevant setting. Teachers and pupils are encouraged to participate actively and effectively in lesson sessions giving room for the acquisition of new ideas, skills, knowledge, and learning experiences and the development of self - belief and self - actualization through the power of contextualization and localization (Flores, 2020). Moreover, contextualization is a prerequisite in addressing the content and organization of activities to be undertaken in the classroom. Students’ engagement in their schoolwork increases significantly when they are taught, why they are learning the concepts and how those concepts can be used in real-world contexts (Mouraz & Leite, 2013).

Corollary to contextualization, contextualized instruction, as a diverse family of instructional strategies is designed to link the learning of foundational skills and academic or occupational content more seamlessly by focusing teaching and learning squarely on concrete applications in a specific context that is of interest to the student (Kalchik & Oertle, 2010). In contextualized instruction, the critical features of a context are considered important for the acquisition and transfer of a skill. One of the primary goals of contextualized instruction is to increase the likelihood that what is taught in the training or classroom setting will be used in future applicable settings (Reboy, 1991).

Further, contextualized instruction was proven to be an effective approach to improve learners’ success across learning areas. Rivet and Krajcik (2008) pointed out that contextualizing instruction is the utilization of particular situations or events that occur outside of science class or are of particular interest to students to motivate and guide the presentation of science ideas and concepts. These findings provide evidence to support claims of contextualizing instruction as a means to facilitate student learning, and point toward future consideration of this instructional method in broader research studies and the design of science learning environments. Similarly, Bottge (1999) investigated the effect of contextualized math instruction on the problem-solving performance. Results showed that the use of contextualized problems to enhance the problem-solving skills of students in general and remedial class. Furthermore, in the field of language learning/teaching, contextualization occurs through bridging the ideas and concepts across courses. The findings of the study compared in t-test substantiated and showed that the contextualization teaching framework had remarkably promoted the learners’ performance and enhanced the participants’ knowledge of English in grammar, vocabulary, reading comprehension and writing (Moghaddas, 2013).

Additionally, it is believed that contextualization is a promising manner in growing and adapting curricula to meet students and context, without neglecting curricula important aspects and traits, however turning them into something comprehensible (Kalchik & Oertle, 2010). Silseth and Erstad (2018) also pointed out that in this instructional method, teachers use students’ everyday experiences as tools for teaching subject matter at school. Research has documented that contextualizing instruction can support classroom learning.

In the present study, the concept of contextualized instruction is used as an approach of teaching Practical Research subject to enhance the research knowledge and skills of the senior high school students. Research skills are the abilities needed to undertake a research, including strategies and tools which can be acquired. It covers problem solving, critical thinking, analysis and dissemination. The acquisition of the skills depends on how thorough the teachers had taught the research skills in terms how the teacher let the students go about using the knowledge and skills to examine an issue, make decision, research on an idea, synthesize the research, do the presentation, and initiate a project (Meerah & Arsal, 2010).

The implementation of contextualized instruction in teaching Practical Research was the main focus of this study. Additionally, its effect on the research knowledge and skills among senior high school students was also determined.

2. Methodology

COINS or contextualized instruction is an approach in teaching practical research subject in the senior high school. Its idea is anchored on the teaching students based on their interest and context. Contextualized instruction as a teaching strategy was implemented in three (3) phases. Phase one (1) was the development of a contextualized lesson plans. Based on the chosen most essential learning competencies, two (2) lesson plans were developed for the academic track and TVL track, respectively. Content and pedagogy vary for both lesson plans as it contextualized.

Phase two (2) was the evaluation of the lesson plans. Experts in the field of humanities and social sciences (HUMSS) for academic track and tourism for TVL track were chosen as evaluators. Additionally, research teachers also served as evaluators. The criteria for the evaluation of the lesson plans were suitability of learning activities, clarity of objectives and appropriateness of assessment or evaluation.

Phase three (3) was the implementation of the lesson plans conducted during the actual learning session of the respondents. The practical research teacher, who was at the same the researcher of the present study, was the one who utilized the contextualized lesson plans.

Participants

The respondents of this study were the Grade 12 students of Iligan City National School of Fisheries for SY 2022-2023. A total of 50 respondents, of which, 15 were from the academic track (HUMSS) and 35 respondents were from the TVL track. These respondents were currently taking up practical research subject during the conduct of this research.

The present study utilized the purposive non-probability sampling technique. This technique was used since the researcher relies on the judgment to choose the participant who will be part of the study. These participants also signify their voluntary participation in this research study.

Data Collection

Prior to the implementation of the contextualized instruction through the developed contextualized lesson plans, a pretest was conducted to determine the prior knowledge of the respondents on research as well as their research skills. Two weeks after the conduct of the pretest, the implementation of the contextualized instruction as a teaching approach commenced. In a period of three (3) months, lessons were discussed using contextualized instruction. Further, posttests (achievement and research skills) were administered towards the end of the 1st semester SY 2022-2023. Additionally, the research outputs of the respondents were showcased during the Senior High School School-Based Research Congress (SHS-SBRC) 2023.

Data Analysis

The primary source of data in this study were the scores in the pretest and posttest for both teacher-made test and research skills questionnaire. Mean percentage and standard deviation, as measures of central tendency, were used to determine the level of performance of the respondents in the pretests and posttests. Further, to determine if there is a significant difference between these scores, paired t-test was utilized. Paired t-test was used since using the same participants eliminated a variation between the samples and

measured only what was being tested, and not caused any other factors. Additionally, to measure the effect size, Cohen's D was calculated.

3. Results and Discussion

Based on the data gathered in this study, the following results were drawn:

A. Performance of the Students in Achievement Test

The performance of students using the researcher made-test test for both the prior knowledge and achievement were determined and compared using the pretest and posttest scores as shown in Table 1.

Table 1. Students' Performance in Achievement Test

	Mean		Standard Deviation		Cohen's D
	Pretest	Posttest	Pretest	Posttest	
N (50)	11.4	12.9	1.95	2.25	0.712

The data presented in the table shows the performance of the students in the pretest and posttest which measures the knowledge gained by the respondents using contextualized instruction. The posttest mean score (12.9) is higher than the pretest mean score (11.4). This implies that the research knowledge of the respondents significantly increased with the use of contextualized instruction. This results agreed with the results of the study conducted by Moghaddas (2013) that contextualization teaching remarkably promoted the learners' performance and enhanced the participants' knowledge. The use of contextualized instruction significantly increased, with a medium effect size (*Cohen's D*= 0.712) on the research knowledge of the respondents.

B. Performance of the Students in terms of Research Skills

The performance of students in terms of their research skills was determined and compared using the pretest and posttest scores as shown in Table 2.

Table 2. Students' Performance in terms of Research Skills

	Mean		Standard Deviation		Cohen's D
	Pretest	Posttest	Pretest	Posttest	
N (50)	37.8	47.0	4.82	5.73	0.820

The data presented in the table shows the performance of the respondents in terms of research skills. The posttest mean score (47.0) is higher than the pretest mean score (37.8). This implies that the research skills of the respondents significantly increased, with a large effect size (*Cohen's D*= 0.820) using the contextualized instruction as an approach in teaching. This results coincide with the study of Meerah and Arsal (2010), that the acquisition of the skills depends on how thorough the teachers had taught the research skills, and how the students go about using the knowledge and skills to examine an issue, make decision, research on an idea, synthesize the research, do the presentation, and initiate a project.

To compare the performance of the respondents and its significant difference in the pretest and posttest for both achievement test and research skills questionnaire, paired t-test was utilized.

Table 3. Paired t-test Results of the Pretest and Posttest Scores

Source	Mean	df	T statistic	p-value
Achievement Test	11.3	12.9	48	3.71
Research Skills	37.8	47.0	49	5.34

The paired t-test results shows that both achievement and the research skills of the respondents had significant increase. It implies that contextualized instruction enhanced not only the research knowledge but also the research skills of the senior high school students.

4. Conclusion

The results of the present study can contribute to the body of knowledge especially on the implementation of new strategies and approaches in teaching research subject in the senior high school. The contextualized instruction is a potential approach since it does only enhance the knowledge of the students but also develop their research skills. Further, it also provided a more meaningful learning experience to senior high school students as they learn research knowledge and skills since the content is presented in their context more specifically on their interests. As a result, the research topics chosen by the respondents were contextualized based on their track, whether academic or TVL. Additionally, since their research topics were aligned with their interest, they were able to come up with satisfactory to good research outputs. The outputs were presented during the culminating activity of the practical research subject.

Declaration of competing interest

The authors declare that they have no competing interests that could have appeared to influence the work reported in this paper.

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