

## Supplementary Materials in Enhancing the Common Learning Competencies of Grade 7 Students in Computer System Servicing

**Reymund D. Celendro**

Lalig, Tiaong, Quezon, 4325

---

**ABSTRACT:** This research uses supplementary materials to enhance the common learning competencies in Computer System Servicing for Grade 7 students. The study explored the potential benefits and challenges of incorporating supplementary material into the curriculum to enhance student's understanding and mastery of the common learning competencies. The research methodology includes a review of the existing literature on supplementary material and its impact on student learning outcomes. Additionally, pretest and posttest data are collected to evaluate respondents' performance levels regarding common learning competencies in Computer System Servicing. The pretest results reveal that the students have basic knowledge and skills, with some competencies from approaching proficiency to developing proficiency. The posttest performance shows that the students achieved proficiency in most competencies, demonstrating a strong understanding and ability in computer system servicing. The significant difference in the pretest and posttest scores indicated that the supplementary material positively impacts students' performance, leading to improved knowledge and skills in computer system servicing. These findings highlight the use of supplementary materials in enhancing student learning outcomes in terms of computer system servicing for Grade 7 TLE students.

**KEYWORDS:** Common Learning Competencies, Computer System Servicing, Pre-and Post Performance, Supplementary Materials.

---

### INTRODUCTION

The Basic Education Learning Continuity Plan serves as a comprehensive framework that aims to ensure the uninterrupted provision of high-quality education, particularly during challenging circumstances. To strengthen and enhance the implementation of this plan, various strategies and measures are implemented, with one crucial element being the active engagement of learning support aides. These committed individuals play an integral role in complementing and enriching the educational process by providing valuable assistance and support to both students and teachers. Through their contributions, including the provision of supplementary materials, personalized guidance, and the fostering of a dynamic classroom environment, learning support aides actively contribute to the transformation of the teaching and learning experience. Their presence not only encourages increased motivation and participation among learners but also addresses the diverse learning needs of students, ensuring that every individual can excel academically. By reinforcing the implementation of the Basic Education Learning Continuity Plan through the involvement of learning support aides, the educational system can cultivate a more inclusive, engaging, and effective learning environment for all [1]. In order to meet the demands of the rapidly evolving digital era, it is imperative to enhance the 21st-century skills of Computer System Servicing (CSS) students and elevate their competence level to a highly proficient standard [2]. Supplementary materials, on the other hand, are additional educational resources intentionally designed to complement and enhance the existing curriculum [3]. These materials, such as supplementary readings, activities, and exercises, are tailored to align with the core content, objectives, topics, and activities of the subject being taught. The purpose of supplementary materials is to foster a vibrant classroom environment, promote increased learner motivation and participation, and facilitate a transformative teaching and learning experience [4]. Through the incorporation of these additional resources, teachers can create a more dynamic and stimulating learning environment that caters to the diverse needs of students.

### OBJECTIVES OF THE STUDY

The researcher discovered that Grade 7 learners in Computer System Servicing showed a lack of performance level. Therefore, the researcher acknowledged a desire to make supplementary material in Computer System Servicing to ensure that learners have sufficient material to enhance their performance level regardless of the emerging nature of the subject. The primary objective of the study was to evaluate the necessity for these explanatory courses and offer guidance on their development. A secondary aim was to

## Supplementary Materials in Enhancing the Common Learning Competencies of Grade 7 Students in Computer System Servicing

identify potential challenges in implementing a learning management system (LMS). Thus, the researcher prepared the study based on these.

### METHODOLOGY

#### Research Design

The one group pre-test post-test research design was used in the study under pre-experimental study. Pre-and post assessment tests were used to determine the significant difference in the performance level of Grade 7 students in terms of the common competencies in Computer System Servicing [5].

This design helped the researcher gather essential facts and data for logical presentation of concepts in Performing Computer Operations, Mensuration and Calculation; Preparing and Interpreting Technical Drawing; and Terminating and Connecting Electrical Wiring.

#### Research Procedure

The following procedures followed in conducting the study.

##### Phase I. Analysis Phase

In this phase, the researcher presented a letter to the school principal and the Junior High School Coordinator. The purpose of the letter was to obtain permission and approval to conduct the study, specifically requesting the participation of Grade 7 students. This step ensured compliance with ethical considerations and sought the necessary support from the school administration.

##### Phase II. Design Phase,

The implementation of lesson exemplars with supplementary materials in computer system servicing followed a systematic approach. The lesson exemplars were designed to align with established best practices and address the specific learning objectives of the subject. This phase aimed to create a comprehensive plan that would ensure the effectiveness of the implemented materials and enable the collection of reliable data.

##### Phase III. Development Phase

Once the design was established. The selected lesson exemplars, which incorporated the use of supplementary materials, were implemented in a classroom setting. This involved detailed lesson planning, including the definition of clear learning objectives, instructional strategies, and assessment methods. Supplementary materials, such as video lessons, were integrated into the lesson plans to enhance student engagement and facilitate effective learning experiences.

##### Phase IV. Implement Phase

During this phase, data collection tools, such as pre-test and post-test, were administered to assess the students' level of competence. Specifically, the Grade 7 Junior High School students experienced pre-and post-assessment tests to measure the impact of the supplementary materials and lesson exemplars on their learning outcomes. This phase aimed to gather valuable data that would contribute to the evaluation of the project's effectiveness.

##### Phase V. Evaluation Phase

The collected data were carefully analyzed using appropriate statistical methods. The analysis aimed to evaluate the effectiveness of the supplementary materials and lesson exemplars in enhancing learning outcomes in the field of Computer System Servicing. The findings from the analysis would provide insights into the impact of the implemented materials and serve as a basis for future improvements or similar educational initiatives.

### RESULTS AND DISCUSSION

**Table 1. Frequency Distribution of Pre-Test score of students in Computer System Servicing**

Scores	Computer Operation		Mensuration and Calculation		Technical Drawing		Electrical Wiring		Verbal Interpretation
	Pre-test		Pre-test		Pre-test		Pre-test		
	f	%	f	%	f	%	f	%	
9-10	0	0.00	0	0.00	0	0.00	0	0.00	Advanced
7-8	3	10.00	1	3.34	2	6.67	6	20.00	Proficient
5-6	13	43.33	6	20.00	7	23.33	11	36.67	Approaching Proficient
3-4	13	43.33	16	53.33	14	46.67	7	23.33	Developing
0-2	1	3.34	7	23.33	7	23.33	6	20.00	Beginning
Total	30	100	30	100	30	100	30	100	

**Legend:** 9-10 - Advanced, 7-8 – Proficient, 5-6 – Approaching Proficiency, 3-4 Developing, 0-2 – Beginning

## Supplementary Materials in Enhancing the Common Learning Competencies of Grade 7 Students in Computer System Servicing

Table 1 shows an analysis of the pre-test scores of students in Computer System Servicing across competencies. In the Computer Operation competency, the majority of students fell into the approaching proficient (43.33%) and developing (43.33%) ranges, indicating room for improvement. Similarly, in Mensuration and Calculation, a significant proportion of students were classified as developing (53.33%), with only a small percentage scoring in the proficient range (3.34%). Technical Drawing showed a need for additional practice, as a considerable number of students were in the developing range (46.67%). In Electrical Wiring, students demonstrated a mix of approaching proficient (36.67%), developing (23.33%), and beginning (20.00%) scores. These findings highlight the areas where students require further attention and support to enhance their understanding and skills in Computer System Servicing, with an emphasis on developing and approaching proficient levels in all competencies.

**Table 2. Frequency Distribution of Post-Test score of students in Computer System Servicing**

Scores	Computer Operation		Mensuration and Calculation		Technical Drawing		Electrical Wiring		Verbal Interpretation
	Post-test		Post-test		Post-test		Post-test		
	f	%	f	%	f	%	f	%	
9-10	8	26.67	6	20.00	0	0.00	3	10.00	Advanced
7-8	14	46.66	12	40.00	11	36.67	16	53.33	Proficient
5-6	8	26.67	10	33.33	15	50.00	9	30.00	Approaching Proficient
3-4	0	0.00	2	6.67	4	13.33	2	6.67	Developing
0-2	0	0.00	0	0.00	0	0.00	0	0.00	Beginning
Total	30	100	30	100	30	100	30	100	

**Legend:** 9-10 - Advanced, 7-8 – Proficient, 5-6 – Approaching Proficiency, 3-4 Developing, 0-2 – Beginning

Table 2 shows the frequency distribution of post-test scores among students in Computer System Servicing, providing insights into their performance in various competencies. The results demonstrate that the supplementary materials had a positive impact on student achievement. In the Computer Operation domain, the majority of students attained proficiency (46.66%) or demonstrated advanced skills (26.67%), indicating significant improvement. Similar progress was observed in the Mensuration and Calculation competency, with a substantial proportion of students achieving proficiency (40.00%) and approaching proficiency (33.33%). Technical Drawing also showed improvement, with a significant number of students classified as approaching proficient (50.00%) or proficient (36.67%). In Electrical Wiring, the majority of students achieved proficiency (53.33%), and a distinguished proportion approached proficiency (30.00%). The intervention resulted in significant advancements across all competencies, highlighting the usefulness of supplementary materials in enhancing students' understanding in Computer System Servicing.

**Table 3. Mean Pre-test Performance of the students in common competencies in Computer System Servicing**

Competencies	Pre-test Scores		
	Mean	SD	Interpretation
Performing Computer Operations	4.63	1.35	Approaching Proficiency
Performing Mensuration and Calculation	3.5	1.36	Developing
Preparing and Interpreting Technical Drawing	3.8	1.49	Developing
Terminating and Connecting Electrical Wiring	4.7	1.95	Approaching Proficiency
Average Mean	4.16	0.92	Approaching Proficiency

**Legend:** 8.00-10.00 - Advanced, 6.00-7.99 – Proficient, 4.00-5.99 Approaching Proficiency, 2.00-3.99 Developing, 0-1.99 – Beginning

Table 3 shows the on the pre-test performance of respondents in Computer System Servicing competencies. The average pre-test score across all competencies obtained a average mean of 4.16 and standard deviation of 0.92, placing the respondents in the verbal interpretation "approaching proficiency" category. This suggests a positive level of understanding and ability in computer system servicing. However, improvement is needed to achieve a higher level of proficiency.

Meanwhile the highest score with a mean of 4.70 and standard deviation of 1.95 with verbal interpretation of Approaching Proficiency was clearly reached by terminating and connecting electrical wiring, implying an acceptable level of learning. This implies that the learner is getting closer to achieving a higher level of competence or proficiency in a specific area. The learner has made significant progress and is nearing a more advanced stage. However, it indicates that there is still some gap between the current level of proficiency and the desired or target level. In contrast, mensuration and calculation obtained the lowest score mean of 3.50

## Supplementary Materials in Enhancing the Common Learning Competencies of Grade 7 Students in Computer System Servicing

and standard deviation of 1.36 with verbal interpretation of Developing, suggesting participants possess only a basic knowledge in this area and highlighting the need for significant improvement. This implies that the learner is actively working on acquiring and improving their skills in a particular area. It indicates that the learner is in the process of developing and expanding their knowledge, understanding, and abilities. Still, it indicates that there is ongoing growth and progress, but the learner may not yet have reached a high level of mastery or expertise.

The table further reveals that respondents possess a basic level of knowledge and skills in Computer System Servicing competencies. However, effort and focus are needed to reach a higher level of proficiency.

This result was similar with the findings of Rabacal, Geroso and Oliveros (2018) during the pre-test, the respondents initially demonstrated poor test performance in computer hardware servicing. The result corresponded with Asan's (2005) findings in his research on project-based learning in the computer classroom. The respondents' levels of competency were similar at the beginning of the study. The data reveal that the respondents may have lack of knowledge and abilities on topics included in the pre-test to obtain high scores [6].

The researcher observed that respondents demonstrated the same level of competence. A low mean score in a Computer System Servicing pre-test could be given to many different kinds of situations. A lack of prior knowledge or understanding is one reason, as the student may have had limited knowledge about the subject topic. Inadequate preparation, whether from limited study time or bad learning practices, may also contribute to lower scores. Furthermore, the difficulties of Computer System Servicing concepts and technical skills might pose challenges for some students, leading to difficulty in understanding. Fear of the test or pressure may have an additional impact on performance during the pre-test.

**Table 4. Mean Post-test Performance of the students in common competencies in Computer System Servicing**

Competencies	Posttest Scores		
	Mean	SD	Interpretation
Performing Computer Operations	7.60	1.52	Proficient
Performing Mensuration and Calculation	7.13	1.74	Proficient
Preparing and Interpreting Technical Drawing	6.00	1.20	Proficient
Terminating and Connecting Electrical Wiring	6.83	1.32	Proficient
Average Mean	6.90	0.87	Proficient

**Legend:** 8.00-10.00 - Advanced, 6.00-7.99 – Proficient, 4.00-5.99 Approaching Proficiency, 2.00-3.99 Developing, 0-1.99 – Beginning

Table 4 shows the data on posttest performance of respondents based on the competencies in Computer System Servicing. The average posttest score for all competencies has a average mean of 6.90 with a standard deviation of 0.87, indicating a "proficient" level of understanding and skills in Computer System Servicing.

In terms of Performing Computer Operations, the mean score of 7.60, with a standard deviation of 1.52, indicates a proficient level of performance. Moreover, students demonstrated understanding and skill in executing computer operations, such as utilizing software applications, managing files and folders, and navigating computer systems effectively.

Moving on to Performing Mensuration and Calculation, the mean score of 7.13, with a standard deviation of 1.74, suggests a proficient level of competence. Students shown proficiency in applying mathematical concepts and calculations relevant to computer system servicing, including measuring dimensions, performing calculations for hardware installation, and accurately assessing system requirements.

Regarding Preparing and Interpreting Technical Drawing, the mean score of 6.00, accompanied by a standard deviation of 1.20, indicates a proficient level of performance. Students shown competence in creating and comprehending technical drawings specific to computer system servicing, such as schematics, circuit diagrams, and assembly plans.

Moving on to Terminating and Connecting Electrical Wiring, the mean score of 6.83, with a standard deviation of 1.32, signifies a proficient level of proficiency. Students shows their skill in properly terminating and connecting electrical wiring in computer systems, taking into account safety protocols, identifying appropriate connections, and ensuring proper functionality.

Considering the average mean score of 6.90, with a standard deviation of 0.87, it is evident that the students have achieved an overall proficient level of performance in the common competencies related to Computer System Servicing.

The legend provided in the table aids in interpreting the scores, with scores between 6.00 and 7.99 being classified as proficient. This indicates that students have attained a compact understanding and skill level in these competencies.

Specifically, the highest mean posttest score in performing computer operations is 7.60, which falls within the verbal interpretation of "proficient" category and demonstrates a good understanding and skills in this area. However, in preparing and interpreting technical drawings, the lowest mean posttest score is 6.00 with a standard deviation of 1.20, which falls under the verbal interpretation of "proficient" category.

## Supplementary Materials in Enhancing the Common Learning Competencies of Grade 7 Students in Computer System Servicing

The table further reveals that respondents have an increase performance level from approaching proficient to proficient. The learning approach in all competencies increases when students are exposed in using digital learning materials to improvement their overall knowledge and skills in computer system servicing.

According to Wacas (2020) e-learning is more successful than traditional strategies for improving learning. With the use of e-learning the result of the post test increased from approaching proficient to proficient performance of the respondents in common competencies in computer system servicing. The results align with the study conducted by Novo-Corti, Varela-Candamio, and Ramil-Diaz (2013), which demonstrated that the implementation of a blended e-learning approach led to enhanced student performance [7].

The researcher observed that the use of supplementary materials can provide invaluable insights into why a student achieved a high mean score in a posttest for Computer System Servicing. Supplementary materials offer flexibility and convenience. This enables students to engage with the subject matter at their own pace, review content as needed, and reinforce their understanding.

Additionally, supplementary materials often incorporate interactive elements, such as quizzes, and multimedia presentations, which can enhance student engagement and retention of information. These dynamic and interactive features can make the learning experience more enjoyable and effective.

**Table 5. Test of Significant Difference in the Pre-test and Post-test Performances of the students Computer System Servicing**

Competencies	Pretest		Posttest		t	df	Sig. (2-tailed)
	Mean	SD	Mean	SD			
Performing Computer Operations	4.63	1.35	7.6	1.52	-9.847	29	0
Performing Mensuration and Calculation	3.5	1.36	7.13	1.74	-13.725	29	0
Preparing and Interpreting Technical Drawing	3.8	1.49	6	1.2	-9.104	29	0
Terminating and Connecting Electrical Wiring	4.7	1.95	6.83	1.32	-6.728	29	0
Average Mean	4.16	0.92	6.9	0.87	-16.546	29	0

**Legend:** If Sig.(2-tailed) < 0.05, then it is statistically significant.

If Sig.(2-tailed) > 0.05, then it is NOT statistically significant

Table 5 shows the test of significant difference in the pre-test and post-test performances of students in Computer System Servicing competencies. The table includes the mean and standard deviation of the pre-test and post-test scores, as well as the t-value, degrees of freedom (df), and the significance level (Sig.) for a two-tailed test.

The results indicate that there is a statistically significant difference between the pre-test and post-test performances for all competencies. The Sig. (2-tailed) values for all competencies are reported as "0.000," which is less than 0.05, indicating statistical significance. This suggests that the students' performances significantly improved from the pre-test to the post-test in all areas of Computer System Servicing.

Specifically, the students showed a significant improvement in performing computer operations, performing mensuration and calculation, preparing and interpreting technical drawing, and terminating and connecting electrical wiring. The average mean scores also demonstrated a significant increase from the pre-test (4.16) to the post-test (6.90) performances.

The results of the test of significant difference support the conclusion that there is a significant improvement in the students' performances after the supplementary materials used. The findings indicate that the students have made significant progress and achieved higher levels of proficiency in the competencies of Computer System Servicing.

The significant increase in post-test scores can be attributed to the use of supplementary materials. These materials provided enhanced learning resources, allowing students to access a wider range of information and perspectives. They reinforced the concepts covered in the regular curriculum through extra practice exercises and explanations, strengthening students' understanding. The individualized learning opportunities offered by the supplementary materials catered to different learning styles and allowed students to focus on areas where they needed additional support. Additionally, the varied instructional strategies employed, such as visuals and interactive activities, engaged students in a dynamic learning experience and facilitated better comprehension and retention of knowledge. The use of supplementary materials provided students with resources, reinforcement, individualized learning opportunities, and varied instructional strategies, leading to a significant improvement in their post-test performance.

According to Caratiquit (2022), youtube videos as supplementary materials to enhance computer troubleshooting and repair techniques for senior high school students in the Philippines provided a significant impact on the student's performance in school, especially in related to computer troubleshooting and repair techniques. The findings revealed that there was a significant difference between the pre-test and post-test scores, shown by the learners' higher mean on their post-test results compared to their pre-test [8].

## Supplementary Materials in Enhancing the Common Learning Competencies of Grade 7 Students in Computer System Servicing

The researcher observes that the respondents which used the supplementary materials scored significantly higher in the post-test. The utilization of supplementary materials in Computer System Servicing enhances the learning experience, providing interactivity, personalized feedback, flexibility, and collaboration. These factors contribute to the significant difference in mean scores in the pre-test and post-test, as students are better equipped with knowledge, skills, and understanding after engaging with supplementary resources. It can be implied that using supplementary materials is an efficient instructional strategy that helps increase students' level of achievement.

### CONCLUSION

Based on the findings of the study, the following conclusions are drawn

From the data gathered and interpreted, it was concluded that there is a significant difference on the pre-test and post-test scores of the respondent's performances in the common competencies on TLE7 Computer System Servicing described in terms of Performing Computer Operations, Performing Mensuration and Calculation, Preparing and Interpreting Technical Drawing and Terminating and Connecting Electrical Wiring. Thus, the hypothesis posited is not supported.

### RECOMMENDATION

Based on the results and conclusions of the study, the following recommendations are hereby suggested:

1. Since the study revealed the usefulness of the supplementary material, teachers can employ the supplementary material to strengthen its effectiveness for the students, as indicated by the study's findings.
2. Since the study's findings highlighting students' positive impressions in supplementary material as helpful, it is recommended that students actively engage with and explore these resources.
3. Based on the study's findings, it is advisable to recommend training and seminars on creating supplementary material to school administrators as a means to equip teachers with the necessary skills and knowledge to effectively utilize these resources, eventually enhancing learners' educational achievements.
4. The school administrators may support facilitating the reproduction of supplementary material that can contribute to enhancing the learning outcomes and competency levels of students within the school.
5. Future researchers should explore the integration of supplementary material into other subjects in Junior High School and across different grade levels to validate the study's findings and expand its applicability.

### REFERENCES

- 1) [https://www.deped.gov.ph/wp-content/uploads/2020/10/DO\\_s2020\\_032-1-1.pdf](https://www.deped.gov.ph/wp-content/uploads/2020/10/DO_s2020_032-1-1.pdf)
- 2) *21st-Century-Skills-of-Computer-System-Servicing-Students-in-One-State-Technical-Vocational-Institution-in-the-Philippines*. (n.d.). Scribd. <https://www.scribd.com/document/628597666/21st-Century-Skills-of-Computer-System-Servicing-Students-in-One-State-Technical-Vocational-Institution-in-the-Philippines>
- 3) Castillo, L. J. A. (2021). ACCEPTABILITY AND EFFECTIVENESS OF MELC-BASED SUPPLEMENTARY LEARNING MATERIALS IN PHYSICAL EDUCATION 9. *EPRA International Journal of Research & Development*, 242–253. <https://doi.org/10.36713/epra7331>
- 4) Thakur, V. K. (2015). Using Supplementary Materials in the Teaching of English: Pedagogic Scope and Applications. *English Language Teaching*, 8(12), 1. <https://doi.org/10.5539/elt.v8n12p1>
- 5) S, C. M., MA, Shek, D. T. L., & Chen, J. M. T. (2018). Changes in the Participants in a Community-Based Positive Youth Development Program in Hong Kong: Objective Outcome Evaluation Using a One-Group Pretest-Posttest Design. *Applied Research in Quality of Life*, 14(4), 961–979. <https://doi.org/10.1007/s11482-018-9632-1>
- 6) Rabacal, J. S., Geroso, M. J. S., & Oliveros, J. A. (2018). Developing students 21 century skills using project based learning. *Asia Pacific Journal of Multidisciplinary Research*, 6(2), 47-53.
- 7) Wacas, R. U. (2020). Effectiveness of E-Learning Technology on The Performance of the CSS NC II Trainees (Computer Systems Servicing) of Tesda Accredited Training Centers in TESDA-Kalinga. *International Journal of English Literature and Social Sciences (IJELS)*, 5(6).
- 8) Caratiquit, K. (2022). YouTube Videos as Supplementary Materials to Enhance Computer Troubleshooting and Repair Techniques for Senior High School Students in the Philippines. Available at SSRN 4205605.