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TITLE OF RESEARCH	Usability of the Training Courseware in Computer Systems Servicing for Skills Development: An Experimental Case study
TYPE OF RESEARCH	ACTION RESEARCH
DIVISION	**SDO-Pasig**

CONTEXT AND RATIONALE

Online learning and training courses have been widely used in industrialized countries and underdeveloped countries for the last 30 years. Approximately 5 million people in Brazil, and other countries all over the world are now pursuing formal education, corporate training, distance and online training course to gain specific knowledge and skills in a wide range of disciplines. Through intensive promotion of social inclusion of education, Brazilian Government and other countries all over the World allotted budget, adding campuses, extra classrooms, and distant teaching centers have been established, and motivated to continuous expansion according to Oliveira, et.al., (2017). Education technology investment has already surpassed $13 billion in the United States (Technology for Education Consortium, 2017). Because online learning takes place over the internet, it is common to use the technology—and as education technology evolves, e-learning is sure to develop. According to Ruiz-Palmero, J., et.al., (2020), the Small Private Online Course (SPOC) at the University of Malaga-Spain, more than 85% of the participants gave the course a positive rating across the board (objectives, content, evaluation, etc.) as well as their preference for online training. The completion percentage was 78.7%, with 70.6 percent having previously participated in online training activities. In the Philippines, DepEd offers the Learning Management System or LMS but limited use by the teachers. While SDO Pasig might introduce the Training Courseware which the researcher created.

However, COVID-19 has evolved into a global health crisis where millions of individuals were infected, with over one million deaths. To combat the spread of COVID-19, most governments have implemented quarantine protocols and have temporarily closed their educational institutions. As a result, more than a billion students were affected worldwide. In the Philippines, over 28 million Filipino students at all academic levels are among those who must remain at home to study and follow the quarantine protocols. Schools and Universities have resorted to remote online learning, which combines synchronous and asynchronous activities (Joaquin, Biana, Dacel, 2020).

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Several challenges and issues teachers and students encountered during the implementation of classes during pandemic. The first and most evident issue facing nationwide schools today is a shortage of resources, including the absence or lack of equipment, books, reference materials, and other learning tools. As a result, teachers become more imaginative and resourceful knowledge providers. The need for instructional resources more than doubled as the student continued in public school for two more years, vocally encourages 21st-century learning equipped with technology. Aside from the continuous challenges of typhoons and frequent flooding even on ordinary rainy days, the Philippines has so many vacations in comparison to other countries that it disrupts the regular and typical school calendar days. At the moment, the entire world, including the country, is combating a pandemic known as coronavirus disease 2019 (Covid-19), which has prevented regular attendance of schools – teaching, non-teaching, and students – due to the lockdown in Luzon and selected cities in other regions of the country. The agony is the what and how to provide the necessary lessons for students to learn. Teachers are encouraged to create their instructional materials and utilize the open educational resources as alternative forms in the teaching-learning process.

In response to these limits, open educational resource designers or educational technologists developed the concept of training courseware and other e-learning resources, also known as educational software. As an educational instrument, the training courseware promotes the skills or competencies of Grade 9 Computer Systems Servicing students that are consistent with the demands of the twenty-first century. It is clear that specific training courseware to teach several JHS subjects, specifically Computer Systems Servicing 9, is required. It is more appropriate to provide supplemental digital instructional material as a standard learning resource. With these concerns in mind, the researcher is motivated to create training courseware in Computer Systems Servicing CSS9 as a learning material and one modality needed for every student in the new normal of blended learning so that students do not fall behind to learn based on Most Essential Learning Competencies (MELCS) that they deserve, regardless of the scenarios they find themselves in.

Therefore, the researcher believes Training Courseware can help students who are fond of absenteeism as-well-as low and high-performing students. Students can perform the needed competencies through the training courseware at their own pace and time to develop the right skills in Computer Systems Servicing. And help the CSS9 Teachers to facilitate learning using the training courseware. It will assist a wide range of students in dealing with the Computer Systems Servicing course in whatever circumstances they are facing in times of pandemic. Also, to find out if the Training Courseware can help MHS teachers, students, and SDO Pasig as a whole.

ACTION RESEARCH QUESTIONS

The purpose of this study is to assess the educational training courseware for Computer Systems Servicing (CSS-9) students at SDO Pasig in the academic year 2022-2023 as one of the learning resource materials in the blended learning environment in the new normal education.

The following will address the concerns in the study:
1. How do CSS 9 students assess the usability of the Computer Systems Servicing Training Courseware in terms of the following:
1.1 Flexibility
1.2 High-Quality Content
1.3 Instructional Design and Learning Methodologies
1.4 Lifelong Learning
1.5 Openness?

2. How do the CSS 9 students differ in their assessments about the variables mentioned in research questions 1?

3. What are the level of difficulties/issues encountered by the participants when utilizing the training courseware in terms of the following:
3.1 Use of Multimedia
3.2 Content
3.3 Learning Pathway
3.4 Security
3.5 Assessment?

PROPOSED INNOVATION, INTERVENTION AND STRATEGY

The Computer Systems Servicing course help students acquire and hone their skills, talents, and attitudes required by the industry. It comprises fundamental and general competencies, including installing and configuring computer systems, configuring computer networks/servers, and maintaining/repairing computer systems and networks. Since, classes started during pandemic most of the teachers couldn't deliver quality education towards learners. Though there are numerous webinars attended and effort exerted by the teachers still not enough to provide quality education. In the case of TLE-Computer Systems Servicing class, the instructions should not be limited to lecture and discussion only. It should focus more on the hands-on or skills development. In this regard the researcher started customizing his lesson that will address the problem regardless if the students are working and could not attend the class. They could still complete the course anytime at their convenience through the Interactive training courseware.

Interactive training courseware will be the product of this study as a tool in the teaching-learning process. As a result, planning its design and structure, as well as its content,

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should be the focus on educational learning theories. It is possible through the use of learning theory to demonstrate the most recent technological foundation developments in education and how they are integrated into the development and evaluation of training courseware in Computer Systems Servicing 9. The multimedia theory is used to make recommendations for training courseware design. According to Bosco (2019) in his review on Multimedia Theory – Preparing for New Generation Students, it is normal for all academic settings, particularly in the government sector, to face challenges; however, there are still many opportunities multimedia offers in creating vibrant learning environments for our young people at the present. It is for this reason that every intervention or project involving the application of technology to academic activities must take into account the learners' level of comprehension.

All Grade 9 CSS students will benefit the CSS 9 Interactive Training Courseware. It is used to strengthen the teaching – learning process to develop the right skills. Specifically, it seeks to address the following objectives:

1. Help **CSS9 students** perform the needed competencies through the training courseware at their own pace and convenience.
2. Enable them to achieve the right skills or competencies in CSS9 using the training courseware.
3. Help the **CSS9 teachers** to facilitate learning with ease using the training courseware.

The CSS 9 students can participate and accomplish the online survey instrument in a short amount of time and follow the IATF protocol.

ACTION RESEARCH METHODS

A. Participants and/or other Sources of Data and Information

Purposive sampling is used to choose the participants for this study. This sample is also known as subjective, judgmental, or selective sampling. The type of participants relies on the researcher's judgment suited to the needed characteristics of the study. Purposive sampling's purpose is to concentrate on one particular feature of a population which will be most useful to make it possible for the researcher to respond to the study's questions (Bayonito, 2015).

Selected CSS9 students in Manggahan High School SDO Pasig City will be used in this study since they are the most appropriate participants to utilize the training courseware. A total of eighty (80) participants or two sections of CSS9 students from the Pasig division will make up the participants in this study. They will be purposefully selected because they meet the necessary characteristics of participants in using the training courseware.

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B. Methods

In this study the international standard questionnaire will be used from Yousof et.al (2015) in their study entitled "A Usability Evaluation of a Blended MOOC Environment: An Experimental Case Study" an International Review of Research in Open and Distributed Learning will be used to secure data on the level of difficulties encountered criteria in using the courseware. It is a combination of the checklist and Likert Method ratings. In addition, this phase shows the quantitative data acquired through an online survey to obtain results regarding the CSS9 Training Courseware evaluation. It will address the issues that may arise while using the training courseware.

The suggested responses from the questionnaire checklist are listed, and shade markings to indicate the participants' selections. A Likert scale or summating scale collection of attitude components is considered approximately equal. About the same attitude value, and to each of which participants answer with varying degrees of agreement or disagreement. To calculate an individual attitude score of each item on such a scale will be added and averaged. Five to describe the participants' assessments in this study, which used the Likert Method. Each category will be assigned a scale value response.

"An Interactive Training Courseware: A Digital Instructional Materials in Computer Systems Servicing 9 for Skills Development" basis for General Usability Evaluation;

Scale	Range	Verbal Interpretation
5	4.50 – 5.00	Strongly Agree
4	3.50 – 4.49	Agree
3	2.50 – 3.49	Moderately Agree
2	1.50 – 2.49	Disagree
1	1.00 – 1.49	Strongly Disagree

For the Level of difficulties and issues encountered;

Scale	Range	Verbal Interpretation
5	4.50 – 5.00	Very High
4	3.50 – 4.49	High
3	2.50 – 3.49	Moderate
2	1.50 – 2.49	Low
1	1.00 – 1.49	Very Low

The researcher will adhere to the ethical standard and protocol for this study. Thus, parent's/guardian's permits of the students will be collected, participation is voluntary, and all data collected will be kept with the utmost confidentiality. Orientation for the conduct of the study will be done for the participants and parents. And explain to them the importance and purpose of the study. Everything will be done with proper documentation for the presentation of facts and the output of the study.

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C. Data Analysis Plan

The study will use a quantitative approach to gather data from participants, employing the survey technique. According to Bhandari (2022), Quantitative research is the process of collecting and analyzing numerical data. It can be used to find patterns and averages, make predictions, test-causal relationships, and generalize results to larger populations.

A survey design, according to Creswell (2014), gives a quantitative or qualitative result a numerical description of a population's tendencies, attitudes, and opinions based on research of a representative sample of that population. As a result, this research will use a tried-and-true method.

The statistical treatment of data is required to make use of the data. It is a crucial part of every experimentation and research. Understanding is needed to conduct the appropriate experiments using the correct statistical treatment to obtain correct findings and conclusions from the information gathered.

The data in problem No. 1 - **How do CSS 9 students assess the usability of the Computer Systems Servicing Training Courseware in terms of the following: Flexibility, High-Quality Content, Instructional Design and Learning Methodologies, Lifelong Learning, Openness?** And The data in problem No. 2 **- What is the level of agreement regarding difficulties do curriculum experts, CSS9 teachers, and CSS9 students encounter when utilizing the training courseware in terms of the following: Use of Multimedia, Content, Learning Pathway, Quality Assurance, Assessment and Security?** – will be treated using **Average Weighted Mean**.

The **Average weighted mean** will assess the participants' usability of the Training Courseware for Computer Systems Servicing CSS9. It will calculate the participants' usability and the level of difficulties and issues encountered in using the training courseware. Each data point in a set is multiplied by a value specified by some attribute of whatever contributed to the data point in the weighted mean. Rather than each data point contributing equally to the final mean, certain data points add greater "weight (Glen, 2014).

Below is the formula of **Average weighted mean**:

$$X = \frac{\Sigma\ Xifi}{n}$$

Where:

X = mean
Xi = midpoint
fi = frequency
n = sample population
Σ = sum of

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The data in problem No. 3 – ***How do the CSS 9 students differ in their assessments about the variables mentioned in research question 1 & 2?*** - will be treated using **F-test**.

It is the most appropriate statistical tool because **F-Test** determines whether the means between two groups of data (higher than 30 population) are statistically significant (Vedantu, 2022).

F TEST

- Variance is given by the following formula:
- Formula for Variation

$$\sigma^2 = \frac{\sum (x - \bar{x})^2}{n - 1}$$

Where,
σ2 = Variance
x = Values given in a set of data
x‾ = Mean of the data
n = Total number of values.

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ACTION RESEARCH WORK PLAN AND TIMELINES

ACTIVITIES	Month 1	Month 2	Month 3	Month 4	Month 5	Month 6
1. Construction and consultation of the Action Research proposal	December 2021 – January 31, 2022					
2. Preparation, Improvement, and Evaluation of the Action Research		February 1- 27, 2022				
3. Submission of the Action Research Proposal		February 28, 2022				
4. Conduct of Research Study			May 2022			
5. Gathering of Data, Statistical Treatment, Analysis and Interpretation				June, 2022		
6. Formulation of Summary findings, Conclusions and Recommendations					July, 2022	
7. Share the research paper during the Learning Action Cell (LAC) session					August 21-29, 2022	
8. Evaluation, Consultation Preparation, Revision of the Final Draft of the Action Research					August 30, 2022	
9. Submission of Action Research for free publication in the Schools Division Office/NCR/National/ International						October 30, 2022

COST ESTIMATES

ACTIVITY	ELIGIBLE EXPENDITURES	QUANTITY	COST
1. Accessing the Training Courseware for the students.	Prepaid Load	80	PHP 4500
2. Utilizing and accessing the training courseware by the teacher	Internet Load	6 months	PHP 9,000
3. Free Food or snacks to the students who participated the online training course	Food	80	PHP 6,000
		TOTAL	PHP 19,500.00

PLANS FOR DISSEMINATION AND UTILIZATION

DISSEMINATION ACTIVITIES	Month 1	Month 2	Month 3	Month 4	Month 5	Month 6
1. Apply and integrate in MHS School Improvement Plan (SIP) for project workplan of the TLE department to strengthen and improve the teaching and learning process.	S.Y. 2021-2022					
2. Share the research paper during the Learning Action Cell (LAC) session.		August 21-29, 2022				
3. Introduce to SDO Pasig and other schools to adopt the CSS9 interactive training			August 30, 2022			

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courseware established at Manggahan High School						
4. Strengthen the use of interactive training courseware through the help of School and SDO Pasig officials, stakeholders and local government. They might allocate funds to provide internet connection and to innovate more educational tool.				S.Y. 2022-2023 And succeeding school years		
5. Leverage the findings of the study for future researchers and innovators.				Succeeding School Years		

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