**Chapter3**

### RESEARCHMETHODOLOGIES RESEARCH DESIGN

This research will utilize **a quantitative method** and will use a descriptive study to assess the effectiveness of a comprehensive video guide in enhancing basic computer system servicing and troubleshooting skills among Information and Communication Technology (ICT) learners. quantitative research involves the use of statistical tools, formulas, and tests to measure and analyze data. the descriptive study design will provide detailed insights into the current skill levels of ICT learners and measure the impact of the video guide intervention.

According to Creswell, J. W. (2014) quantitative research relies on numerical data and statistical analysis to draw conclusions about the effectiveness of interventions.

For this study aims to identify senior high school students at the Metropolitan Institute of Arts and Sciences who struggle with soft skills, specifically four selected skills. Using quantitative research, researchers will use statistical tools, calculations, and tests to gather data, enabling simple to advanced statistical analysis and relationship-based analysis.

### RESPONDENTS

The respondents in this study includes technicians, costumer service related employees, current IT students and graduates with a total of 30 people from Caloocan City. The respondents that will be involved in this research study can be composed of technicians, workers that are in the field of computer science, college students that are studying information technology, or those who have a degree of information technology.

### SAMPLING TECHNIQUES

In this method, the population is first divided into subgroups (or strata) who all share a similar characteristic. It is used when we might reasonably expect the measurement of interest to vary between the different subgroups, and we want to ensure representation from all the subgroups. For example, in a study of stroke outcomes, we may stratify the population by sex, to ensure equal representation of men and women. The study sample is then obtained by taking equal sample sizes from each stratum. **Stratified Sampling** is to offer detailed insights into difficulties faced by different skills levels, such as novices, intermediates, and advanced learners. It enhances the efficiency and engagement of ICT learners by tailoring materials to their unique learning preferences. By ranking content creation based on common problems, stratified sampling allows for effective resource allocation, leading to better comprehension and skill development in ICT troubleshooting process.

**Purposive sampling** is a useful technique for researchers who need to get detailed information from particular subjects. Although its generalisability is limited, it can offer rich and comprehensive data that is crucial for comprehending intricate events. In order to improve the fundamental computer system maintenance and troubleshooting abilities of Information and Communication Technology (ICT) students, this document describes a plan for developing an extensive video tutorial. A wide range of viewpoints and experiences will be represented in the book thanks to the use of purposive sampling techniques, which will make the information interesting and relevant to a large audience.

### RESEARCH INSTRUMENT

To evaluate the effectiveness of a comprehensive video guide developed to improve basic computer system servicing and troubleshooting skills of information and communication technology learners and because our problem with our topic is students who don't know anything about basic computer services so we will make a video presentation for other students to watch so they can know or learn basic computer services and our research instrument is questioners for students who don't know anything about basic computer services, a structured **survey questionnaire** will be used as the major research instrument.

The questionnaire will include both closed and open-ended questions organized into three essential sections: demographic information, prior knowledge and experience with computer maintenance, perceptions of the video tutorial, and self-assessment of troubleshooting skills before and after the intervention. The questions will test learners' confidence, engagement with the video material, and the practical application of learnt abilities. The research's goal in assessing the responses is to identify areas for development, measure skill enhancement and here is to help students who lack knowledge when it comes to computer services, and provide insight into the overall success of video-based learning in technical education.

### QUESTIONNAIRE INDICATORS

Table1: To determine the current level of knowledge of learners in learners regarding basic computer system servicing and troubleshooting.

|  |  |  |
| --- | --- | --- |
| Range | WeightMean | Interpretation |
| 4.20-5.0 | 5 | StronglyAgree |
| 3.40-4.19 | 4 | Agree |
| 2.60-3.39 | 3 | Neither Agree or Disagree |
| 1.80-2.59 | 2 | Disagree |
| 1.0-1.79 | 1 | Strongly Disagree |

Table2: To assess the key challenges learners face in understanding and learning about computer system servicing (CSS) and troubleshooting.

|  |  |  |
| --- | --- | --- |
| Range | WeightMean | Interpretation |
| 4.20-5.0 | 5 | StronglyAgree |
| 3.40-4.19 | 4 | Agree |
| 2.60-3.39 | 3 | Neither Agree or Disagree |
| 1.80-2.59 | 2 | Disagree |
| 1.0-1.79 | 1 | Strongly Disagree |

Table3: To identify the most common misconceptions or gaps in learners' knowledge about computer system servicing (CSS) and troubleshooting

|  |  |  |
| --- | --- | --- |
| Range | WeightMean | Interpretation |
| 4.20-5.0 | 5 | StronglyAgree |
| 3.40-4.19 | 4 | Agree |
| 2.60-3.39 | 3 | Neither Agree or Disagree |
| 1.80-2.59 | 2 | Disagree |
| 1.0-1.79 | 1 | Strongly Disagree |

Table 4: To assess how learners perceive the importance of computer system servicing (CSS) and troubleshooting skills for their academic and career development.

|  |  |  |
| --- | --- | --- |
| Range | WeightMean | Interpretation |
| 4.20-5.0 | 5 | StronglyAgree |
| 3.40-4.19 | 4 | Agree |
| 2.60-3.39 | 3 | Neither Agree or Disagree |
| 1.80-2.59 | 2 | Disagree |
| 1.0-1.79 | 1 | Strongly Disagree |

Table 5: To assess the frequency and types of resources learners use to troubleshoot computer problems.

|  |  |  |
| --- | --- | --- |
| Range | WeightMean | Interpretation |
| 4.20-5.0 | 5 | StronglyAgree |
| 3.40-4.19 | 4 | Agree |
| 2.60-3.39 | 3 | Neither Agree or Disagree |
| 1.80-2.59 | 2 | Disagree |
| 1.0-1.79 | 1 | Strongly Disagree |

Table 6: To assess how satisfied learners are with the availability of resources for learning CSS and troubleshooting.

|  |  |  |
| --- | --- | --- |
| Range | WeightMean | Interpretation |
| 4.20-5.0 | 5 | StronglyAgree |
| 3.40-4.19 | 4 | Agree |
| 2.60-3.39 | 3 | Neither Agree or Disagree |
| 1.80-2.59 | 2 | Disagree |
| 1.0-1.79 | 1 | Strongly Disagree |

Table 7: To identify the specific areas where learners struggle with CSS and troubleshooting, and to evaluate how their learning is improving with support.

|  |  |  |
| --- | --- | --- |
| Range | WeightMean | Interpretation |
| 4.20-5.0 | 5 | StronglyAgree |
| 3.40-4.19 | 4 | Agree |
| 2.60-3.39 | 3 | Neither Agree or Disagree |
| 1.80-2.59 | 2 | Disagree |
| 1.0-1.79 | 1 | Strongly Disagree |

### QUESTIONNAIRE CONSTRUCTIONS

The researchers prepared questionnaires that will be helpful to attain the following objectives:

1. To determine the current level of knowledge of learners in learners regarding basic computer system servicing and troubleshooting.
2. To assess the key challenges learners face in understanding and learning about computer system servicing (CSS) and troubleshooting.
3. To identify the most common misconceptions or gaps in learners' knowledge about computer system servicing (CSS) and troubleshooting.
4. To assess how learners perceive the importance of computer system servicing (CSS) and troubleshooting skills for their academic and career development.
5. To assess the frequency and types of resources learners use to troubleshoot computer problems.
6. To assess how satisfied learners are with the availability of resources for learning CSS and troubleshooting.
7. To identify the specific areas where learners struggle with CSS and troubleshooting, and to evaluate how their learning is improving with support.

### DATA GATHERING PROCEDURE

The panelist suggested that the researchers at the Metropolitan Institute of Arts and Sciences create a comprehensive video guide for ICT learners who lack sufficient knowledge in computer system servicing (CSS) and troubleshooting. This video guide aims to address the skill gaps in CSS and troubleshooting, providing ICT learners with essential knowledge to enhance their technical abilities.

Despite the difficulty in formulating the research approach, we created a survey questionnaire to gather data from our respective respondents. This survey was designed to cover various aspects of computer system servicing and troubleshooting, focusing on ICT learners who lack sufficient knowledge in these areas. We worked with our panelist, Mr. Jhomar Beltran, to refine the instrument and ensure its effectiveness in capturing relevant data from the target respondents. Through this process, we aim to better understand the challenges faced by ICT learners in mastering CSS and troubleshooting skills.

After collecting the data, the researchers analyzed the responses to create a comprehensive video guide that aims to improve the selected skills and enhance the overall abilities of ICT learners.

After completing the data collection phase, the information gathered by the researchers will undergo thorough analysis. This will lead to the creation of a comprehensive video guide aimed at helping ICT learners gain more knowledge in computer system servicing (CSS) and troubleshooting. The video will provide learners with essential skills and information to enhance their technical abilities in these areas.

### VALIDATION

The instrument used in this study was determined to be reliable and valid following an evaluation by a designated validator. The survey questionnaire was designed based on data collected by the researchers and incorporating input from their practical research teacher. To further validate the research instrument and papers, the researchers received assistance from their validator, Mr. Jhomar Maglente Beltran, from Metropolitan Institute of Arts and Sciences.

The validator reviewed and analyzed the data collected by the researchers to assess the accuracy of the study. This consultation aimed to identify any necessary changes or corrections to ensure the successful completion of the research. Once the validator confirms the validity and reliability of the content of the study, the questionnaire will then be distributed to IT professionals. The outcomes of this study are expected to benefit the respondents, and could serve as valuable reference material for future researchers.

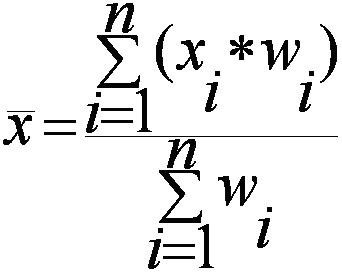
### ADMINISTRATION AND RETRIEVAL

Administering a survey questionnaire require to reaching out the respondents and giving them a survey questionnaire. Getting permission to conduct the survey is essential, particularly if it includes gathering personal data. The researchers prepared a letter to research teacher to request permission. Google Forms are provided by the researchers to fulfill data collection. Thereafter consenting to participate, the respondents will fill out the survey and return it through google forms. Following the collection of the completed questionnaires, the next step is to analyzing and interpreting the collected data to gain additional understanding.

### STATISTICALTREATMENT OF DATA

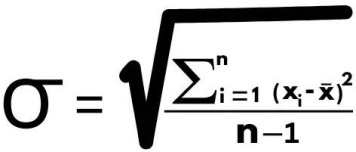
* 1. **Weighted mean** - is a statistical tool that is used to calculate the weight of responses in the assigned questionnaires for the respondents to answer that are distributed during the data gathering procedure.

Formula:



* 1. **Standard deviation-**a tool that is used to measures the extent of scattering in a set of values, typically compared to the mean value of the set.

Formula:



* 1. **Rank**-is used by statisticians to find what percentage of score with in a group are lower than a pretermitted set point score

Formula.

R=P/100 (N+1)

Where:

R=Percentile Rank

P= Percentile

N=Number of item