

## **An Evaluation of the Research Training Seminar Workshop Using Four Stages Evaluation Model**

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### **Abstract**

Research training is very important for students to develop competencies in undertaking systematic investigations. Research training programs must be designed and continuously evaluated for effectiveness. This study assesses into the effectiveness of a Research Training Seminar Workshop in terms of the Four Stages Evaluation Model, which discusses planning, implementation, output, and impact. The study sought to assess reaction and learning levels before and after the seminar, behavior change, and overall assessment of the workshop. The study used a descriptive evaluation research design and a quantitative approach. The targeted population included 347 tertiary students at a university in Central Mindanao, Philippines, who were in thesis writing during the Second Semester of Academic Year 2024-2025. A researcher-made survey questionnaire, in addition to the researcher-made pre-test and post-test were utilized. Data analysis was achieved using mean, standard deviation, and paired sample t-test to measure participants' reactions, learning improvements, and behavioral changes. Participants strongly agreed that the seminar was well-structured, met their expectations, and was relevant. A statistically significant increase in post-test scores indicated that the level of research competencies improved. Behavioral improvements have been observed, specifically on the application of research strategies learned. The recommendations for enhancing future research trainings in research seminars include adding interactive methods of learning, extending the time for training, and adding follow-up mentorship programs. Such refinements will greatly strengthen the research skills of the participants, make them more effective in engaging, and will create a sustainability culture of research in the academic institutions.

**Keywords:** Research Training Seminar Workshop, Evaluation, Four Stages Evaluation Model, Higher Education

### **Introduction**

Research training plays a crucial role in developing the competencies of students in conducting systematic investigations that contribute to knowledge generation and problem-solving. Effective research training programs are structured and continuously evaluated ensuring relevance and impact (Guskey, 2018). In assessing the effectiveness of these kinds of programs, various evaluation models may be utilized and. one of these is the Four Stages Evaluation Model which examines training effectiveness in terms of planning, implementation, output, and impact (Smith et al., 2020).

Training programs in higher education institutions significantly influence research productivity. Kirkpatrick and Kirkpatrick (2016) emphasized that evaluating training programs based on multiple levels such as participant reactions, learning outcomes, behavioral changes, and research outputs is a need for further improvement. Johnson and Brown (2019) found that structured research training seminars enhances participants' research proposal writing skills, while Lee and Park (2021) highlighted the importance of content relevance, engagement, and post-training support in sustaining learning outcomes. These researches supports the need for a comprehensive evaluation approach to research training initiatives.

The Four Stages Evaluation Model provides a structured framework for assessing the Research Training Seminar Workshop. It consists of four key phases namely the Planning, which examines objectives, design, and preparatory activities; the Implementation, which evaluates instructional delivery, facilitator effectiveness, and participant engagement; the Output, which measures immediate learning outcomes and skill acquisition; and the Impact, which assesses the long-term effects on participants' research practices and productivity (Smith et al., 2020). By employing this evaluation model, the present study aims to determine the effectiveness of the Research Training Seminar Workshop and identify areas for improvement.

This study contributes to the growing body of literature on research training effectiveness by systematically evaluating a seminar workshop designed to enhance research skills at a University in Central Mindanao, Philippines. The findings will provide valuable insights into best practices for research training programs thereby ensuring that they meet the needs of participants and promote a culture of research excellence in academic and professional settings.

### **Statement of the Problem**

In this study, the research training seminar workshop of a University in Central Mindanao will be evaluated through four stages evaluation by Donald Kirkpatrick. The following questions will be addressed at the end of the study.

1. What is the extent of the participants' reaction on the research training seminar workshop?
2. What is the level of learning among the participants before and after the research training seminar workshop?
3. How do participants change their behavior after the research training seminar workshop?
4. What is the assessment of the results of the research training seminar workshop?

### **Literature Review**

The assessment of training programs holds a vital importance in determining the overall impact caused to participants especially those associated with research training seminar workshops. There have been various models for evaluation of training programs, and one is Four Stages Evaluation Model that encompasses reaction, learning, behavior, and results (Kirkpatrick & Kirkpatrick, 2016). This model is a holistic assessment framework providing a criterion for both immediate and long-term effects of training interventions. The most important learning highlighted by research on seminar workshops is that it should get participation along with knowledge acquisition. Further analysis reveals that interactive and experiential learning designs within training workshops deliver higher results in terms of the remaining outcomes and knowledge application (Garet et al, 2001). Similarly, effectiveness of training programs is found linked to variables such as motivation of participants, competency of facilitator, and the content specificity with respect to the learners

The studies about training evaluation suggested that a multi-level assessment is needed to ensure that knowledge gained is practically applicable in real-world settings. Like Phillips and Phillips (2017), the Four Stages Evaluation Model is followed measuring reaction, knowledge retention, behavioral change, and results in professional practice of the overall input. In the context of research training, evaluation ensures that the participants sharpen important research skills and apply them effectively in their fields. Previous studies on research capacity building pointed out the fact of structured evaluation to identify gaps and improve future training initiatives (Brew & Boud, 1995). It is to say that a systematic evaluation model, such as the Four Stages Evaluation Model, will ensure that research training workshops achieve their intended goals and contribute to the professional growth of the participants.

Effectiveness can also be determined using qualitative and quantitative evaluation frameworks for seminar workshops. For Guskey (2020), the complete picture of that evaluation would include feedback from participants, direct observation, and performance assessment to measure training impact on professional development. By using a variety of data collection methods to assess research training workshops, both subjective and objective indicators of success are captured. Research indicates that a well-structured evaluation improves the effectiveness of training programs while assisting in institutional decision making and policy formation (Baldwin & Ford, 1988). This means that application of models such as the Four Stages Evaluation Model will assist organizations in refining their training strategies and enhance their professional development initiatives. Further, connections between technology and research training workshops have been studied as determinants of effectiveness as well. E learning to machine learning.

### **Methodology**

This part presents the research design, respondents, instrument, data gathering procedure, statistical treatment, and ethical considerations used by the researcher.

### **Research Design**

This study employed the descriptive evaluation research with a quantitative approach. The evaluation approach used is the Four Stages Evaluation Model of Donald Kirkpatrick.

### **Respondents**

The respondents of this study were 347 tertiary students of a University in Central Mindanao, Philippines who are in their thesis writing during the Second Semester of Academic Year 2024 – 2025.

### **Instrument**

A researcher made survey questionnaire validated by five research experts was utilized to find out the content validity of the instrument. The five-point Likert scale used were 5 – Excellent, 4 – Very Good, 3 – Good, 2 – Fair, and 1 – Needs Improvement. Using the Aiken's Content Validity Index, the content validation resulted to a value of 0.97 which says that the instrument is very valid. Aiken's Validity Index as narrated in the study of Irawan and Wiluyeng (2020) as cited in the study of Baybayan (2025) was calculated through the formula, wherein  $V =$

Validity of Aiken's Index,  $S = \frac{\text{The score awarded by the rater minus the lowest possible rating a rater can award}}{\text{The highest possible rating a rater can award} - \text{The lowest possible rating a rater can award}}$ ,  $C = \frac{\text{The highest possible rating a rater can award}}{\text{The lowest possible rating a rater can award}}$ , and  $N = \text{The number of raters rating the test questionnaire}$ . The Validity of Aiken's Index or  $V$  obtained in each item is then classified by Irawan and Wilujeng (2020) into different categories with respective decisions, namely  $0 \leq V \leq 0.4$  as Invalid,  $0.4 < V \leq 0.8$  Medium Validity, and  $0.8 < V \leq 1$  Very Valid.

### Data Gathering Procedure

A formal letter addressed to the president of one University in Central Mindanao, Philippines was sent for approval in conducting the research training seminar workshop to student researchers. After the approval, the researcher conducted the research training seminar workshop and gave the pre-test. After obtaining the pre-test answers of the respondents, the research training seminar started wherein the speaker taught the student researchers about research which includes but not limited to Research Designs, Research Approaches, Research Manuals, Statement of the Problem, Research Frameworks, Research Methodology, Research Instrument Validity and Reliability, Sampling Techniques, Probability Sampling, Non probability sampling, Data Presentation, Visuals, Analysis, Results Focus, Summary of Findings, Conclusion, Recommendation, Bibliography, and Abstract, and Kinds of Title. After the given research training seminar workshop, the researcher gave the student researchers the post test and the survey instrument which contains statements about the seminar. After all responses were gathered, the researcher tallied, computed, and analyzed the gathered data.

### Statistical Analysis

After gathering the responses from the student researchers, for the extent of the participants' reaction on the research training seminar workshop and behavior of the participants after the research training seminar workshop, the researcher computed for the mean and standard deviation and interpreted the data. The results were interpreted as follows: 3.50 – 4.00 Strongly Agree, 2.50 – 3.49 Agree, 1.50 – 2.49 Disagree, 1.00 – 1.49 Strongly Disagree. Also, it applied paired samples t-test to discover the difference between pre and post test results in learning level of the respondents involved.

### Ethical Considerations

This research emphasized the adherence to ethical standards throughout the research process; the researcher focused on the key parameters of beneficence, justice, autonomy, and transparency. The research was conducted in full consideration of the education sector through the scrutiny of the conducted research seminar as a means of benefiting the research culture in the University. Fairness, non-interference, and transparency were maintained throughout the research process. The researcher informants about the results of the study with the utmost transparency and ensured that there was proper clearance for publication. The study was also entirely free from any material incentive or sponsorship and was done solely with the researcher's funds. Other ethical steps taken to protect the school included a pledge of confidentiality and privacy. The study also guaranteed that no personal information would be made known while very strictly maintaining data secrecy. The research methodology included data collection procedures, and compliance with the University's approvals. The study focused on the research training seminar workshop. The researcher followed a structured process, obtaining necessary permissions from school authorities before conducting the study. Additionally, proper documentation was followed.

### Results and Discussion

This presents the findings of the study, analysis, and interpretations. The first part presents the Aiken's Content Validity result of the created pre and post test questions validated by five research experts. The second part presents the extent of the participants' reaction on the research training seminar workshop. The third part presents the level of learning of the participants before and after the research training seminar workshop. The fourth part presents the Behavior of the participants after the research training seminar workshop.

Table 1. *Aiken's Content Validity Result*

| Item Number                           | Aiken's Index Item Validator 1 | Aiken's Index Item Validator 2 | Aiken's Index Item Validator 3 | Aiken's Index Item Validator 4 | Aiken's Index Item Validator 5 | S1 | S2 | S3 | S4 | S5 | $\sum S$ | V    | Decision |
|---------------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|----|----|----|----|----|----------|------|----------|
| <b>I. PRE AND POST TEST QUESTIONS</b> |                                |                                |                                |                                |                                |    |    |    |    |    |          |      |          |
| A1                                    | 4                              | 4                              | 5                              | 5                              | 5                              | 3  | 3  | 4  | 4  | 4  | 18       | 0.90 | VV       |
| A2                                    | 4                              | 4                              | 5                              | 5                              | 5                              | 3  | 3  | 4  | 4  | 4  | 18       | 0.90 | VV       |
| A3                                    | 4                              | 4                              | 5                              | 5                              | 5                              | 3  | 3  | 4  | 4  | 4  | 18       | 0.90 | VV       |
| A4                                    | 5                              | 4                              | 5                              | 5                              | 5                              | 4  | 3  | 4  | 4  | 4  | 19       | 0.95 | VV       |

|                                                                                           |   |   |   |   |   |   |   |   |   |   |    |      |    |
|-------------------------------------------------------------------------------------------|---|---|---|---|---|---|---|---|---|---|----|------|----|
| A5                                                                                        | 5 | 4 | 5 | 5 | 5 | 4 | 3 | 4 | 4 | 4 | 19 | 0.95 | VV |
| A6                                                                                        | 5 | 5 | 5 | 5 | 5 | 4 | 4 | 4 | 4 | 4 | 20 | 1.00 | VV |
| A7                                                                                        | 5 | 5 | 5 | 4 | 5 | 4 | 4 | 4 | 3 | 4 | 19 | 0.95 | VV |
| A8                                                                                        | 5 | 5 | 5 | 5 | 5 | 4 | 4 | 4 | 4 | 4 | 20 | 1.00 | VV |
| A9                                                                                        | 5 | 5 | 5 | 5 | 5 | 4 | 4 | 4 | 4 | 4 | 20 | 1.00 | VV |
| A10                                                                                       | 4 | 5 | 5 | 4 | 5 | 3 | 4 | 4 | 3 | 4 | 18 | 0.90 | VV |
| A11                                                                                       | 4 | 4 | 5 | 5 | 5 | 3 | 3 | 4 | 4 | 4 | 18 | 0.90 | VV |
| A12                                                                                       | 4 | 4 | 5 | 5 | 5 | 3 | 3 | 4 | 4 | 4 | 18 | 0.90 | VV |
| A13                                                                                       | 4 | 5 | 5 | 5 | 5 | 3 | 4 | 4 | 4 | 4 | 19 | 0.95 | VV |
| A14                                                                                       | 4 | 5 | 5 | 5 | 5 | 3 | 4 | 4 | 4 | 4 | 19 | 0.95 | VV |
| A15                                                                                       | 4 | 5 | 5 | 5 | 5 | 3 | 4 | 4 | 4 | 4 | 19 | 0.95 | VV |
| A16                                                                                       | 4 | 5 | 5 | 4 | 5 | 3 | 4 | 4 | 3 | 4 | 18 | 0.90 | VV |
| A17                                                                                       | 4 | 5 | 5 | 5 | 5 | 3 | 4 | 4 | 4 | 4 | 19 | 0.95 | VV |
| A18                                                                                       | 5 | 5 | 5 | 5 | 5 | 4 | 4 | 4 | 4 | 4 | 20 | 1.00 | VV |
| A19                                                                                       | 5 | 5 | 5 | 5 | 5 | 4 | 4 | 4 | 4 | 4 | 20 | 1.00 | VV |
| A20                                                                                       | 5 | 5 | 5 | 4 | 5 | 4 | 4 | 4 | 3 | 4 | 19 | 0.95 | VV |
| A21                                                                                       | 4 | 5 | 5 | 4 | 5 | 3 | 4 | 4 | 3 | 4 | 18 | 0.90 | VV |
| A22                                                                                       | 5 | 5 | 5 | 5 | 5 | 4 | 4 | 4 | 4 | 4 | 20 | 1.00 | VV |
| A23                                                                                       | 5 | 5 | 5 | 5 | 5 | 4 | 4 | 4 | 4 | 4 | 20 | 1.00 | VV |
| A24                                                                                       | 4 | 5 | 5 | 5 | 5 | 3 | 4 | 4 | 4 | 4 | 19 | 0.95 | VV |
| A25                                                                                       | 4 | 5 | 5 | 5 | 5 | 3 | 4 | 4 | 4 | 4 | 19 | 0.95 | VV |
| A26                                                                                       | 4 | 5 | 5 | 5 | 5 | 3 | 4 | 4 | 4 | 4 | 19 | 0.95 | VV |
| A27                                                                                       | 4 | 5 | 5 | 5 | 5 | 3 | 4 | 4 | 4 | 4 | 19 | 0.95 | VV |
| A28                                                                                       | 4 | 5 | 5 | 5 | 5 | 3 | 4 | 4 | 4 | 4 | 19 | 0.95 | VV |
| A29                                                                                       | 5 | 5 | 5 | 5 | 5 | 4 | 4 | 4 | 4 | 4 | 20 | 1.00 | VV |
| A30                                                                                       | 4 | 5 | 5 | 5 | 5 | 3 | 4 | 4 | 4 | 4 | 19 | 0.95 | VV |
| A31                                                                                       | 5 | 5 | 5 | 5 | 5 | 4 | 4 | 4 | 4 | 4 | 20 | 1.00 | VV |
| A32                                                                                       | 5 | 5 | 5 | 5 | 5 | 4 | 4 | 4 | 4 | 4 | 20 | 1.00 | VV |
| A33                                                                                       | 5 | 5 | 5 | 4 | 5 | 4 | 4 | 4 | 3 | 4 | 19 | 0.95 | VV |
| A34                                                                                       | 5 | 5 | 5 | 4 | 5 | 4 | 4 | 4 | 3 | 4 | 19 | 0.95 | VV |
| A35                                                                                       | 5 | 5 | 5 | 4 | 5 | 4 | 4 | 4 | 3 | 4 | 19 | 0.95 | VV |
| A36                                                                                       | 5 | 5 | 5 | 4 | 5 | 4 | 4 | 4 | 3 | 4 | 19 | 0.95 | VV |
| A37                                                                                       | 4 | 5 | 5 | 4 | 5 | 3 | 4 | 4 | 3 | 4 | 18 | 0.90 | VV |
| A38                                                                                       | 5 | 5 | 5 | 4 | 5 | 4 | 4 | 4 | 3 | 4 | 19 | 0.95 | VV |
| A39                                                                                       | 4 | 5 | 5 | 4 | 5 | 3 | 4 | 4 | 3 | 4 | 18 | 0.90 | VV |
| A40                                                                                       | 5 | 5 | 5 | 4 | 5 | 4 | 4 | 4 | 3 | 4 | 19 | 0.95 | VV |
| A41                                                                                       | 5 | 5 | 5 | 4 | 5 | 4 | 4 | 4 | 3 | 4 | 19 | 0.95 | VV |
| A42                                                                                       | 4 | 5 | 5 | 4 | 5 | 3 | 4 | 4 | 3 | 4 | 18 | 0.90 | VV |
| A43                                                                                       | 5 | 5 | 5 | 5 | 5 | 4 | 4 | 4 | 4 | 4 | 20 | 1.00 | VV |
| A44                                                                                       | 5 | 5 | 5 | 5 | 5 | 4 | 4 | 4 | 4 | 4 | 20 | 1.00 | VV |
| A45                                                                                       | 5 | 5 | 5 | 5 | 5 | 4 | 4 | 4 | 4 | 4 | 20 | 1.00 | VV |
| A46                                                                                       | 4 | 5 | 5 | 5 | 5 | 3 | 4 | 4 | 4 | 4 | 19 | 0.95 | VV |
| A47                                                                                       | 5 | 5 | 5 | 5 | 5 | 4 | 4 | 4 | 4 | 4 | 20 | 1.00 | VV |
| A48                                                                                       | 5 | 5 | 5 | 5 | 5 | 4 | 4 | 4 | 4 | 4 | 20 | 1.00 | VV |
| A49                                                                                       | 5 | 5 | 5 | 5 | 5 | 4 | 4 | 4 | 4 | 4 | 20 | 1.00 | VV |
| A50                                                                                       | 5 | 5 | 5 | 5 | 5 | 4 | 4 | 4 | 4 | 4 | 20 | 1.00 | VV |
| A51                                                                                       | 4 | 5 | 5 | 5 | 5 | 3 | 4 | 4 | 4 | 4 | 19 | 0.95 | VV |
| A52                                                                                       | 4 | 5 | 5 | 5 | 5 | 3 | 4 | 4 | 4 | 4 | 19 | 0.95 | VV |
| A53                                                                                       | 5 | 5 | 5 | 5 | 5 | 4 | 4 | 4 | 4 | 4 | 20 | 1.00 | VV |
| A54                                                                                       | 4 | 5 | 5 | 5 | 5 | 3 | 4 | 4 | 4 | 4 | 19 | 0.95 | VV |
| A55                                                                                       | 4 | 5 | 5 | 5 | 5 | 3 | 4 | 4 | 4 | 4 | 19 | 0.95 | VV |
| A56                                                                                       | 5 | 5 | 5 | 5 | 5 | 4 | 4 | 4 | 4 | 4 | 20 | 1.00 | VV |
| A57                                                                                       | 4 | 5 | 5 | 5 | 5 | 3 | 4 | 4 | 4 | 4 | 19 | 0.95 | VV |
| A58                                                                                       | 5 | 5 | 5 | 5 | 5 | 4 | 4 | 4 | 4 | 4 | 20 | 1.00 | VV |
| A59                                                                                       | 5 | 5 | 5 | 5 | 5 | 4 | 4 | 4 | 4 | 4 | 20 | 1.00 | VV |
| A60                                                                                       | 5 | 5 | 5 | 5 | 5 | 4 | 4 | 4 | 4 | 4 | 20 | 1.00 | VV |
| A61                                                                                       | 5 | 5 | 5 | 5 | 5 | 4 | 4 | 4 | 4 | 4 | 20 | 1.00 | VV |
| A62                                                                                       | 5 | 5 | 5 | 5 | 5 | 4 | 4 | 4 | 4 | 4 | 20 | 1.00 | VV |
| A63                                                                                       | 5 | 5 | 5 | 5 | 5 | 4 | 4 | 4 | 4 | 4 | 20 | 1.00 | VV |
| A64                                                                                       | 5 | 5 | 5 | 5 | 5 | 4 | 4 | 4 | 4 | 4 | 20 | 1.00 | VV |
| A65                                                                                       | 5 | 5 | 5 | 5 | 5 | 4 | 4 | 4 | 4 | 4 | 20 | 1.00 | VV |
| <b>II. EXTENT OF THE PARTICIPANTS' REACTION ON THE RESEARCH TRAINING SEMINAR WORKSHOP</b> |   |   |   |   |   |   |   |   |   |   |    |      |    |
| B1                                                                                        | 5 | 5 | 5 | 5 | 5 | 4 | 4 | 4 | 4 | 4 | 20 | 1.00 | VV |
| B2                                                                                        | 5 | 5 | 5 | 5 | 5 | 4 | 4 | 4 | 4 | 4 | 20 | 1.00 | VV |

|                                                                                       |   |   |   |   |   |   |   |   |   |   |    |             |           |
|---------------------------------------------------------------------------------------|---|---|---|---|---|---|---|---|---|---|----|-------------|-----------|
| B3                                                                                    | 5 | 5 | 5 | 5 | 5 | 4 | 4 | 4 | 4 | 4 | 20 | 1.00        | VV        |
| B4                                                                                    | 5 | 5 | 5 | 5 | 5 | 4 | 4 | 4 | 4 | 4 | 20 | 1.00        | VV        |
| B5                                                                                    | 5 | 5 | 5 | 5 | 5 | 4 | 4 | 4 | 4 | 4 | 20 | 1.00        | VV        |
| <b>III. BEHAVIOR OF THE PARTICIPANTS AFTER THE RESEARCH TRAINING SEMINAR WORKSHOP</b> |   |   |   |   |   |   |   |   |   |   |    |             |           |
| C1                                                                                    | 5 | 5 | 5 | 5 | 5 | 4 | 4 | 4 | 4 | 4 | 20 | 1.00        | VV        |
| C2                                                                                    | 5 | 5 | 5 | 5 | 5 | 4 | 4 | 4 | 4 | 4 | 20 | 1.00        | VV        |
| C3                                                                                    | 5 | 5 | 5 | 5 | 5 | 4 | 4 | 4 | 4 | 4 | 20 | 1.00        | VV        |
| <b>Overall</b>                                                                        |   |   |   |   |   |   |   |   |   |   |    | <b>0.97</b> | <b>VV</b> |

Note: VV- Very Valid, MV – Medium Valid, IV – Invalid

Table 1 presents the validity of the instrument through Aiken's Content Validity Index. This further reveal that all of the items are very valid with an overall validity of 0.96. This further reveal that items A6, A8, A9, A18, A19, A22, A23, A29, A31, A32, A43, A44, A45, A47, A48, A49, A50, A53, A56, A58, A59, A60, A61, A62, A63, A64, A65, B1, B2, B3, B4, B5, C1, C2, and C3 got a validity of 1.00. Moreover, A4, A5, A7, A13, A14, A15, A17, A20, A24, A25, A26, A27, A28, A30, A33, A34, A35, A36, A38, A40, A41, A46, A51, A52, A54, A55, and A57 got a validity of 0.95. Finally, items A1, A2, A3, A4, A10, A11, A12, A16, A21, A37, A39, and A42 got a validity of 0.90.

Table 2. *Extent of the participants' reaction on the research training seminar workshop*

| Statement                                                                         | Mean        | SD          | Interpretation        |
|-----------------------------------------------------------------------------------|-------------|-------------|-----------------------|
| 1. The trainer/facilitator was knowledgeable and engaging throughout the seminar. | 3.95        | .285        | Strongly Agree        |
| 2. The training seminar workshop was relevant to my current research needs.       | 3.95        | .300        | Strongly Agree        |
| 3. The content presented in the seminar workshop met my expectations.             | 3.92        | .342        | Strongly Agree        |
| 4. The environment of the seminar was conducive to learning and participation.    | 3.90        | .364        | Strongly Agree        |
| 5. Overall, I was satisfied with the research training seminar workshop.          | 3.93        | .296        | Strongly Agree        |
| <b>Overall</b>                                                                    | <b>3.93</b> | <b>.317</b> | <b>Strongly Agree</b> |

Note: 3.50 – 4.00 Strongly Agree, 2.50 – 3.49 Agree, 1.50 – 2.49 Disagree, 1.00 – 1.49 Strongly Disagree

Table 2 presents the extent of the participants' reaction on the research training seminar workshop. This further reveal that most of the respondents strongly agree to the following statements with a mean of 3.93.

Moreover, statement number 1 "The trainer/facilitator was knowledgeable and engaging throughout the seminar." and 2 "The training seminar workshop was relevant to my current research needs." got the highest mean of 3.95 which is interpreted as strongly agree. This is followed by statement number 5 "Overall, I was satisfied with the research training seminar workshop." with a mean of 3.93 which is interpreted as strongly agree. These suggest that the effectiveness of the workshop largely depended on the expertise of the facilitator and the applicability of the content. This aligns with the idea that an engaging and knowledgeable trainer significantly enhances the learning experience. Furthermore, the statement regarding overall satisfaction reinforces that the seminar met the expectations of most participants.

On the other hand, statement number 4 "The environment of the seminar was conducive to learning and participation." got the lowest rated mean of 3.90 but is still interpreted as strongly agree. This is followed by statement number 3 "The content presented in the seminar workshop met my expectations." with a mean of 3.92 which is interpreted as strongly agree. This suggests that while participants generally found the seminar setting supportive, there is room for improvement in ensuring a more engaging and comfortable learning environment. Additionally, this indicates that while the participants' expectations were mostly met, there may be opportunities to enhance the depth or delivery of the seminar material to maximize its impact.

Overall, these results affirm that the seminar was effective in shaping participants' research behaviors, but future iterations could focus on optimizing the learning environment and providing opportunities for deeper engagement and discussion.

Table 3. *Difference between the pre and post test result in terms of level of learning of the respondents*

| Table 3: Difference between pre and post test result in terms of level of learning of the respondents |           |     |       |       |        |     |      |                |           |
|-------------------------------------------------------------------------------------------------------|-----------|-----|-------|-------|--------|-----|------|----------------|-----------|
| Factors                                                                                               |           | N   | Mean  | SD    | T      | df  | p    | Interpretation | Decision  |
| Level of learning                                                                                     | Pre Test  | 347 | 61.46 | 5.899 | -8.856 | 346 | .000 | Significant    | Reject Ho |
|                                                                                                       | Post Test | 347 | 64.28 | 1.669 |        |     |      |                |           |

Table 3 presents the level of learning of the participants before and after the research training seminar workshop

through Paired Samples T-Test. This further reveal that there is a significant difference in the test scores of the participants from the pre to the post test ( $t(346) = -8.856, p = .000$ ). Moreover, it showed that the post-test gained a higher mean of 64.28 than the pre-test with 61.46. This indicates that the seminar had a measurable impact on participants' learning outcomes. Furthermore, the increase in mean scores from the pre-test suggests that participants improved their understanding of the research concepts presented during the seminar. Although the improvement is statistically significant, the magnitude of the increase is relatively moderate. This may imply that while the seminar was effective, additional reinforcement activities or extended training sessions could further enhance participants' knowledge retention and application.

Overall, these findings support the conclusion that structured research training seminars contribute to participants' learning, but future iterations of the program might explore more interactive or hands-on approaches to maximize learning gains.

Table 4. *Behavior of the participants after the research training seminar workshop*

| Statement                                                                                                           | Mean        | SD          | Interpretation        |
|---------------------------------------------------------------------------------------------------------------------|-------------|-------------|-----------------------|
| 1. I was able to apply strategies or methods from the seminar to my research project                                | 3.87        | .366        | Strongly Agree        |
| 2. I was able to positively change my approach to my research project as a result of attending the seminar workshop | 3.84        | .401        | Strongly Agree        |
| 3. I was able to share the seminar workshop insights to my colleagues.                                              | 3.82        | .469        | Strongly Agree        |
| <b>Overall</b>                                                                                                      | <b>3.84</b> | <b>.412</b> | <b>Strongly Agree</b> |

Note: 3.50 – 4.00 Strongly Agree, 2.50 – 3.49 Agree, 1.50 – 2.49 Disagree, 1.00 – 1.49 Strongly Disagree

Table 4 presents the Behavior of the participants after the research training seminar workshop. This further reveal that most of the respondents strongly agree to the following statements with a mean of 3.84. This indicate that the research training seminar workshop had a positive impact on participants' behavior, as reflected in their self-reported ability to apply learned strategies, change their research approach, and share insights with others. The responses suggest a strong agreement that the seminar influenced participants' actions following the training.

Moreover, statement number 1 "I was able to apply strategies or methods from the seminar to my research project" got the highest mean of 3.87 which is interpreted as strongly agree. This is followed by statement number 2 "I was able to positively change my approach to my research project as a result of attending the seminar workshop" with a mean of 3.84 which is interpreted as strongly agree. These underscores the practical relevance of the training and suggests that the participants not only gained knowledge but were also able to translate it into their research practices implying that the seminar was instrumental in refining participants' research methodologies.

On the other hand, statement number 3 "I was able to share the seminar workshop insights to my colleagues." got the lowest rated mean of 3.82 but is still interpreted as strongly agree. This suggests that there may be barriers to knowledge-sharing among participants. These barriers could include a lack of opportunities for discussion, time constraints, or limited confidence in explaining new concepts to others. Future seminars might consider incorporating structured peer-sharing activities to encourage the dissemination of knowledge beyond the participants themselves.

Overall, the findings showed that the seminar was effective in changing the behavior of participants positively but could improve in promoting a culture of shared learning and knowledge in general.

## Conclusion

The research training seminar workshop has proven effective in improving participants' knowledge, skills, and research behavior as evidenced by their positive reactions, considerable learning gains, and changes in behavior. Participants strongly agreed that the workshop was relevant, well-facilitated, and met their expectations, although there are some minor areas to improve in the learning environment. The significant increase in post-test scores emphasizes the impact of the seminar on learning, but reinforcement activities can further heighten knowledge retention. Moreover, participants have learned to apply strategies learned in the workshop and to modify their research methodologies, but sharing their knowledge with peers was somewhat limited.

## Recommendation

The recommendation, if implemented, is likely to impact the seminars in a positive way since it proposes to enhance the understanding of future research training through increased interactive learning methods like hands-on exercises and longer training. Enhanced seminar settings by providing for collaborative discussion and peer-sharing activities could potentially increase engagement and participation. Also, follow-up sessions or

mentorship could be established to enhance long-term application and dissemination of knowledge. With these modifications, participants' research competencies and professional growth will be the topic of the seminar's greatest impact.

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