**Malaysian Journal of Social Sciences and Humanities (MJSSH) (e-ISSN : 2504-8562)**
**2023, Volume 8, Issue 8, e002430**
**DOI:** https://doi.org/10.47405/mjssh.v8i8.2430

# Research Methodology Mastery for Conducting an Islamic Studies Undergraduate Final-Year Project at UiTM Shah Alam

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**KEYWORDS:**
Research methodology
Islamic studies
Undergraduate
Final year project

**CITATION:**
Mohd Amzari Tumiran, Nasharuddin Mohammad, & Abd Shukor Mohd Ali. (2023). Research Methodology Mastery for Conducting an Islamic Studies Undergraduate Final-Year Project at UiTM Shah Alam. *Malaysian Journal of Social Sciences and Humanities (MJSSH), 8*(8), e002430. https://doi.org/10.47405/mjssh.v8i8.2430

## ABSTRACT

The acquisition of research methodology is a crucial competency typically attained by seasoned scholars in academia. However, it is necessary to assess the level of research methodology proficiency among undergraduate students to adequately prepare them for the completion of their final year project, which is a mandatory component for graduation. This study aimed to examine the mastery level of research methodology in preparation for conducting an undergraduate final-year project. The study included a sample of respondents ($n$=228) who were final-year students in Islamic studies at UiTM Shah Alam. An online questionnaire was employed as a tool for data collection, while IBM SPSS Statistics was used for data analysis. The data underwent analysis using descriptive statistics and the Friedman test. The descriptive statistics indicates "information management" (Good: 53.9 percent, Excellent: 32 percent) as the highest frequency of mastery level compared to "instrumentation procedure", and "sampling technique" mastery level. The Friedman test indicates a significant difference in "information management" (mean rank: 2.56) which is better than "sampling technique" (mean rank: 1.66) and "instrumentation procedure" (mean rank: 1.77) with $\chi^2(2)137.1$, $\rho<.05$. This study suggests that there is a need for improvement in the aspects of research methodology, specifically in "sampling techniques" and "instrumentation procedures", particularly among undergraduate students in the field of Islamic studies. This study proposes the implementation of effective pedagogical strategies and a comprehensive curriculum to enhance proficiency in research methodology for future academic pursuits.

**Contribution/Originality:** This study is one of very few that have investigated the research methodology mastery level for conducting an Islamic studies undergraduate

final-year project. This study contributed to the identification of the improvable aspects of research methodology mastery among Islamic studies undergraduate students as a preparation for conducting a final-year project.

## 1. Introduction

Research methodology encompass a comprehensive range of techniques and methodologies employed in the execution of research endeavours, whereas research methodology pertains to the systematic approach employed to effectively address research challenges (Mishra & Alok, 2022). The discipline pertains to the systematic examination of the methodologies employed in conducting research. In this domain, the researcher elucidates the various steps typically undertaken to investigate a research problem. Therefore, the methodology refers to the scientific approach used in conducting research (Sutrisna, 2009).

The acquisition of research methodology is a crucial competency typically attained by seasoned scholars in academia. The mastery of various aspects of research methodology is essential for the successful execution of high-quality research. Research methodology refers to a systematic approach employed to address a research problem by employing diverse data collection techniques, interpreting the gathered data, and deriving conclusions based on the research findings (Asenahabi, 2019). Information search, sampling techniques, and instrumentation for data collection and analysis are the necessary components of research methodology to be mastered (Sileyew, 2020). Research methodology is widely regarded as an obligatory academic discipline within the realm of higher education, necessitating the acquisition and practical application of its principles in the context of scholarly investigation.

However, it is necessary to assess the level of research methodology proficiency among undergraduate students to adequately prepare them for the completion of their final year project, which is a mandatory component for graduation. A Final-Year Project (FYP) refers to an individual project or academic undertaking that is mandatory for every undergraduate student to fulfil the requirements for graduation (Shaw et al., 2013). The primary objective of a Final-Year Project is to highlight the proficiency and expertise that students have acquired throughout their academic pursuits. Typically, undergraduate students possess limited experience or are unfamiliar with the process of engaging in scholarly research. Research methodology is exclusively taught during the final semester preceding the implementation of the final year project. It is imperative to investigate the extent of undergraduate students' proficiency in research methodology to ascertain their ability to effectively undertake final-year projects.

This study aimed to examine the mastery level of research methodology in preparation for conducting an undergraduate final-year project. The discovery is anticipated to aid in the determination of the proficiency level in research methodology among students in their final year. It is imperative to undertake subsequent measures to effectively mitigate any deficiencies in the acquisition of this skill. The results of this study are anticipated to serve as valuable input for any future revisions to curricula pertaining to research methodology.)

## 2. Literature Review

Several recent studies have been identified to gain a comprehensive understanding of the existing research gap. The studies have been conducted on undergraduate students in different countries. Roder and Pelzom (2022), Pop et al. (2022), Hanimoğlu (2019), Alghamdi and Deraney (2018), conducted studies in Bhutan, Romania, Turkiye, and Saudi Arabia, respectively. Furthermore, these literatures have undergone a rigorous review process, leading to the identification of a gap in the existing research.

The study conducted by Roder and Pelzom (2022) focused on investigating the characteristics and experiences of undergraduate students in Bhutan. The results of the study indicate that the involvement in final-year research has a beneficial effect on the cultivation of independent learning abilities among students. During the culmination of the academic year, a considerable proportion of students underwent a discernible transformation in their attitudes towards ownership, self-confidence, and independence. A notable proportion of students conveyed that their prior educational experiences equipped them with a certain degree of preparedness to undertake the project. However, a substantial subset also encountered challenges in effectively employing their understanding of research methodologies. Both faculty members and students often encounter difficulties in effectively managing their time and managing their workload (Roder & Pelzom, 2022).

In a recent study conducted by Pop et al. (2022), the focus of investigation was medical undergraduates in Romania. The findings indicate that a considerable proportion of third- and fifth-year students demonstrated a keen interest and readiness to participate in research endeavours throughout their medical education, as evidenced by more than 60 percent of respondents expressing such inclination. Additionally, it was noted that most of the participants, specifically over two-thirds, demonstrated a keen inclination towards engaging in research endeavours subsequent to the culmination of their medical education. According to the data, a notable proportion of third-year students (6 percent) and fifth-year students (31 percent) have reported their involvement in the preparation of a scientific presentation for a medical congress, indicating their participation in this activity at least once. Around 9 percent of third-year students were actively involved in the collaborative authorship of a scientific article and actively participated in research endeavours. Among the group of students in their fifth year, a quarter of them participated in the process of authoring scientific papers, whereas 21 percent actively participated in research activities (Pop et al., 2022).

During the intermission, Hanimoğlu (2019) conducted a study on undergraduate students who pursued postgraduate education at Cukurova University in Turkiye. The research findings indicate an emerging pattern among graduates wherein they are increasingly inclined to pursue additional education, despite their limited comprehension of diverse areas of specialisation and the potential stress and psychological difficulties that may arise from engaging in postgraduate studies. The oversight of undergraduate students is of paramount importance in cultivating their awareness of the significance of pursuing higher education and equipping them with the essential abilities to effectively tackle potential obstacles. The findings of the study indicate that undergraduate students may have a limited comprehension of postgraduate education. Furthermore, the efficacy of the supervisory programme implemented at the university is questionable in terms of adequately equipping students to navigate the psychosocial challenges that frequently accompany their educational advancement (Hanimoğlu, 2019).

Prior to the aforementioned study, Alghamdi and Deraney (2018) conducted research on undergraduate students in Saudi Arabia. They have examined the effectiveness of active learning by conducting a quantitative analysis of the combined scores from the final examinations, as well as the individual writing and research skills of the two groups. The study's results indicated that the incorporation of active learning strategies yielded significant positive effects on the participants' overall competencies. The results were demonstrated through noteworthy enhancements in their final examination scores, as well as their individual aptitude in writing and research. This research investigates the skills that have demonstrated the most significant and least significant enhancements, as well as the pedagogical factors involved in teaching a writing and research course using active learning strategies (Alghamdi & Deraney, 2018).

The aforementioned studies conducted by Roder and Pelzom (2022), Pop et al. (2022), Hanimoğlu (2019), Alghamdi and Deraney (2018), a research gap in the field of population studies have collectively identified. Research on the mastery level of research methodology in Malaysia is relatively scarce. The investigation of this matter is anticipated to be concentrated within a restricted population that offers research methodology as an officially recognised academic course, particularly within the realm of higher education. While this emergence is present in nearly all institutions of higher education, the course of study is limited to senior undergraduate students, in addition to postgraduate students.

## 3. Methodology

This section provides a comprehensive overview of the sampling, questionnaire development and alpha Cronbach reliability test statistics of the questionnaire.

### 3.1. Sampling

Table 1 shows the sampling of respondents ($n$=228) who were final-year students in Islamic studies at UiTM Shah Alam. An online questionnaire was employed as a tool for data collection, while IBM SPSS Statistics was used for data analysis. The data underwent analysis using descriptive statistics and the Friedman test.

Table 1: Sampling of Respondents

| | Frequency | Percentage |
|---|---|---|
| Male students | 66 | 28.9 |
| Female students | 162 | 71.1 |
| Total | 228 | 100 |

### 3.2. Questionnaire Development

The questionnaire employs a Likert scale consisting of five levels to assess the respondent's level of mastery in research methodology. (a) 1: Poor; (b) 2: Fair; (c) 3: Average; (d) 4: Good; and (d) 5: Excellent. The items have been categorised into three primary themes, namely: (a) information management, (b) instrumentation procedure, and (c) sampling technique. Table 2 shows the content development of the questionnaire, in which the formulation of each statement in the questionnaire was derived from the corresponding items:

Table 2: The Content Development of the Questionnaire

| Theme | Item | Mastery Aspects |
|---|---|---|
| Information Management | Search Engine (Brickley et al., 2019) | Utilise a search engine to conduct targeted information retrieval. |
| | Publication Types (Kulczycki et al., 2018) | Discern and differentiate between diverse types of publications. |
| | Reference Styles (Pandey et al., 2020) | Examine the distinctions between various reference styles. |
| Instrumentation Procedure | Data Analysis (Bergin, 2018) | Select the suitable methods of data analysis for both quantitative and qualitative research designs. |
| | Data Collection (Mazhar et al., 2021) | Design and implement a suitable tool for the purpose of gathering data. |
| | Survey and Interview (Phellas et al., 2012) | Elucidate the distinctions between instrumentation in survey and interview methodologies. |
| Sampling Technique | Population and Sample (Majid, 2018) | Comprehend the distinction between the concepts of population and sample. |
| | Sampling Randomization (Etikan & Bala, 2017) | Differentiate between random and non-random sampling methods for a given population. |
| | Sampling Criteria (Patino & Ferreira, 2018) | Develop the criteria for inclusion and exclusion of samples within the targeted population. |

### 3.3. Alpha Cronbach Reliability Test Statistics of the Questionnaire

Table 3 shows the reliability test item-total statistics from the pilot study. The present study conducted an analysis of the Alpha Cronbach reliability test statistics for the questionnaire utilised in the research. The results of the Alpha Cronbach reliability test for the questionnaire demonstrate a prominent level of acceptability, as indicated by Cronbach's alpha value of 0.886. All the items in the reliability test item-total statistics exhibit values lower than the alpha threshold when removed. Hence, it can be concluded that all the items included in the questionnaire possess a prominent level of reliability, making them suitable for use in conducting an actual survey.

Table 3: Reliability Test

| | | Scale Mean if Item Deleted | Scale Variance if Item Deleted | Corrected Item-Total Correlation | Cronbach's Alpha if Item Deleted |
|---|---|---|---|---|---|
| (a) | Search Engine | 27.71 | 24.629 | .502 | .884 |
| | Publication Types | 28.06 | 24.759 | .530 | .881 |
| | Reference Styles | 27.74 | 25.217 | .493 | .884 |
| (b) | Data Analysis | 28.41 | 22.860 | .719 | .866 |
| | Data Collection | 28.25 | 22.842 | .727 | .866 |
| | Survey and Interview | 28.32 | 22.622 | .764 | .862 |
| (c) | Population and Sample | 28.16 | 22.592 | .666 | .871 |
| | Sampling Randomization | 28.32 | 22.580 | .704 | .867 |
| | Sampling Criteria | 28.79 | 23.259 | .618 | .875 |

## 4. Results

### 4.1. Descriptive Statistics

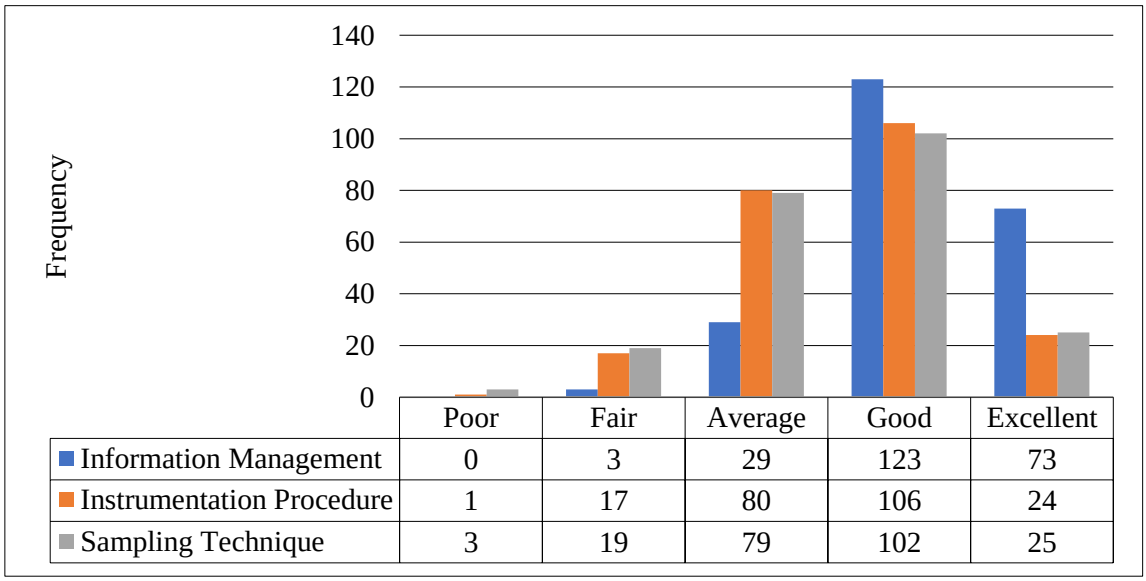
Table 4 and Figure 1 show the frequency and percentage of research methodology mastery level based-on theme.

Table 4: Frequency and Percentage of Research Methodology Mastery Level Based-on Theme (*n*=228)

| | Frequency (Percentage) | | | | |
|---|---|---|---|---|---|
| | **Poor** | **Fair** | **Average** | **Good** | **Excellent** |
| Information Management | - | 3 (1.3) | 29 (12.7) | 123 (53.9) | 73 (32.0) |
| Instrumentation Procedures | 1 (0.4) | 17 (7.5) | 80 (35.1) | 106 (46.5) | 24 (10.5) |
| Sampling Techniques | 3 (1.3) | 19 (8.3) | 79 (34.6) | 102 (44.7) | 25 (11.0) |

The descriptive statistics indicates "information management" (Good: 53.9 percent, Excellent: 32 percent) as the highest frequency of mastery level compared to "instrumentation procedure", and "sampling technique" mastery level. In particular, the respondents exhibit a notable proficiency in the skill of "examine the distinctions between various reference style", with a subsequent aptitude in "utilise a search engine to conduct targeted information retrieval."

Figure 1: Frequency of Research Methodology Mastery Level Based-on Theme (*n*=228)

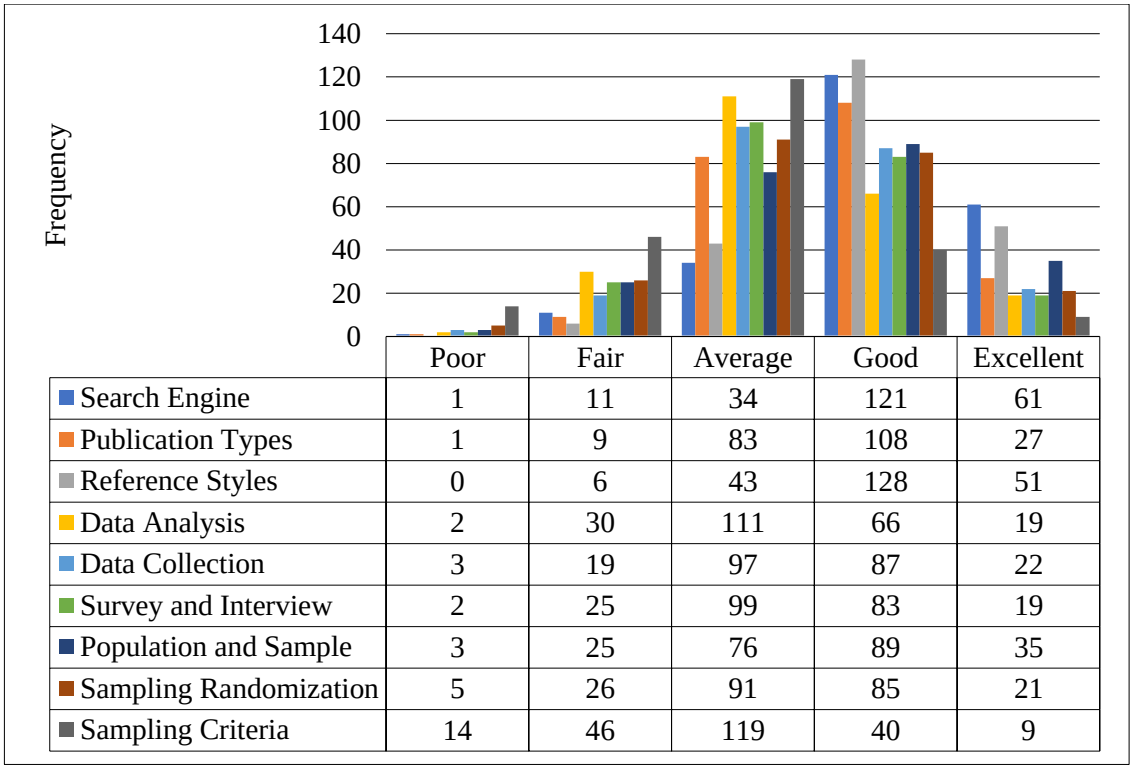



In particular, the frequency and percentage of research methodology mastery level based-on item are shown in Table 5 and Figure 2.

Table 5: Frequency and Percentage of Research Methodology Mastery Level Based on Item ($n$=228)

| | Frequency (Percentage) | | | | |
|---|---|---|---|---|---|
| | **Poor** | **Fair** | **Average** | **Good** | **Excellent** |
| Search Engine | 1 (.4) | 11 (4.8) | 34 (14.9) | 121 (53.1) | 61 (26.8) |
| Publication Types | 1 (.4) | 9 (3.9) | 83 (36.4) | 108 (47.4) | 27 (11.8) |
| Reference Styles | 0 (0) | 6 (2.6) | 43 (18.9) | 128 (56.1) | 51 (22.4) |
| Data Analysis | 2 (.9) | 30 (13.2) | 111 (48.7) | 66 (28.9) | 19 (8.3) |
| Data Collection | 3 (1.3) | 19 (8.3) | 97 (42.5) | 87 (38.2) | 22 (9.6) |
| Survey and Interview | 2 (.9) | 25 (11.0) | 99 (43.4) | 83 (36.4) | 19 (8.3) |
| Population and Sample | 3 (1.3) | 25 (11.0) | 76 (33.3) | 89 (39.0) | 35 (15.4) |
| Sampling Randomization | 5 (2.2) | 26 (11.4) | 91 (39.9) | 85 (37.3) | 21 (9.2) |
| Sampling Criteria | 14 (6.1) | 46 (20.2) | 119 (52.2) | 40 (17.5) | 9 (3.9) |

Figure 2: Descriptive Statistics on Research Methodology Mastery Level




| | Poor | Fair | Average | Good | Excellent |
|---|---|---|---|---|---|
| Search Engine | 1 | 11 | 34 | 121 | 61 |
| Publication Types | 1 | 9 | 83 | 108 | 27 |
| Reference Styles | 0 | 6 | 43 | 128 | 51 |
| Data Analysis | 2 | 30 | 111 | 66 | 19 |
| Data Collection | 3 | 19 | 97 | 87 | 22 |
| Survey and Interview | 2 | 25 | 99 | 83 | 19 |
| Population and Sample | 3 | 25 | 76 | 89 | 35 |
| Sampling Randomization | 5 | 26 | 91 | 85 | 21 |
| Sampling Criteria | 14 | 46 | 119 | 40 | 9 |

## 4.2. The Friedman Test

Table 6 shows the Friedman test between themes of research methodology mastery level. The Friedman test was conducted to compare the three main themes of the questionnaire. The Friedman test indicates a significant difference in "information management" (mean rank: 2.56) which is better than "sampling technique" (mean rank: 1.66) and "instrumentation procedure" (mean rank: 1.77) with $\chi^2(2)137.1$, $\rho<.05$.

Based on the analysis, "information management" has the highest mastery level of the research methodology theme, while "instrumentation procedures" and "sampling techniques" have the less mastery level among the Islamic studies undergraduates

students. This analysis concludes that "instrumentation procedures" and "sampling techniques" are the crucial aspects that have to be improved.

Table 6: Friedman Test between Themes of Research Methodology Mastery Level (*n*=228)

| | Themes | Results |
|---|---|---|
| Ranks | Information Management | 2.56 |
| | Instrumentation Procedure | 1.77 |
| | Sampling Technique | 1.66 |
| Test Statistics | N | 228 |
| | Chi-Square | 137.127 |
| | df | 2 |
| | Asymp. Sig. | .000 |

## 5. Discussion

This study posits that undergraduate students demonstrate an important level of proficiency in the skill of "information management" as they approach the culmination of their final year project. Moreover, some studies exhibited apparent consistency with the aforementioned finding. It is widely believed that achieving an important level of mastery in the field of "information management" has a positive influence on the ability to sustain research capability, exhibit good research management practises, increase the likelihood of pursuing postgraduate research, and enhance critical thinking skills.

In a study conducted by Santoro et al. (2018), it was found that the implementation of a knowledge management system can enhance the establishment of open and collaborative ecosystems. This system enables organisations to effectively utilise both internal and external knowledge resources, thereby fostering the development of internal knowledge management capabilities. Consequently, this enhanced capacity for knowledge management contributes to an increased ability to innovate (Santoro et al., 2018).

Furthermore, the research conducted by Al-Mamary (2022) revealed that the student's behavioural intentions towards utilising learning management platforms are significantly influenced by their anticipated effort and social influence. Furthermore, it has been observed that the behavioural intentions and facilitating conditions of students exert a substantial and noteworthy impact on the usage behaviour of university students (Al-Mamary, 2022).

The study conducted by Wilson et al. (2018) provides evidence that undergraduate students exhibit a higher propensity to pursue a doctoral programme and achieve a greater number of esteemed outcomes, such as presentations, publications, and awards, in comparison to applicants. The finding is posited that crucial elements of the programme encompass financial support for personal and professional requirements, availability of a wide range of intellectual, analytical, and field resources, and the existence of a community of undergraduate researchers who provide mutual assistance and engage in the exchange of objectives and interests (Wilson et al., 2018).

Permana et al. (2019) conducted a study in which they identified three variables, namely mastering concepts, academic ability, and analytical skill, that significantly contribute to the development of student's critical thinking skills. The student's ability to analyse information significantly influences the development of their critical thinking abilities. Hence, the findings of this study may serve as a fundamental resource for the development

of instructional strategies that foster the enhancement of students' critical thinking abilities, specifically by tailoring the curriculum to incorporate problem-based learning methodologies that align with their skill levels (Permana et al., 2019).

The discourse suggests that a strong proficiency in "information management" among undergraduate students can offer a thorough foundation and effective knowledge dissemination to support their final-year projects. In addition to possessing management skills, it is imperative to also possess soft skills when undertaking a project to advance research opportunities at the postgraduate level. Factors such as high self-esteem, motivation, internal beliefs, and external support are influential in facilitating the development of advanced proficiency in research methodology.

## 6. Conclusion

This study suggests that there is a need for improvement in the aspects of research methodology, specifically in "sampling techniques" and "instrumentation procedures," particularly among undergraduate students in the field of Islamic studies. The students may encounter challenges in obtaining more precise results and estimating sampling errors if they do not possess a thorough understanding of the sampling technique. One significant drawback is the necessity for individuals to allocate additional time and financial resources to overcome the challenges posed by the entire population (Berndt, 2020). The inadequate implementation of the instrumentation procedure may result in the utilisation of unsuitable instruments during the process of data collection and analysis. This course of action will result in an increased expenditure of time and resources for data collection and analysis.

This study proposes the implementation of effective pedagogical strategies and a comprehensive curriculum to enhance proficiency in research methodology for future academic pursuits (Nind & Lewthwaite, 2018). Several factors need to be considered when evaluating an academic setting, including the content being taught, the pedagogical approaches employed, the competence and expertise of the instructors, and the level of critical thinking exhibited by the students. It is imperative to cultivate and formulate a harmonious integration of these various elements to enhance proficiency in research methodology, thereby facilitating the successful completion of an undergraduate final project.

## Ethics Approval and Consent to Participate

The researchers adhere to the research ethics guidelines established by the Research Ethics Committee of Universiti Teknologi MARA (RECUiTM). All procedures performed in this study involving human participants were conducted in accordance with the ethical standards of the institutional research committee.

## Acknowledgement

The authors wish to express gratitude to the Academy of Contemporary Islamic Studies, Universiti Teknologi MARA Shah Alam, Selangor for technical support.

**Funding**

No funding.

**Conflict of Interest**

The authors reported no conflicts of interest for this work and declare that there is no potential conflict of interest with respect to the research, authorship, or publication of this article.

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