**RESEARCH PROPOSAL**

**The Impact of Modern Technology on Student Learning Experiences in Higher Education**

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# **Project Title**

The Impact of Modern Technology on Student Learning Experiences in Higher Education.

# **Significance/Contribution to the discipline/Research Problem**

The utilisation of modern technology has been observed to have a positive effect on higher education on a broader scale, as it has led to an increase in the availability of learning opportunities, the provision of equal educational opportunities to all, and the promotion of lifelong learning (Sanchez & Aleman, 2001)(UNESCO, 2021).

This study delves into the implications of modern technology on the student learning experience within higher education institutions. It will provide comprehensive information on the following topics: educational improvement; student involvement and motivation; decision-making; problem-solving; student-centred approaches; and future-oriented preparation.

Furthermore, the study will contribute to the body of scholarly knowledge by consolidating different perspectives and research findings; and serve as a foundation for future research into the incorporation of modern technology in higher education institutions. Ultimately, its importance lies in its ability to inform educational strategies; inform policy decisions; enhance student experiences; and provide valuable insight into existing and future research efforts.

Modern educational technologies have demonstrated their potential to be beneficial in the classroom and in the classroom experience. To ensure the success of modern technology-based education, it is essential to have digital literacy and to have the necessary institutional infrastructure in place to facilitate the transition from the traditional learning spaces to technology-enabled learning platforms (Okoye et al., 2023).

# **Aims and Objectives**

This study seeks to gain a comprehensive understanding of the complexities and advantages of incorporating modern technology into higher education institutions, as well as its influence on student learning experiences. Additionally, it is intended to provide practical advice and guidance to decision-makers and higher education institutions to maximise the efficacy of technology integration within higher education institutions.

Key objectives of the study include:

* To assess the current level of technology integration within higher education institutions.
* To explore the various types of technologies employed and their role in classroom instruction, as well as the impact of modern technology on student involvement and motivation.
* To explore the factors that can contribute to or detract from student participation when incorporating modern technology into the educational system.
* To identify the challenges that students face when using modern technology for educational purposes, such as accessibility, digital illiteracy, and technological obstacles.
* To provide recommendations and guidance for educators and educational institutions to improve student learning experiences through the integration of modern technology.

# **Research Questions**

The research questions for the study are as follows:

* How does modern technology in higher education influence student engagement, motivation, and academic performance?
* What strategies and teaching methods are most effective in incorporating modern technologies such as gamification, simulation, and online learning platforms into higher education?
* What are the student perceptions and attitudes towards the integration of modern technology in their learning experiences?
* What are the challenges faced by students and their learning experiences pertaining to the incorporation of modern technology?

# **Methodology / Development Strategy**

For the purpose of this study, a mixed methods design (Creswell, 1999) will be used. A mixed methods design is a process of collecting, analysing, and combining or ‘mixing’ at some point of the research process both quantitative data and qualitative data within a single study to gain a more complete understanding of a research problem (Creswell, 1999).

The reason for mixing is that quantitative and qualitative methods alone are not enough to understand the trends and details of the situation effectively. For example, a complex question such as how modern technology in higher education institutions affects student engagement, motivation, and academic performance. When combined, the quantitative and qualitative methods are complementary and allow for a more comprehensive analysis Dawadi, 2021).

By combining qualitative and quantitative data, one can gain a comprehensive, contextualised understanding of the data, while the other can provide a more general, externally valid insight. The advantages of the former are often outweighed by the disadvantages of the latter (George, 2023). For example, solely quantitative studies will most likely struggle to incorporate the learning experiences of the students, so adding qualitative data deepens and enriches the quantitative results. In contrast, solely qualitative studies are often not very generalisable, only reflecting the learning experiences of the students, so adding quantitative data can validate the qualitative findings

According to Schoonenboom & Johnson (2017), Mixed method research designs can be divided into four main categories: triangulation, embedded, explanatory, and exploratory. In this study, we will use the explanatory model, which involves the collection of quantitative data first, followed by the collection of qualitative data. This approach was developed to gain a more comprehensive understanding of the study by combining the quantitative data with the qualitative data, thus providing a better understanding and explanation.

Schoonenboom & Johnson (2017), states that the explanatory design, also referred to as sequential design, is a combination of two-staged mixed methods. Initially, quantitative data is collected and analysed, followed by qualitative data. During the explanatory design, the researcher identifies specific quantitative findings that require further explanation.

In order to examine the quantitative data in greater detail, qualitative information will be collected from participants that could be used to elucidate the findings. In this study, the primary emphasis will be placed on the quantitative data. The explanatory design is widely recognized as the simplest of the mixed methodology designs. The advantages of an explanatory research design structure, which is characterised by its two-stage implementation:

* This structure allows for the researcher to apply the two methods in a separate stage, while simultaneously collecting a single data type at a time.
* The final report is presented in two distinct stages, allowing the reader to gain a comprehensive understanding of the findings.

This study is based on perceptions from student participants, it therefore draws on a variety of mixed-method design studies, such as Guillot's (2003). Guillot's (2003) design was used to measure the perceptions of both teachers and students in higher education when it comes to online instructional methodology. In addition, the mixed-method design study by Almekhlafi & Almeqdadi (2010) was used to explore the perception of teachers in the United Arab Emirates school classroom when it comes to technology integration. All of these studies were conducted with the aim of obtaining valid and reliable data.

The research design of the study is outlined in Figure 5.1. This study will employ a mixed-method approach, utilising a questionnaire and an interview as research instruments to generate quantitative and qualitative data. The questionnaire data will be analysed using descriptive statistics, while the interview results will be coded and analysed to corroborate the questionnaire results.

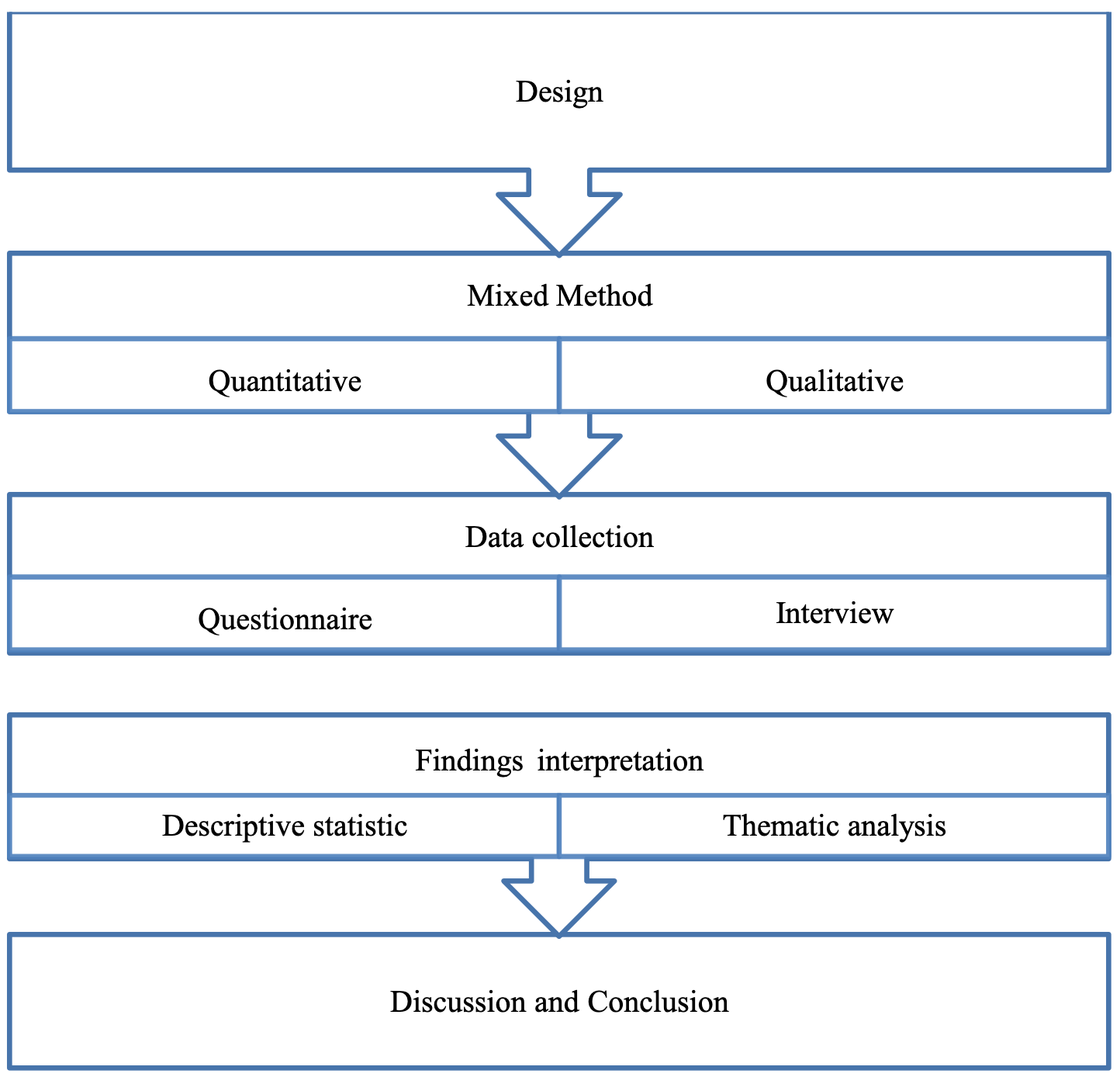


Figure 5.1: Research Design (Basir, 2015).

# **Development Process and Resources**

Quantitative Data Collection and Analysis

* Design and conduct surveys for students on the use of technology, its benefits and drawbacks, and their preferences. Utilize Likert scale and closed-end questions. Conduct a pilot survey to validate the survey tool and evaluate its reliability. Depending on the results, survey items may require revision.
* Process data using descriptive analysis and inferential test to identify, describe, summarise, and analyse student responses, as well as to derive patterns and correlations.

Qualitative Data Collection and Analysis

* Prepare semi-structured interview guides. Tailor questions to gather in-depth insights into students participants’ learning experiences and attitudes regarding modern technology integration in their higher education institutions.
* Conduct interviews and record responses and transcribing them for analysis.
* Carry out coding and thematic analysis are used to break down, compare, comprehend, and classify data in order to identify common themes.

Interpretation and Reporting

* Integrate the results of surveys and interviews to create a comprehensive report and use triangulation techniques to verify and confirm data from a variety of sources.
* Compare data across different educational institutions, fields, and participant populations to recognize similarities and disparities.
* Prepare a research report and provide practical recommendations to educators, institutes, and policy makers based on the findings.

Figure 6.1. Below depicts the development process for an explanatory sequential mixed-method research design, it captures the phase, procedures, and product output.

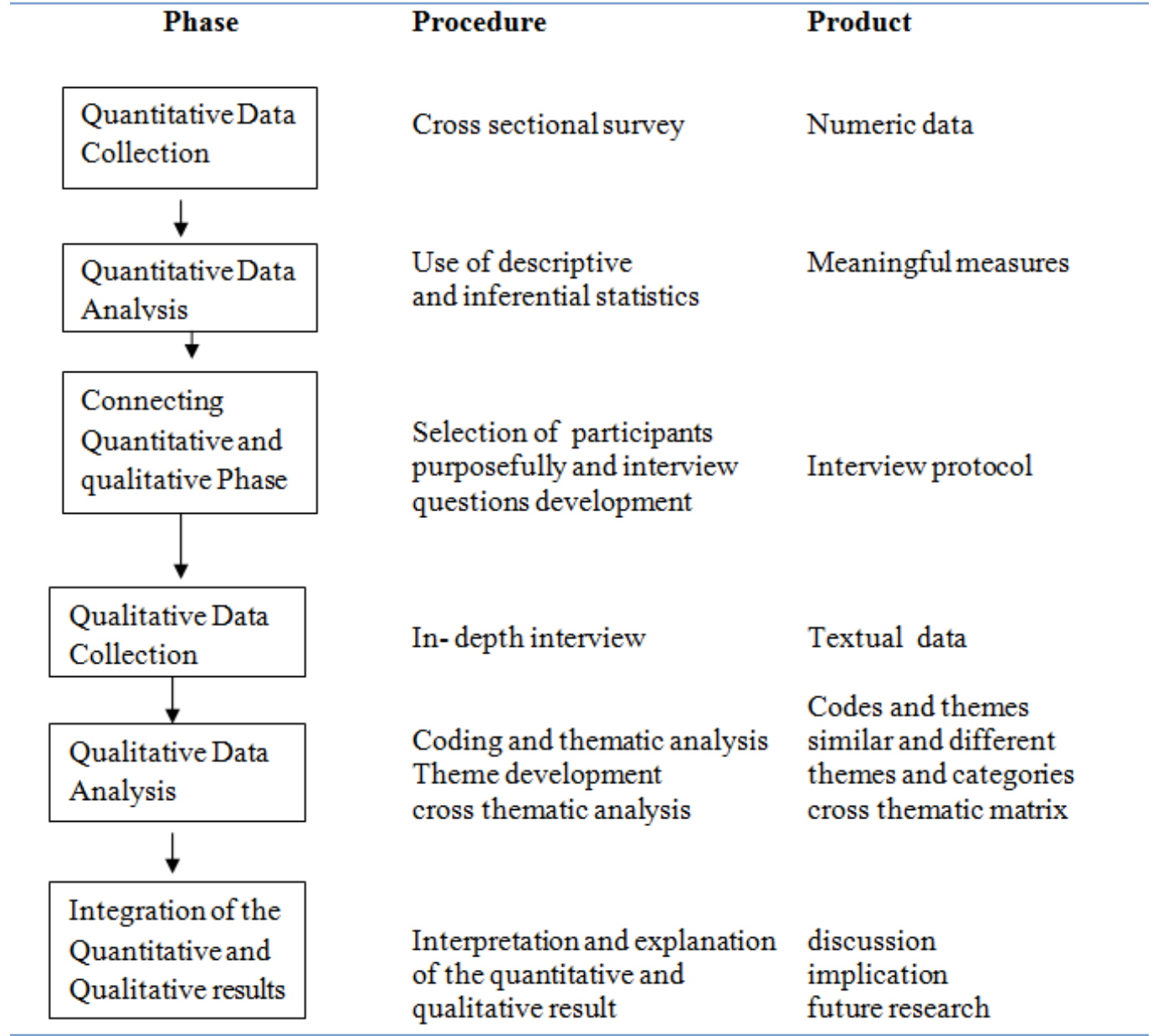


Figure 6.1. Explanatory Sequential Research Design (Subedi, 2016).

Key Resources

* Ethics committee or review board to ensure that research is conducted in accordance with ethical guidelines and regulations.
* Participants of the interviews and surveys related to the study.
* Technological resources which comprise of survey platform, data analysis software, communication tools, and recording equipment,

# **Ethical Considerations and Risk Assessment**

Mixed methods research necessitates ethical considerations due to the fact that it involves quantitative and qualitative studies. Quantitative considerations include obtaining informed consent, keeping respondents anonymous, avoiding unethical practices, protecting vulnerable populations; being aware of potential power constraints in data collection, respecting diverse cultures, not disclosing sensitive information; and concealing participants' identities (Subedi, 2016).

Subedi (2016) further states that in an Explanatory Mixed-Model, researchers may begin their research with a large quantitative database. In order to conduct qualitative interviews with those individuals, an identifier needs to be associated with the quantitative database. Some individuals may not wish to have their quantitative data disclosed. Consequently, the unauthorized use of names constitutes an ethical issue with mixed methods.

Ethical aspects are of the utmost importance in any research process, particularly when human subjects are involved. In order to conduct a research project on the incorporation of modern technology into higher education and evaluating student learning experiences, for this reason, this study will adhere to the following ethical principles and standards:

* The ethical issues will be addressed at each phase in the study.
* In compliance with Institutional Review Board regulations, permission for conducting the research must be obtained. An informed consent form will be developed.
* The anonymity of participants will be protected by numerically coding each questionnaire and keeping responses confidential.
* All study data, including the survey, will be kept in locked file cabinet, and electronic files will be password-protected, make use of encryption, and destroyed after a reasonable period of time.

Potential Risks and Mitigation Strategies of the study have been identified and adhered to are as follows:

* Risks associated with the safeguarding of data include access by unauthorised individuals, data breaches and cyber-attacks, which may compromise the data of participants and research subjects. To mitigate these risks, it is recommended to implement encryption, secure storage of data and effective access controls. Additionally, it is important to regularly update security measures and software to protect against cyber threats.
* Risks of ethical violations may arise, such as questions of informed consent, breaches of confidentiality, or dissatisfaction of participants. To mitigate these risks, it is essential to adhere to ethical guidelines that guarantee informed consent and confidentiality.

Risks associated with technology failures during the collection of data, such as crashes of the survey platform or audio recording issues, can arise. To mitigate these risks, it is important to ensure that technology platforms are reliable and tested. Additionally, it is beneficial to have backup plans in place, such as alternate survey tools and additional recording devices.

* Risks associated with time constraints that may impede the comprehensive collection, evaluation, and reporting of data. To mitigate these risks, it is essential to establish a realistic timeline for the project. Additionally, it is important to regularly assess progress and modify strategies as necessary.

# **Artefact Outputs**

The main artefacts, that will be developed from the study will comprise of:

* Research Proposal Document
* Research Paper – comprising of literature review etc.
* Ethical review documents which include informed consent forms, and approval letters from respective ethical committee boards

# **Timeline of Proposed Activities**

|  |  |  |  |
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| PROJECT NAME | PROJECT LEAD | PROJECT START DATE | PROJECT END DATE |
| The Impact of Modern Technology on Student Learning Experiences in Higher Education | N Mlambo | 01 /11/ 2023 | 30/06/ 2024 |

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|  | Individual columns represent weeks. | | | | | | | | | | | | | | | | | | | |
| **MONTH** | **November 2023** | | | | | **December 2023** | | | | | **January 2024** | | | | | **February 2024** | | | | |
| **WEEK START DATE** | **1** | **8** | **15** | **22** | **29** | **6** | **13** | **20** | **27** | **-** | **3** | **10** | **17** | **24** | **31** | **7** | **14** | **21** | **28** | **-** | |
| **ACTIVITY** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **-** | **10** | **11** | **12** | **13** | **14** | **15** | **16** | **17** | **18** | **-** | |
| **Study Preparation** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
| Develop Study Objections, and Rationale |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
| Compile Literature Review |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
| Develop and Pilot Documentation |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
| Obtain Ethical Approval |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |

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|  | Individual columns represent weeks. | | | | | | | | | | | | | | | | | | | | | | |
| **MONTH** | **March 2024** | | | | | **April 2024** | | | | | | **May 2024** | | | | | | **June 2024** | | | | | |
| **WEEK START DATE** | **6** | **13** | **20** | **27** | **-** | **3** | **10** | **17** | **24** | **-** | **1** | | **8** | **15** | **22** | **29** | **5** | | **12** | **19** | **26** | **-** |
| **ACTIVITY** | **19** | **20** | **21** | **22** | **-** | **23** | **25** | **25** | **26** | **-** | **27** | | **28** | **29** | **30** | **31** | **32** | | **33** | **34** | **35** | **-** |
| **Data Collection and Analysis** |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  | |  |  |  |  |
| Collect Quantitative Data |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  | |  |  |  |  |
| Analyse Quantitative Data |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  | |  |  |  |  |
| Collect Qualitative Date |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  | |  |  |  |  |
| Analyse Qualitative Data |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  | |  |  |  |  |
| Integrate Quantitative and Qualitative Date |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  | |  |  |  |  |
| **Reporting and Dissemination** |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  | |  |  |  |  |
| Analyse and Interpret Findings |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  | |  |  |  |  |
| Compile Report and Recommendations |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  | |  |  |  |  |
| Prepare and Submit Final Research Study |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  | |  |  |  |  |

# **Key Literature**

Below is the Key Literature that will be incorporated and aid in achieving the research objectives

Literature to provide insight on historical background:

(Fahmy, 2004).

(Muttappallymyalil et al., 2016).

Literature to provide insight on the theoretical frameworks and foundations.

(Chugh et al., 2023).

(Marikyan & Papagiannidis, 2023).

(Almaiah et al., 2019).

(Chao, 2019).

(Sprenger & Schwaninger, 2021).

(Yawen & Moyan, 2021).

(Tambum et al., 2020).

(Santos & Castro, 2021).

(Hamam & Hysaj, 2021).

(Handayani et al., 2023).

Literature to provide insight on modern technology and its influence on student engagement and motivation.

(Schindler et al., 2017).

(D’Angelo, 2018).

(Bond et al., 2020).

Tugun (2020).

(Greve & Tan, 2021).

(Ahalt & Fecho, 2015).

Aljawarneh (2020).

(Bhaskar, 2023).

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Literature to provide insight on the challenges of modern technology in higher education institutions.

(Almaiah et al., 2020).

(García-Morales, 2021).

(Schmidt & Tang, 2020)

(Krishnamurthy, 2020).

(Marinoni et al., 2020).

(Cavus et al., 2022).

(Jensen, 2019).

(Dong et al.,2020).

(European University Association, 2020).

Literature to provide insight on students’ perceptions on modern technology in higher education.

(Bahja et al., 2022).

(D’Angelo, 2018).

(Al-Rawashdeh, 2021).

(Yang & Cornelius, 2004).

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