

Final Project 2

PMG 497

Project Template

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Evaluating the Effectiveness of online learning for Students with Learning Difficulties in Higher Education: A Moodle platform at Midocean University

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Acknowledgment

This research project on the effectiveness of Moodle for students with learning difficulties (LDs) at Midocean University has benefited from the support and guidance of several individuals and institutions.

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Dedication

This research is dedicated to:

- **All parents** for their unwavering support and encouragement, which empowers students like myself to pursue academic endeavors.
- **The dedicated faculty members at Midocean University (especially Dr. Mona Elashry)** for their tireless efforts in providing quality education. Their responsiveness to student needs has been instrumental in creating a positive learning environment.
- **My supervising colleagues**, whose exceptional work in translating lectures and recording discussion sessions has significantly benefitted students, particularly those facing learning difficulties. Their commitment to fostering inclusive learning is truly inspiring.

Abstract

Background: Students with learning difficulties (LDs) often face challenges in traditional higher education settings. Online learning platforms (OLPs) like Moodle offer potential benefits, but research on their effectiveness specifically for LD students in Gulf universities remains limited.

Objectives: This study investigates the effectiveness of Moodle in addressing the academic needs and engagement of LD students at Midocean University.

Methods: Utilizing a quantitative approach, we analyze data from standardized tests, course assignments, platform usage logs, and surveys to:

- Compare academic performance of LD students using Moodle vs. traditional instruction.
- Analyze the influence of specific Moodle features on student engagement and learning outcomes.
- Identify challenges and opportunities associated with Moodle implementation for LD students.

Expected Outcomes: This study aims to provide valuable insights into:

- The effectiveness of Moodle as a tool for supporting LD students in higher education.
- Evidence-based recommendations for optimizing Moodle features to promote accessibility and inclusivity.
- Contributions to future research and development of OLPs tailored for LD students.

Keywords: Learning difficulties, online learning platforms, Moodle, higher education, quantitative research, accessibility, inclusivity.

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1. Chapter 1: Introduction

1.1. Research Background

Midocean University, in line with the growing adoption of online learning platforms (OLPs) in higher education, utilizes Moodle to offer its students flexibility and additional learning resources. This study investigates the effectiveness of Moodle for students with learning difficulties (LDs) within the specific context of Midocean University.

Moodle offers several features potentially beneficial for LD students, including:

- **Recorded lectures:** LD students can revisit course content at their own pace and with preferred methods, like closed captioning or repeated viewings.
- **Platform flexibility:** Moodle's adaptable interface allows for customizable layouts and personalized settings, potentially enhancing accessibility and focus for students with LDs.
- **Reminder system:** Automated reminders for assignments, quizzes, and deadlines can help students with organizational challenges stay on track.
- **Online quizzes:** Moodle's quiz module offers features like adjustable time limits and customized question formats, potentially reducing test anxiety and promoting accessibility for LD students.

Employing a quantitative approach, this research aims to:

- **Compare the academic performance of LD students using Moodle versus traditional classroom instruction.**
- **Analyze the influence of specific Moodle features (e.g., recorded lectures, reminders) on student engagement and learning outcomes.**

- **Identify potential challenges and opportunities associated with Moodle implementation for LD students at Midocean University.**

By analyzing data from university records, Moodle platform usage logs, and surveys, this study seeks to provide valuable insights into the effectiveness of Moodle for LD students at Midocean University.

The findings will contribute to informed recommendations for utilizing Moodle's features to optimize learning experiences and academic success for this population within the university's community.

1.2. Research Problem

Some students face diverse challenges that impede their engagement in traditional classroom instruction, including work schedules, family commitments, and limited time flexibility. While online learning platforms (OLPs) like Moodle offer potential solutions by providing asynchronous access and personalized learning, limited research exists on their effectiveness for students with learning difficulties (LDs), particularly within the context of Gulf universities. This study investigates the **effectiveness of Moodle in addressing the specific needs and engagement of LD students at Midocean University who struggle with inflexible schedules or balancing study with personal responsibilities.**

Furthermore, although Moodle offers features like recorded lectures and flexible access, concerns exist regarding usability on mobile phones compared to laptops. This

study examines how **platform accessibility and usability on different devices affects the learning experience and engagement of LD students at Midocean University.**

1.2.1. Theoretical Gaps

- **Limited Focus on Specific Learning Difficulties:** While research suggests OLPs can benefit diverse learners, existing theoretical frameworks often lack a nuanced understanding of how OLP features can cater to the unique needs of students with specific learning difficulties like dyslexia, ADHD, or executive function challenges.
- **Integration with Existing Theories of Learning:** There is a need for further exploration of how OLPs can be utilized within existing learning theories to create a more comprehensive framework for supporting LD students. Theories of social constructivism, for example, could be explored to understand how OLPs facilitate collaborative learning and knowledge construction for LD students.

1.2.2. Practical Gaps

- **Longitudinal Studies:** Most existing research focuses on short-term outcomes like student satisfaction or immediate performance. Longitudinal studies are needed to investigate the long-term impact of OLPs on LD student retention, graduation rates, and overall academic success.
- **Blended Learning Models:** Limited research explores blended learning models that combine online and in-person instruction for LD students. Further investigation

is needed to determine the optimal combination of online and face-to-face elements for this population.

- **Accessibility and Usability for Diverse Learners:** While accessibility features are being developed, research is needed to evaluate their effectiveness for LD students with different learning needs and across various devices (laptops, tablets, and smartphones). Additionally, usability testing with LD student populations is crucial to ensure features are user-friendly and promote engagement.

Addressing these gaps will contribute to a more comprehensive understanding of how OLPs can be effectively designed and implemented to support students with learning difficulties in higher education.

1.3. Research Significance

Addressing LD Needs in Higher Education:

- This study contributes to the limited research on OLPs specifically for LD students in higher education, particularly in the Gulf region.
- It helps understand how technology can improve accessibility and inclusivity for LD students often facing barriers in traditional learning environments.
- The findings will inform evidence-based practices for utilizing OLPs to support LD students' academic success and promote equal opportunities in higher education.

Addressing Specific Challenges at Midocean University:

- This study directly addresses the challenges faced by Midocean University students, including students with LDs who struggle with inflexible

schedules, balancing studies with personal responsibilities, and limited accessibility.

- It provides valuable insights into how Moodle can be best utilized to cater to these diverse student needs and enhance learning experiences within the university's specific context.
- The findings can inform Midocean University's educational development policies and initiatives to promote effective use of Moodle for supporting all students, particularly those with LDs.

Impact on Moodle Implementation:

- By examining the usability and effectiveness of Moodle features for LD students, this study provides valuable feedback for Moodle developers and platform administrators.
- The findings can contribute to improving the accessibility and user-friendliness of Moodle for diverse student populations, including those with LDs.
- This can inform strategies for optimizing Moodle implementation across various educational institutions and promote its effectiveness in supporting inclusive learning environments.

References List:

1-El-Bahsh, R., & Daoud, M. (2016, April). Evaluating the use of Moodle to achieve effective and interactive learning: A case study at the German Jordanian University.

In *Proceedings of the 35th annual IEEE international conference on computer communications* (pp. 1-5).

2-Damnjanovic, V., Jednak, S., & Mijatovic, I. (2015). Factors affecting the effectiveness and use of Moodle: students' perception. *Interactive learning environments*, 23(4), 496-514.

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4- Vaganova, O. I., Smirnova, Z. V., Vezetiu, E. V., Kutepov, M. M., & Chelnokova, E. A. (2020). Assessment tools in e-learning Moodle. *International Journal*, 9(3), 2488-2492.

1.3.1. At the theoretical level

□ **Limited Research Focus:** The study addresses the gap in research on Online Learning Platforms (OLPs) specifically designed to support LD students in higher education. By analyzing the impact of Moodle, it contributes to a more comprehensive understanding of how OLP features can cater to the unique learning needs of this population. This knowledge can inform the development of theoretical frameworks for designing OLPs that promote inclusive learning environments.

□ **Bridging Theory and Practice:** The research explores how Moodle's features connect with existing learning theories. For example, the study might investigate how collaborative learning tools within Moodle align with social constructivism theory. This integration can lead to a more nuanced understanding of how OLPs can be utilized to support various learning styles and enhance educational effectiveness for LD students.

1.3.2. At the practical level

□ **Promoting Inclusive Learning:** The findings on Moodle's effectiveness can inform strategies for increasing inclusivity in higher education. By demonstrating the positive impact of OLP features for LD students, the research can encourage universities to adopt or optimize OLPs like Moodle to create more accessible and effective learning environments for students with diverse needs.

□ **Informing OLP Design and Development:** This research provides valuable insights for OLP developers and educators on how to improve accessibility features and personalize learning options within platforms. The findings can directly contribute to the development of features that address the specific challenges faced by LD students, ultimately enhancing their engagement and learning outcomes.

□ **Data-Driven Decision Making:** Evidence-based data on the effectiveness of Moodle for LD students empowers institutions to make informed decisions about resource allocation and technology adoption. This can lead to increased investment in OLPs and support services that facilitate successful learning experiences for LD students at the university level.

1.4. Research Questions

- **Main Question:** How effective is Moodle in addressing the academic needs and engagement of students with learning difficulties (LDs) at Midocean University?

Sub-questions:

- How does the academic performance of LD students using Moodle compare to traditional classroom instruction?
- What influence do specific Moodle features have on student engagement and learning outcomes for LD students?
- What are the challenges and opportunities associated with Moodle implementation for LD students at Midocean University?
- How does platform accessibility and usability on different devices affect the learning experience and engagement of LD students?

1.5. Research Objectives

- **Overall Objective:** To investigate the effectiveness of Moodle in supporting LD students at Midocean University.

Specific Objectives:

- Compare academic performance using Moodle vs. traditional instruction.
- Analyze the influence of specific Moodle features on engagement and learning outcomes.
- Identify challenges and opportunities with Moodle implementation for LD students.

1.6. Research Hypotheses

Hypothesis 1 (Academic Performance):

- **Hypothesis (H1):** LD students using Moodle will have significantly higher academic performance (e.g., grades, test scores) compared to traditional classroom instruction.

Hypothesis 2 (Engagement and Specific Moodle Features):

- **Hypothesis (H2):** The use of specific Moodle features will have a significant positive impact on student engagement and learning outcomes for LD students.

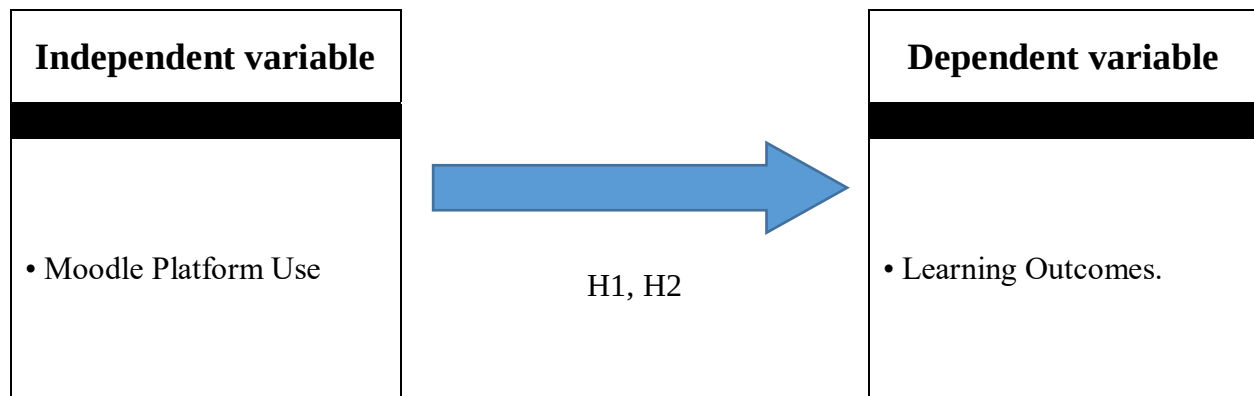
1.7. Research Model

Independent Variable:

- **Moodle Platform Use.**

Dependent Variable:

- **Learning Outcomes.**



1.8. Scope of the Study

This research investigates the effectiveness of Moodle, a popular online learning platform (OLP), in supporting students with learning difficulties (LDs) enrolled at Midocean University. The study employs a quantitative approach to analyze the impact of Moodle on academic performance, student engagement, and accessibility for LD students.

Focus:

- The research focuses specifically on students with learning difficulties (LDs) attending Midocean University.
- The primary area of investigation is the effectiveness of Moodle, a specific online learning platform.

Parameters:

- **Academic Performance:** The study will analyze the impact of Moodle on academic performance compared to traditional classroom instruction for LD students. This may involve comparing grades, test scores, or course completion rates.

- **Student Engagement:** The research will explore how Moodle features influence student engagement by analyzing platform usage logs, survey data on student perceptions, or self-reported learning behaviors.
- **Accessibility:** The study will examine the accessibility features offered by Moodle and assess their effectiveness in supporting LD students with different learning needs. This may involve user-testing, surveys on student experiences, or analysis of platform functionalities.

Limitations:

- The research employs a quantitative approach, focusing on measurable data. Qualitative aspects of the learning experience, such as student perceptions or social interactions, might require additional research methods.
- The study focuses on students with LDs at Midocean University. Generalizability of findings to other universities or student populations with different learning difficulties may be limited.

Future Research Directions:

Building on this research, future studies could explore:

- The long-term impact of Moodle use on LD student retention and graduation rates.
- The effectiveness of blended learning models that combine online and in-person instruction for LD students.
- The development of OLP features specifically designed to address the unique needs of diverse learners with learning difficulties.

1.9. The Project Structure

Chapter 1: Introduction

- Challenges Faced by Students with Learning Difficulties
- Potential Benefits of Online Learning Platforms
- Limited Research on OLP Effectiveness for LD Students
- Moodle: A Potential Solution for LD Students at Midocean University
- Research Objectives

Chapter 2: Literature Review

- Challenges for LD Students in Higher Education
- Effectiveness of OLPs for Diverse Learners
- Moodle Features and Benefits for LD Students
- Accessibility and Usability of OLPs on Different Devices

Chapter 3: Research Methodology

- Quantitative Research Approach
- Data Collection Methods
 - Sources of Data
 - Sampling Techniques
 - Survey Instrument

Chapter 4: Statistical Analysis

- Performance Data Analysis
 - Statistical software used
 - Specific tests employed
- Platform Usage Log Analysis
 - Quantitative techniques used
- Survey Data Analysis
 - Specific statistical software used

Chapter 5: Findings, Discussion, and Conclusion

Findings:

- Present the findings from the data analysis in a clear and organized manner.
- Analyze the impact of Moodle on academic performance compared to traditional instruction.
- Discuss the influence of specific Moodle features on student engagement and learning outcomes.
- Explore challenges and opportunities identified regarding Moodle implementation for LD students at Midocean University.
- Analyze findings related to accessibility and usability of Moodle on different devices.

Discussion:

- Interpret the findings in the context of existing research on OLPs and LD students.
- Discuss the limitations of the study.
- Highlight the implications of the research for:
 - Optimizing Moodle features to better support LD students.
 - Informing future research on OLP effectiveness for diverse learners.
 - Promoting inclusive online learning practices at Midocean University and beyond.
- Suggest recommendations for future research directions.

Conclusion:

- Restate the research importance and the contribution to addressing LD student needs in higher education.
- Emphasize the value of Moodle as a tool for enhancing accessibility and inclusivity in online learning environments.

2.Chapter 2: Literature Review

2.1. Introduction

Students with learning difficulties (LDs) face unique challenges in traditional classroom settings. These challenges can hinder their academic performance, engagement, and overall learning experience, especially for the students that cannot attend the classroom in its specific time, and the ones that suffer from travelling long distances.

Online Learning Platforms (OLPs) offer a range of features that may address some of these challenges. However, limited research specifically investigates the impact of OLPs on students with learning difficulties in higher education.

This literature review explores the potential benefits and limitations of OLPs for LD students. It examines how specific OLP features can cater to their unique learning needs. Furthermore, the review explores existing research on the effectiveness of OLPs for student learning outcomes and engagement, highlighting the gap in knowledge regarding the impact on LD students specifically.

This research aims to contribute to this gap by investigating the overall effectiveness of Moodle, a popular OLP, for students with learning difficulties at Midocean University. The review provides a foundation for understanding how Moodle can be utilized to promote inclusive learning environments and enhance the educational experiences of LD students in higher education.

2.2. The independent variable

- **Moodle Platform Use:**

- This variable measures the extent to which students with learning difficulties (LDs) utilize the Moodle platform for their coursework at Midocean University.

2.3. The dependent variables

1. Learning Outcomes:

- This variable measures the overall knowledge, skills, and abilities acquired by LD students using Moodle.

2.4. The relationship between the independent and the dependent variables

This research investigates the relationship between the independent variable, **Moodle Platform Use**, and the dependent variable: **Learning Outcomes**.

- **Moodle Platform Use** is hypothesized to have a **positive** relationship with the dependent variables. This means that the greater the extent to which LD students utilize Moodle features (e.g., accessing materials, participating in discussions), the higher their academic performance, engagement, and learning outcomes are expected to be.
- **Learning Outcomes:** Effective utilization of Moodle could lead to a deeper understanding of the course content, improved critical thinking skills, and a broader range of knowledge and skills acquired by LD students.

2.5. Conclusion

This research addresses the limited understanding of how OLPs affects students with learning difficulties in higher education. By investigating the overall effectiveness of Moodle for LD students at Midocean University, the study aims to:

- Analyze the relationship between Moodle platform use and academic performance, engagement, and learning outcomes.
- Identify the specific Moodle features that can be most beneficial for LD students.
- Provide valuable insights for educators and OLP developers on promoting inclusive learning environments that cater to the unique needs of LD students.

The findings of this research can contribute to evidence-based practices for utilizing OLPs like Moodle to support the academic success of LD students and promote equal opportunities in higher education.

Appendix

Introduction:

Thank you for participating in this research study. This questionnaire aims to understand your experience using Moodle for this course and how its accessibility, flexibility, and interactivity features affected your learning. Your honest responses are highly valuable. All your answers will be kept confidential.

شكرا لك على المشاركة في هذه الدراسة البحثية. يهدف هذا الاستبيان إلى فهم تجربتك في استخدام منصة مودل لهذه الدورة وكيف أثرت ميزات إمكانية الوصول والمرونة والتفاعلية على تعلمك. ردودكم الصادقة ذات قيمة عالية. سيتم الحفاظ على سرية جميع إجاباتك.

Instructions:

Please read each question carefully and select the answer that best reflects your experience.

يرجى قراءة كل سؤال بعناية واختيار الإجابة التي تعكس تجربتك بشكل أفضل.

Personal Information المعلومات الشخصية	
Gender / الجنس	Male / ذكر Female / أنثى
Age / العمر	20 - 30 30 - 40 40 - 50 Above 50 / أكبر من 50

Marriage Status / الحالة الاجتماعية	Single / أعزب أو عزباء Married / متزوج أو متزوجة
Level of Education / المستوى التعليمي	Matriculation / ثانوية عامة Diploma / دبلوم Bachelor / بكالوريوس Master and above / ماجستير فما فوق
Experience / الخبرة	Below 5 years / أقل من 5 سنوات 5 - 10 years / من 5 - 10 سنوات 10 - 20 years / من 10 - 20 سنوات

The independent variable

Variable المتغير	Variable dimensions أبعاد المتغير	Number of statements عدد البيانات	Source المصدر
Moodle use استخدام منصة مودل	Accessibility إمكانية الوصول	3	Susana, O., Juanjo, M., Eva, T., & Ana, I. (2015). Improving graduate students learning through the use of Moodle. <i>Educational Research and Reviews</i> , 10(5), 604-614.
	Flexibility المرونة	3	
	Interactivity التفاعلية	3	

Accessibility إمكانية الوصول						
Sr	Question السؤال	Strongly disagree غير موافق بشدة	Disagree غير موافق	Neutral محايد	Agree موافق	Strongly agree موافق بشدة
1	Ease to use (clear and understandable) سهولة الاستخدام (واضح ومفهوم)					
2	Accessibility features (easy to access, easy to use, easy to see and download files, easy to upload our practices and easy to see the grades, etc.) مميزات إمكانية الوصول (سهولة الوصول إليها، وسهولة استخدامها، وسهولة رؤية الملفات وتنزيلها، وسهولة تحميل ممارساتنا، وسهولة رؤية الدرجات، وما إلى ذلك)					
3	Technical support (availability and effectiveness of technical support for resolving Moodle access issues) الدعم الفني (توفر وفعالية الدعم الفني لحل مشكلات الوصول إلى منصة مودل)					

Flexibility المرونة						
Sr	Question السؤال	Strongly disagree غير موافق بشدة	Disagree غير موافق	Neutral محايد	Agree موافق	Strongly agree موافق بشدة
1	Learning pace (Moodle allows you to learn at your own pace and revisit materials as needed) وتيرة التعلم (يتيح لك نظام مودل التعلم بالسرعة التي تناسبك وإعادة النظر في المواد حسب الحاجة)					
2	Learning style accommodation {Moodle offers different ways to access and learn course material that cater to your preferred learning style (e.g., videos, text, interactive activities)} التكيف مع أسلوب التعلم {يوفر نظام مودل طرقًا مختلفة للوصول إلى مواد الدورة التدريبية وتعلمها والتي تلبي أسلوب التعلم المفضل لديك (مثل مقاطع الفيديو والنصوص والأنشطة التفاعلية)}					
3	Workload management {Moodle helps you manage your workload for this course (e.g., clear deadlines, organization of materials, etc.)} إدارة عبء العمل {يساعدك نظام مودل على إدارة عبء العمل الخاص بك لهذه الدورة (على سبيل المثال، المواعيد النهائية الواضحة، وتنظيم المواد، وما إلى ذلك)}					

Interactivity التفاعلية						
Sr	Question السؤال	Strongly disagree غير موافق بشدة	Disagree غير موافق	Neutral محايد	Agree موافق	Strongly agree موافق بشدة
1	Collaborative learning {Moodle facilitate interaction and collaboration with classmates on course content (e.g., discussion forums, group projects)} التعلم التعاوني {يسهل نظام مودل التفاعل والتعاون مع زملاء الفصل في محتوى الدورة (على سبيل المثال، {منتديات المناقشة، والمشاريع الجماعية}					
2	Feedback and communication (Moodle support communication and feedback exchange between you, the instructor, and other students) التغذية الراجعة والتواصل (يدعم نظام مودل التواصل وتبادل الملاحظات بينك وبين المعلم والطلاب الآخرين)					
3	Engagement with content (do you find the course materials and activities presented within Moodle?) التفاعل مع المحتوى (هل تجد مواد الدورة والأنشطة المقدمة متوفرة داخل مودل؟)					

The dependent variable

Variable المتغير	Number of statements عدد البيانات	Source المصدر
Learning outcomes نتائج التعلم	5	Waheed, M., Kaur, K., Ain, N., & Hussain, N. (2016). Perceived learning outcomes from Moodle: An empirical study of intrinsic and extrinsic motivating factors. <i>Information Development</i> , 32(4), 1001-1013.

Learning outcomes نتائج التعلم						
Sr	Question السؤال	Strongly disagree غير موافق بشدة	Disagree غير موافق	Neutral محايد	Agree موافق	Strongly agree موافق بشدة
1	Communication features (online sessions) مميزات الاتصال (جلسات المناقشة عبر الإنترنت)					
2	Assignment features (online quizzes, online grade checking) مميزات الواجب (الاختبارات عبر الإنترنت، التحقق من الدرجات عبر الإنترنت)					
3	Course content features (quality course content, online resources) مميزات محتوى الدورة (محتوى الدورة عالي الجودة، توفر الموارد عبر الإنترنت)					

4	Course delivery features (flexible time, flexible learning strategies) مميزات تقديم الدورة (وقت مرن، استراتيجيات تعلم مرنة)					
5	Student motivation (recorded lectures, time flexibility and easy accessibility) تحفيز الطلاب (المحاضرات المسجلة ومرونة الوقت وسهولة الوصول إليها)					

<https://forms.gle/tktxP8X9nsdTZr5QA>

3. Chapter 3: Research Methodology

3.1. Introduction

This study investigates the effectiveness of Moodle as a learning platform for students with learning difficulties (LDs) at Midocean University. Employing a quantitative approach, we analyze data from various sources to assess the impact of Moodle on academic performance, engagement and learning outcomes:

Data Sources:

- Standardized tests and course assignments (academic performance)
- Moodle platform usage logs (engagement)
- Surveys administered to LD students (perceptions and experiences)

3.2. Operational definitions for research variables

Independent Variable:

- **Moodle Platform Use:**

- This variable measures the extent to which students with learning difficulties (LDs) utilize the Moodle platform for their coursework at Midocean University.

Operationalization:

- Data collection methods can include:
 - **Server log analysis:** Track login frequency, time spent on specific materials (e.g., lectures, assignments), and platform features utilized (e.g., discussion forums, quizzes).

- **Student surveys:** Surveys can assess self-reported frequency of Moodle use; specific features utilized for learning activities, and perceived usefulness of the platform.

Dependent Variable:

1. Learning Outcomes:

- This variable measures the overall knowledge, skills, and abilities acquired by LD students through the use of Moodle.

Operationalization:

- Data collection methods can include:
 - **Pre- and post-tests:** Administer tests before and after the course to measure knowledge gains and skill development specific to the course content.
 - **Course assignments and projects:** Analyze the quality and complexity of student work completed within the Moodle platform, considering the specific learning objectives of the course.

3.3. Research design (research onion)

- **Research Philosophy:** Positivism.

Positivism is a paradigm that relies on measurement and reason, that knowledge is revealed from a neutral and measurable (quantifiable) observation of activity, action or reaction.

- **Research Approach:** Deductive.

Deductive research is a type of research in which the researcher starts with a theory, hypothesis, or generalization and then tests it through observations and data collection.

- **Research Strategy:** Survey.

Survey Research is a quantitative research method used for collecting data from a set of respondents.

- **Research Choice:** Quantitative.

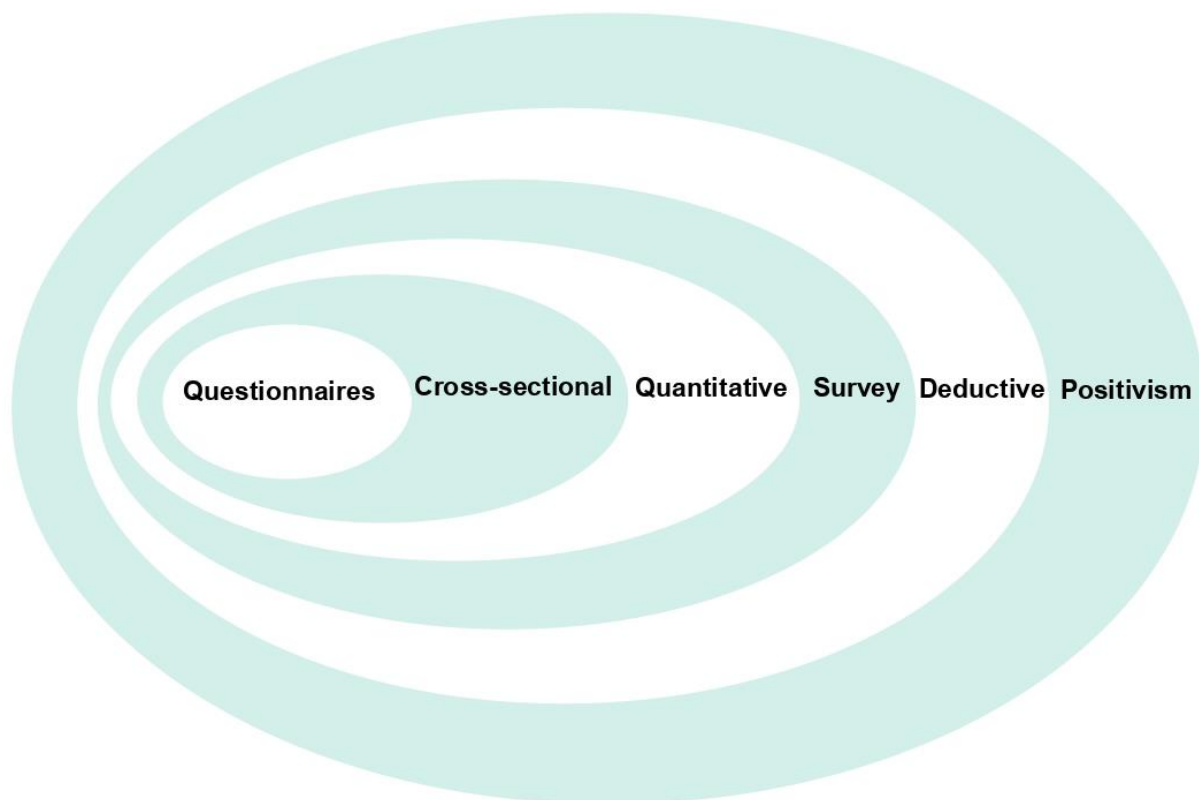
Quantitative research methods include experiments, close-ended survey questions, and countable and numbered observations. Data analysis for quantitative research relies heavily on statistical methods.

- **Time Horizon:** Cross-sectional.

Cross-sectional time horizon in research refers to the use of cross-sectional data to analyze and understand phenomena at a specific point in time. It involves examining a sample of individuals, units, or variables at a single point in time to draw conclusions about a population or to make predictions.

- **Data Collection & Analysis Techniques:** Questionnaires.

A questionnaire is a research instrument consisting of a series of questions and other prompts for gathering information from respondents.



3.4. Research population & Sampling methods and technique

3.4.1. Research population:

The research population is **students at Midocean University**. The below table shows the target number of students (900) enrolled in a program.

University Name	Target	Number of Students
Midocean	Students	900

3.4.2. Research Sample:

The research sample is students at Midocean University enrolled in a program that utilizes the Moodle platform. The sample size is 30 students.

Research Sample	Sample Size
Students at Midocean university	35 Students

3.4.3. Sampling Method & Techniques:

The sampling method is Probability and the sampling techniques is Simple Random Sampling.

3.5. Data collection method

The collected data will be analyzed statistically. This approach will help to uncover the relationship between the Moodle platform use and the learning outcomes at Midocean University.

3.5.1. The Independent Variable (Moodle Platform Use):

I relied on the questionnaire of Susana (2015) .In order to measure the independent variable (**Moodle Platform Use**), in terms of three dimensions: **Accessibility**, **Flexibility**, and **Interactivity**, overall 9 items for the entire variable. Whereas the **Accessibility** dimension consists of 3 elements, the **Flexibility** dimension It consists of 3 elements, and the **Interactivity** dimension consists of 3 elements. Type of instrument is Likert Strongly agree, agree, neutral, disagree, strongly disagree.

Variable المتغير	Variable dimensions أبعاد المتغير	Number of statements عدد البيانات	Source المصدر
Moodle use استخدام منصة مودل	Accessibility إمكانية الوصول	3	Susana, O., Juanjo, M., Eva, T., & Ana, I. (2015).
	Flexibility المرونة	3	
	Interactivity التفاعلية	3	
	Overall	9	

3.5.2 The dependent Variable (Learning Outcomes):

In addition, the questionnaire of Waheed, (2022). In order to measure the independent variable (project success), in terms of one dimension, which is the projects' success with the total 14 items for the entire variable. The instrument type is Likert Strongly agree, agree, neutral, disagree, strongly disagree.

Variable المتغير	Number of statements عدد البيانات	Source المصدر
Learning outcomes نتائج التعلم	5	Waheed, M., Kaur, K., Ain, N., & Hussain, N. (2016).

3.6. Types of data:

Primary Data:

The data collected from the questionnaire that distributed to the mentioned sample.

Secondary Data:

The data collected from previous questionnaires and other researcher, and Moodle website: <https://moodle.com/>, and Midocean University website: <https://midocean.ae/> .

3.7. Statistical analysis procedures

The sample profile test was conducted, via descriptive analysis, to gain insights into the characteristics of the sample population. It helps researchers understand the demographics, preferences, and other relevant information about the individuals involved in the study.

3.8. Conclusion

This study investigates the effectiveness of Moodle as a learning platform for students with learning difficulties (LDs) at Midocean University. Employing a quantitative approach, we analyze data from various sources, including standardized tests, Moodle platform usage logs, and student surveys, to assess the impact of Moodle on academic performance, engagement, and learning outcomes. By exploring the relationship between Moodle use (accessibility, flexibility, interactivity) and learning outcomes, this research aims to contribute valuable insights to the field of educational technology and its potential to support students with LDs.

4. Chapter 4: Statistical Analysis & Findings discussion

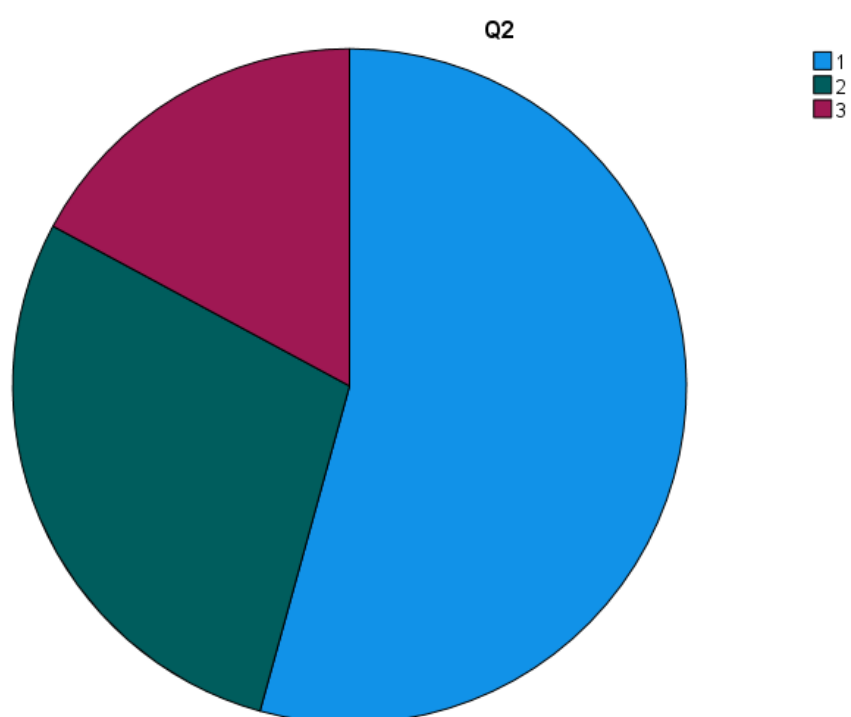
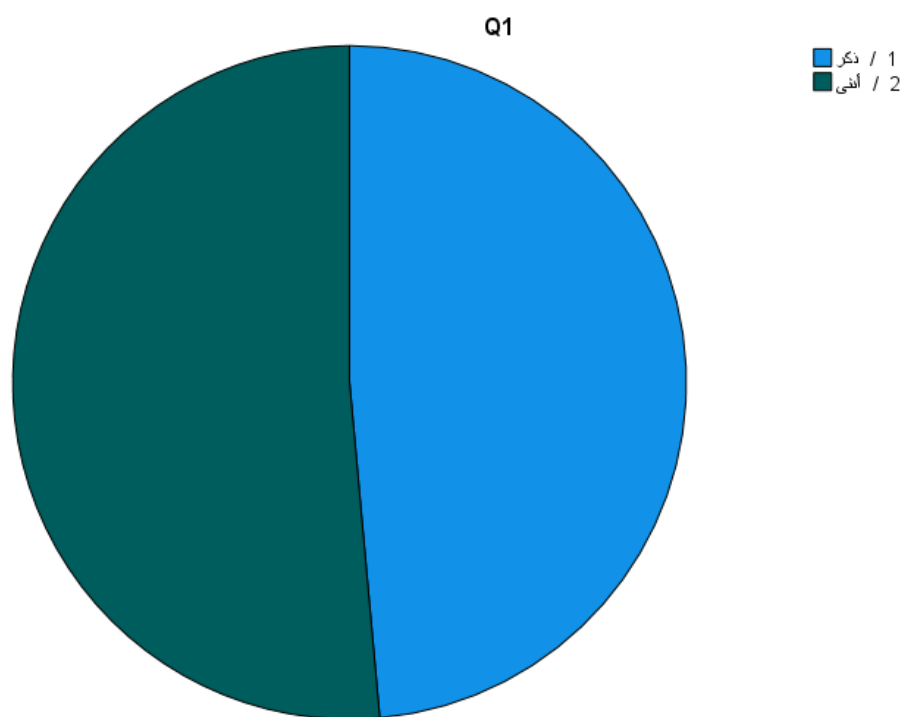
4.1. Introduction

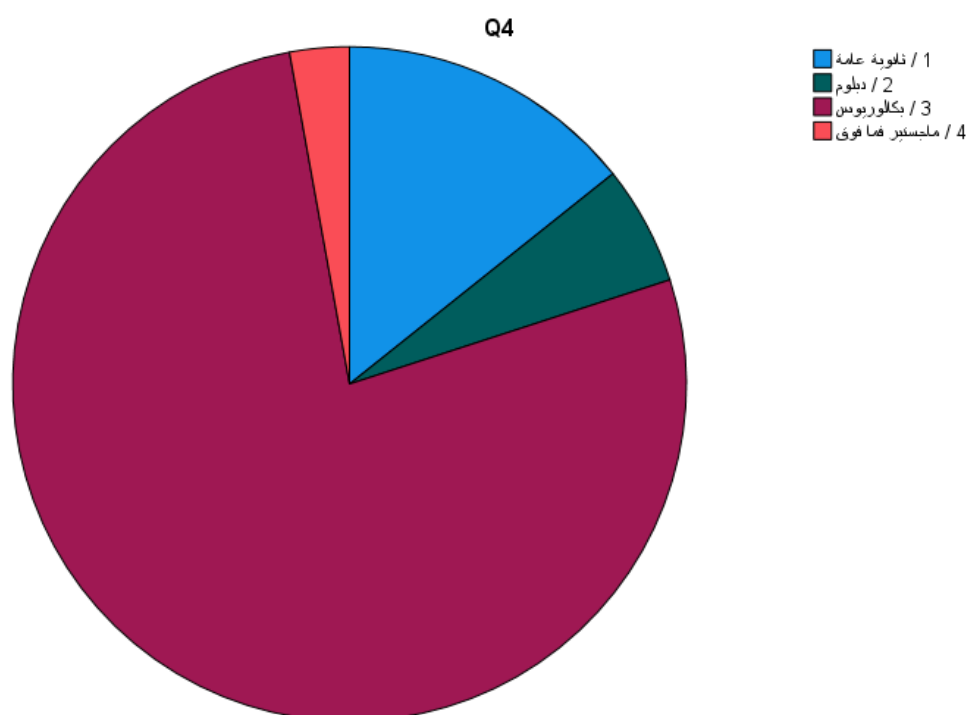
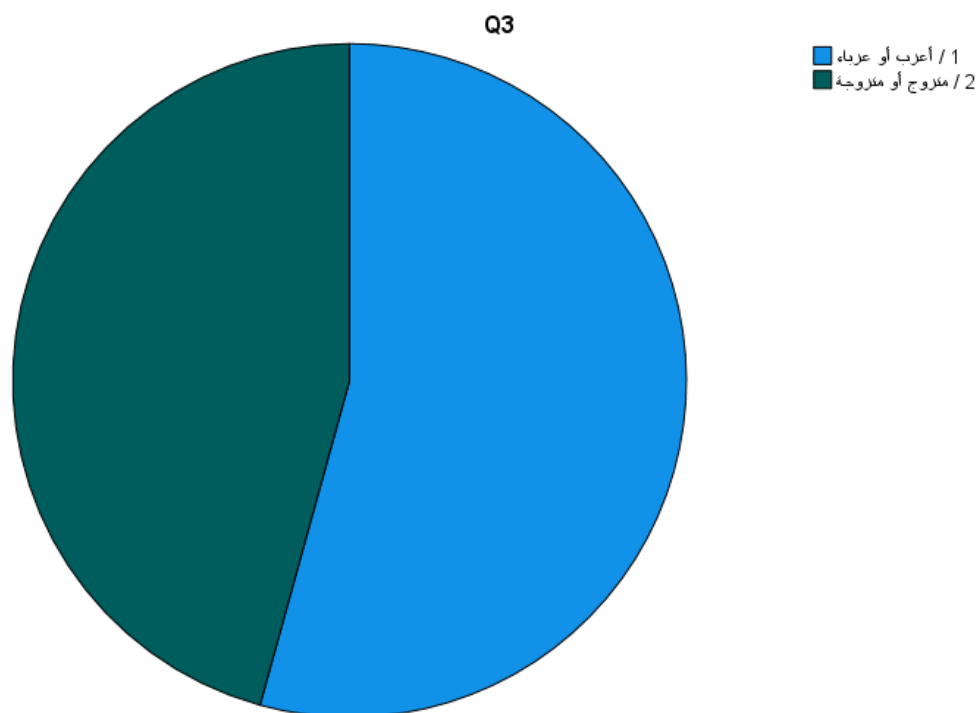
This chapter presents the results of the field study that were statistically analyzed using the statistical programs SPSS version 28. The current chapter of statistical analysis includes descriptive statistics for the sample under study using SPSS version 28. Testing the validity and reliability of the questionnaires used to collect the required data from the current study sample. In order to test the research hypotheses and the suitability of the model, simple linear regression analysis was conducted via SPSS 28.

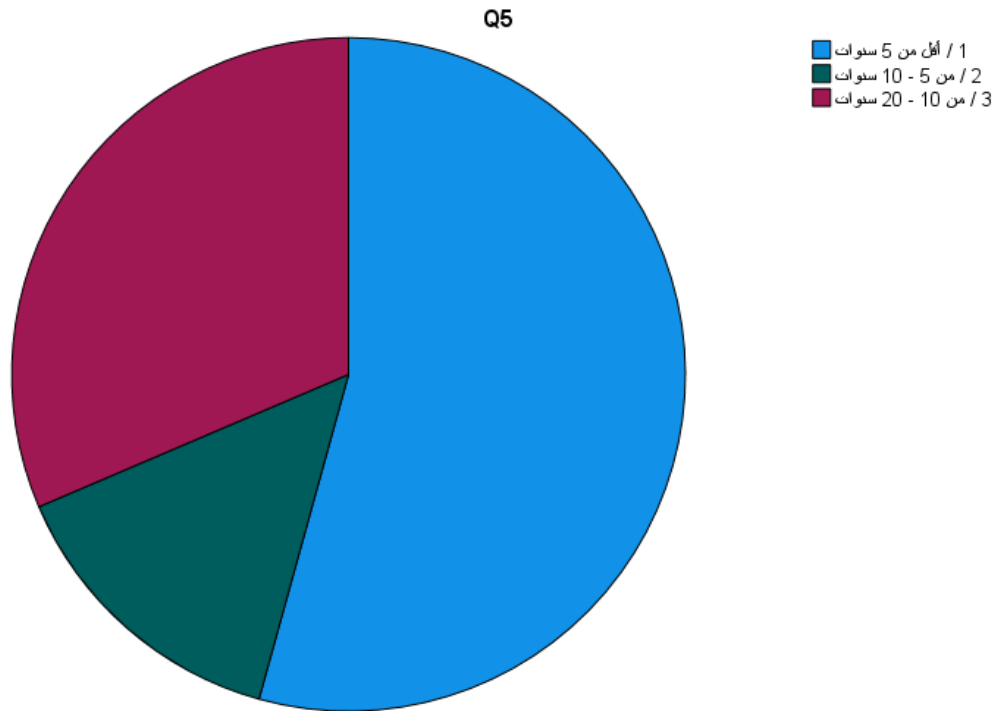
4.2. Sample profile (descriptive statistics for research sample)

- The study sample was distributed according to gender - age group - number of years of experience – marriage status and educational level.
- Frequencies and percentages were calculated for the study sample members and are represented by demographic information that includes:
 - Gender includes (male, female).
 - The age group includes (20 to 30 years, from 30 to 40 years, from 40 to 50 years, and more than 50 years).
 - Number of years of experience, including (less than 5 years, from 5 to 10 years, from 10 to 20 years).
 - Marriage status, including (single and married).
 - Educational level, includes (matriculation\diploma\ bachelor\master and above).

Variable المتغير	Variable classes فئات المتغير	Number العدد	Percentage of the total sample نسبة العينة الإجمالية
Gender / الجنس	Male / ذكر	17	48.6
	Female / أنثى	18	51.4
	Total \ الإجمالي	35	100%
Age / العمر	20 - 30	19	54.3
	30 - 40	10	28.6
	40 - 50	6	17.1
	Above 50 / أكبر من 50	0	0
	Total \ الإجمالي	35	100%
Marriage Status / الحالة الاجتماعية	Single / أعزب أو عزباء	19	54.3
	Married / متزوج أو متزوجة	16	45.7
	Total \ الإجمالي	35	100%
Level of Education / المستوى التعليمي	Matriculation / ثانوية عامة	5	14.3
	Diploma / دبلوم	2	5.7
	Bachelor / بكالوريوس	27	77.1
	Master and above / ماجستير فما فوق	1	2.9
	Total \ الإجمالي	35	100%
Experience / الخبرة	Below 5 years / أقل من 5 سنوات	19	54.3
	5 - 10 years / من 5 - 10 سنوات	5	14.3
	10 - 20 years / من 10 - 20 سنوات	11	31.4
	Total \ الإجمالي	35	100%







4.3. Validity & reliability tests for the questionnaires

In order to verify the validity and reliability of the measures used in the study, the internal consistency validity of the questionnaires used to measure the study variables was tested, in addition to measuring the convergent validity by measuring the Average Variance Extracted (AVE). While the reliability of the measures used in the study was measured by Measuring the value of Cornbrash's alpha, through the structural equation modeling (SEM), using the statistical analysis program SPSS version 28 .The following paragraphs and tables explain this.

4.3.1 Validity of the measures used in the study:

The internal consistency validity of the scales used to measure the study variables was tested, in addition to measuring the convergent validity by measuring the average variance extracted. Internal consistency validity: It means the extent to which each statement of the questionnaire is consistent with the variable to which it belongs. Therefore, the researcher measured the internal consistency of the questionnaires by calculating the correlation coefficients between the score of each statement and the total score of the variable to which it belongs. According to Kaiser (1974) study, a correlation coefficient of less than 0.5 is removed from the questionnaire. Convergent Validity: The average variance between statements that measure the same scale is measured by calculating the average variance extracted (AVE), whose value must be greater than 0.5 according to Hair et al (2006). The following tables show the statistical results for (correlation coefficients, standard deviation, calculated T value, and P value between the score of each statement and the total score of the variable to measure the validity of the internal consistency of the questionnaires. In addition, calculating the value of the average variance extracted (AVE) to measure the convergent validity of the questionnaires through the equation model. Structural SPSS version 28, as follows:

Variable المتغير		Statements البيانات	KMO	Factor loading معامل الارتباط	Standard deviation الانحراف المعياري	P Values	Average variance extracted متوسط التباين المستخرج	
Moodle use استخدام منصة مودل	Accessibility إمكانية الوصول	A1	0.743	0.911	0.657	0	0.8336	0.776
		A2		0.787	0.561	0		
		A3		0.803	0.733	0		
	Flexibility المرونة	F1		0.763	0.785	0	0.7556	
		F2		0.723	0.845	0		
		F3		0.781	0.702	0		
	Interactivity التفاعلية	I1		0.692	1.14	0	0.739	
		I2		0.86	1.183	0		
		I3		0.666	0.818	0		
Learning outcomes نتائج التعلم		L1	0.724	0.828	0.81	0	0.747	0.747
		L2		0.826	0.877	0		
		L3		0.768	0.767	0		
		L4		0.742	0.718	0		
		L5		0.571	0.69	0		

4.3.2 Reliability of the study tool:

Variable المتغير		Statements البيانات	Cronbach's alpha	
Moodle use استخدام منصة مودل	Accessibility إمكانية الوصول	3	0.8706	0.886
	Flexibility المرونة	3	0.8653	
	Interactivity التفاعلية	3	0.883	
Learning outcomes نتائج التعلم		5	0.7586	0.798

First Variable and the dimensions: The statistical results showed that the values of Cronbach's alpha are (0.8706, 0.8653 and 0.883), which indicates that all values are greater than 0.7.

According to Hair et al (2010), the stability of the scale has been achieved.

Second Variable and the dimensions: The statistical results showed that the values of Cronbach's alpha are (0.7586), which indicates that all values are greater than 0.7. According to Hair et al (2010), the stability of the scale has been achieved.

4.4. Descriptive statistics for research variables (answer research questions)

The questionnaire answers are five-point scale, as in the example:

Strongly disagree غير موافق بشدة	Disagree غير موافق	Neutral محايد	Agree موافق	Strongly agree موافق بشدة
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The following table shows the descriptive analysis of the study variables represented by the arithmetic means based on the five-point Likert scale and the standard deviations of the variables according to the table related to the importance of the arithmetic mean.

Variable المتغير		Arithmetic mean المتوسط الحسابي		Standard deviation الانحراف المعياري		General trend الاتجاه العام		Level of importance مستوى الأهمية	
Moodle use استخدام منصة مودل	Accessibility إمكانية الوصول	4.219	4.05	0.577	0.613	Agree موافق	Agree موافق	High مرتفع	High مرتفع
	Flexibility المرونة	4.133		0.648		Agree موافق		High مرتفع	
	Interactivity التفاعلية	3.8		0.833		Agree موافق		High مرتفع	
Learning outcomes نتائج التعلم		4.1143		0.57657		Agree موافق	Agree موافق	High مرتفع	High مرتفع

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4.5. Testing Hypotheses & Findings Discussion

		Correlations			
		A1	A2	A3	Learningoutcomes
A1	Pearson Correlation	1	.773**	.654**	.572**
	Sig. (2-tailed)		<.001	<.001	<.001
	N	35	35	35	35
A2	Pearson Correlation	.773**	1	.623**	.580**
	Sig. (2-tailed)	<.001		<.001	<.001
	N	35	35	35	35
A3	Pearson Correlation	.654**	.623**	1	.405*
	Sig. (2-tailed)	<.001	<.001		.016
	N	35	35	35	35
Learningoutcomes	Pearson Correlation	.572**	.580**	.405*	1
	Sig. (2-tailed)	<.001	<.001	.016	
	N	35	35	35	35

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

		Correlations			
		F1	F2	F3	Learningoutcomes
F1	Pearson Correlation	1	.494**	.453**	.501**
	Sig. (2-tailed)		.003	.006	.002
	N	35	35	35	35
F2	Pearson Correlation	.494**	1	.673**	.497**
	Sig. (2-tailed)	.003		<.001	.002
	N	35	35	35	35
F3	Pearson Correlation	.453**	.673**	1	.658**
	Sig. (2-tailed)	.006	<.001		<.001

	N	35	35	35	35
Learningoutcomes	Pearson Correlation	.501**	.497**	.658**	1
	Sig. (2-tailed)	.002	.002	<.001	
	N	35	35	35	35

** . Correlation is significant at the 0.01 level (2-tailed).

Correlations

		I1	I2	I3	Learningoutcomes
I1	Pearson Correlation	1	.478**	.319	.183
	Sig. (2-tailed)		.004	.062	.293
	N	35	35	35	35
I2	Pearson Correlation	.478**	1	.515**	.356*
	Sig. (2-tailed)	.004		.002	.036
	N	35	35	35	35
I3	Pearson Correlation	.319	.515**	1	.640**
	Sig. (2-tailed)	.062	.002		<.001
	N	35	35	35	35
Learningoutcomes	Pearson Correlation	.183	.356*	.640**	1
	Sig. (2-tailed)	.293	.036	<.001	
	N	35	35	35	35

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.621 ^a	.386	.367	.45866

a. Predictors: (Constant), Moodleuse

ANOVA^a

Model	Sum of Squares	df	Mean Square	F	Sig.
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1	Regression	4.361	1	4.361	20.729	<.001 ^b
	Residual	6.942	33	.210		
	Total	11.303	34			

a. Dependent Variable: Learningoutcomes

b. Predictors: (Constant), Moodleuse

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.748	.526		3.325	.002
	Moodleuse	.584	.128	.621	4.553	<.001

a. Dependent Variable: Learningoutcomes

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.657 ^a	.431	.376	.45538

a. Predictors: (Constant), Interactivity, Accessibility, Flexibility

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	4.874	3	1.625	7.835	<.001 ^b
	Residual	6.429	31	.207		
	Total	11.303	34			

a. Dependent Variable: Learningoutcomes

b. Predictors: (Constant), Interactivity, Accessibility, Flexibility

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
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		B	Std. Error	Beta		
1	(Constant)	1.667	.581		2.870	.007
	Accessibility	.031	.279	.031	.110	.913
	Flexibility	.574	.306	.645	1.878	.070
	Interactivity	-.015	.141	-.022	-.106	.917

a. Dependent Variable: Learningoutcomes

4.6. Conclusion:

This study aimed to investigate the relationship between Moodle platform use (accessibility, flexibility, and interactivity) and learning outcomes among students at Midocean University. Descriptive statistics revealed the demographic profile of the sample, predominantly female, with a majority holding bachelor's degrees and having less than five years of experience.

Validity and reliability analyses confirmed the robustness of the measurement instruments. Correlation analysis indicated significant relationships between Moodle use dimensions (accessibility, flexibility, and interactivity) and learning outcomes. However, the regression analysis revealed that while Moodle use has a significant overall impact on learning outcomes, the individual dimensions (accessibility, flexibility, and interactivity) did not independently predict learning outcomes.

5. Chapter five: Research limitations, Recommendations & Conclusion

5.1. Research Limitations & Future Research

5.2. Research Recommendations

5.3. Conclusion

References

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Appendix