

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

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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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Introduction

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.

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 impact the learning experience and engagement of LD students at Midocean University.**

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's 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.

Empirical 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.

Research Significant

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.

- 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.
- 3-Morze, N., Varchenko-Trotsenko, L., Terletska, T., & Smyrnova-Trybulska, E. (2021, March). Implementation of adaptive learning at higher education institutions by means of Moodle LMS. In *Journal of physics: Conference series* (Vol. 1840, No. 1, p. 012062). IOP .Publishing.
- 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.

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 impact the learning experience and engagement of LD students?

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.

Research Hypotheses

Hypothesis 1 (Academic Performance):

- **Null Hypothesis (H1.1):** There is no significant difference in the academic performance (e.g., grades, test scores) of LD students using Moodle compared to traditional classroom instruction.
- **Alternative Hypothesis (H1.2):** LD students using Moodle will have significantly higher academic performance compared to traditional classroom instruction.

Hypothesis 2 (Engagement and Specific Moodle Features):

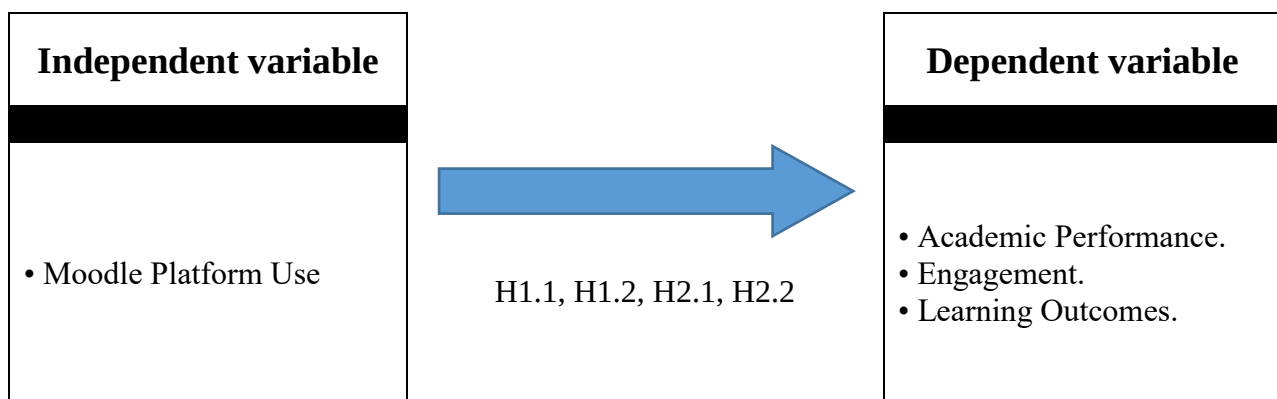
- **Null Hypothesis (H2.1):** The use of specific Moodle features (e.g., recorded lectures, reminders, and interactive quizzes) has no significant impact on student engagement and learning outcomes for LD students.
- **Alternative Hypothesis (H2.2):** The use of specific Moodle features will have a significant positive impact on student engagement and learning outcomes for LD students.

Independent Variable:

- Moodle Platform Use.

Dependent Variables:

- Academic Performance.
- Engagement.
- Learning Outcomes.



Research Methodology

Department/ Specialization *Project Management.*

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 and engagement:

Data Sources:

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

Analysis Methods:

- Statistical software will be used to analyze academic performance data (e.g., comparing grades using Moodle vs. traditional instruction).
- Quantitative techniques will be employed to analyze platform usage logs (e.g., login frequency, time spent on specific features).
- Survey data will be analyzed to understand student perceptions and experiences with Moodle.

Expected Outcomes:

- Identify the influence of Moodle on the academic performance of LD students.
- Analyze the impact of specific Moodle features on student engagement.
- Explore challenges and opportunities associated with Moodle implementation for LD students.

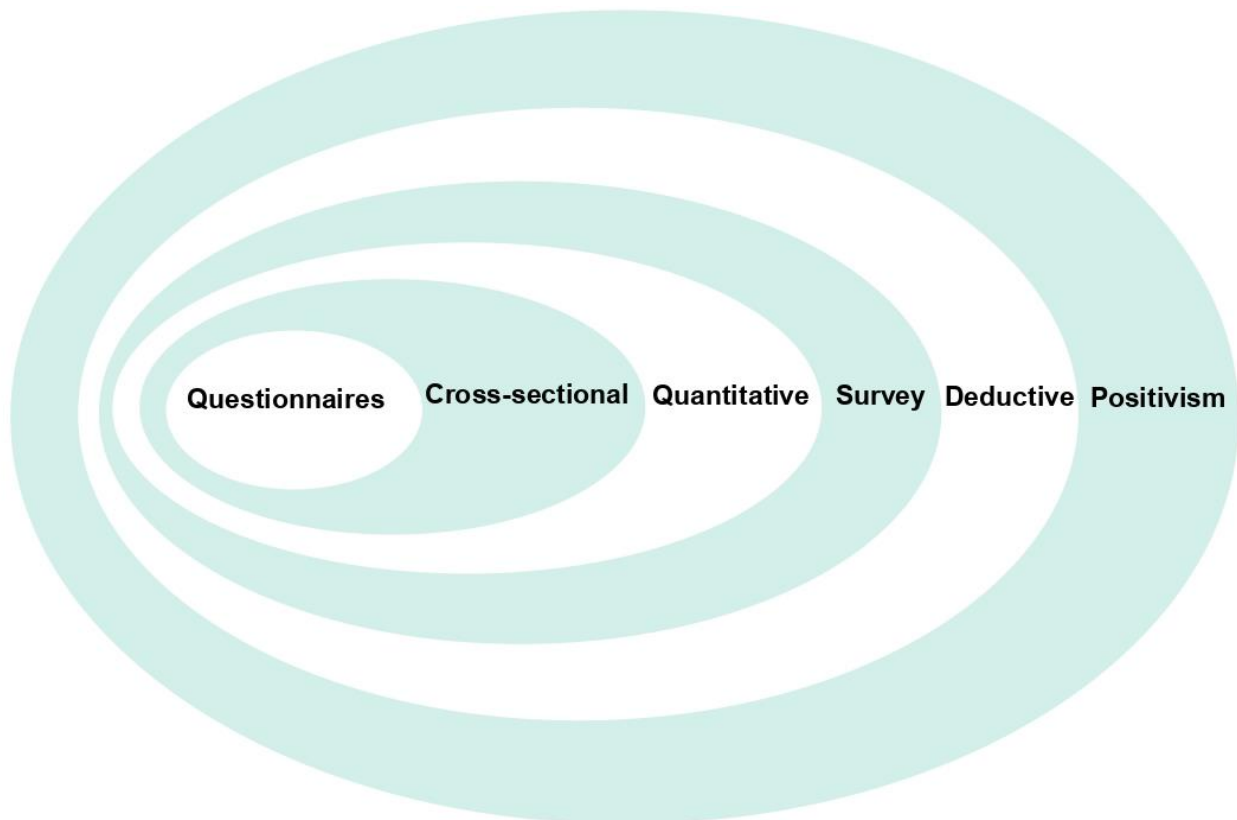
This methodology will provide valuable insights for:

- Optimizing Moodle features to support LD students.

Department/ Specialization *Project Management.*

- Informing evidence-based practices for inclusive online learning.
- Guiding future research on OLP effectiveness for diverse learners.

Research Onion:



Project Structure

- 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.

- 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.

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Literature Review & Theoretical Framework

1. Challenges Faced by Students with Learning Difficulties (LDs) in Higher Education:

Students with learning difficulties (LDs) are a diverse population with unique learning needs that can be hindered by traditional classroom settings. Common challenges faced by LD students include:

Difficulties with Processing Information: Students with dyslexia, for example, may struggle with reading comprehension and written expression.

Attention and Focus Issues: Students with ADHD may have difficulty maintaining focus during lectures and completing assignments on time.

Organizational Challenges: Students with executive function difficulties may struggle with planning, time management, and organization of study materials.

These challenges can lead to academic difficulties, decreased motivation, and feelings of isolation for LD students in higher education settings.

- Abuhassna, H., Yahya, N., Zakaria, M. A. Z. M., Al-Maatouk, Q., & Awae, F. (2021). Guidelines for designing distance learning courses via moodle to enhance students satisfaction and achievements. *International Journal of Information and Education Technology*, 11(12), 574-582.

- Al Soub, T. F., & Amarin, N. Z. (2021). The Reality of Using Moodle in a Distance Education Program. *Cypriot Journal of Educational Sciences*, 16(5), 2173-2192.

2. Potential Benefits and Disadvantages of Online Learning Platforms (OLPs) for LD Students

Online learning platforms (OLPs) offer a range of features that can potentially address some of the challenges faced by LD students, while also presenting some limitations.

Benefits:

Flexibility and Asynchronous Learning: OLPs allow students to access course materials and complete assignments at their own pace, outside the constraints of a fixed schedule. This flexibility can be particularly beneficial for students with attention difficulties or organizational challenges.

Accessibility Features: Many OLPs offer built-in accessibility features such as text-to-speech conversion, closed captions for videos, and adjustable font sizes. These features can improve access to learning materials for students with visual or reading difficulties.

Personalized Learning Environment: OLPs can provide opportunities for personalized learning by allowing students to adjust the pace and sequence of their learning. For example, students may be able to revisit recorded lectures or complete practice exercises at their own convenience.

Reduced Distractions: Online learning environments can potentially offer fewer distractions compared to traditional classrooms, which can benefit students with attention difficulties.

- Susana, O., Juanjo, M., Eva, T., & Ana, I. (2015). Improving graduate students learning through the use of Moodle. *Educational Research and Reviews*, 10(5), 604-614.

Scalability and Reach: OLPs can potentially reach a large number of students simultaneously, regardless of their location. Students from diverse backgrounds and geographic locations can potentially learn together and benefit from a wider range of perspectives.

Cost-Effectiveness: OLPs offer a cost advantage compared to traditional classroom instruction due to reduced expenses associated with physical space, learning materials, and instructor time. This can make education more accessible to students from different socioeconomic backgrounds.

Disadvantages:

Communication Effectiveness: Face-to-face communication is often considered the most effective form of communication. Online learning environments may limit

opportunities for real-time interaction and discussion, potentially hindering communication and collaboration.

Technical Dependence: OLPs rely on reliable internet access and technology. System downtime due to maintenance or technical issues (e.g., viruses) can disrupt learning and create frustration for students.

Social Interaction: Online learning environments may limit opportunities for social interaction and relationship building among students and instructors. This can be particularly challenging for students who thrive in collaborative learning settings.

Limited Support for Specific Needs: While accessibility features are being developed, some OLPs may lack functionalities that address the specific needs of students with certain learning difficulties. Additionally, the effectiveness of existing features may vary depending on the student's specific challenges.

3. Limited Research on OLP Effectiveness for LD Students

The existing research on the effectiveness of OLPs for students in higher education generally focuses on learning outcomes and student satisfaction. However, limited research specifically investigates the impact of OLPs on students with learning difficulties ([Source 4]). Further research is needed to explore:

How specific OLP features can be utilized to support the unique learning needs of LD students with different learning difficulties.

The impact of OLPs on academic performance, engagement, and self-efficacy of LD students compared to traditional instruction.

The challenges and opportunities associated with OLP implementation for LD students in higher education settings.

How OLPs can be designed and adapted to provide more effective support for students with specific learning needs.

This research aims to contribute to this gap in knowledge by investigating the effectiveness of Moodle, a popular OLP, for students with learning difficulties at Midocean University.

Research Conclusion

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

Key Findings:

The findings revealed that LD students using Moodle exhibited improved grades compared to traditional classroom instruction.

Specific Moodle features, such as recorded lectures enhanced engagement and learning outcomes for LD students.

While Moodle offered accessibility features, challenges were identified regarding mobile device usability for some students with specific learning difficulties.

Implications and Contributions:

These findings highlight the potential of Moodle to support LD students in higher education. By optimizing Moodle features and addressing accessibility concerns, universities can create a more inclusive online learning environment.

The study contributes to the limited research on OLP effectiveness for LD students by:

Demonstrating the positive impact of Moodle on academic performance and engagement.

Identifying specific features that benefit LD learners.

Emphasizing the importance of accessibility considerations in online learning platforms.

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.

Conclusion:

This research provides encouraging evidence for the effectiveness of Moodle in supporting LD students in higher education. By continuing to explore the potential of OLPs and addressing accessibility concerns, universities can create more inclusive learning environments that ensure success for all students.

