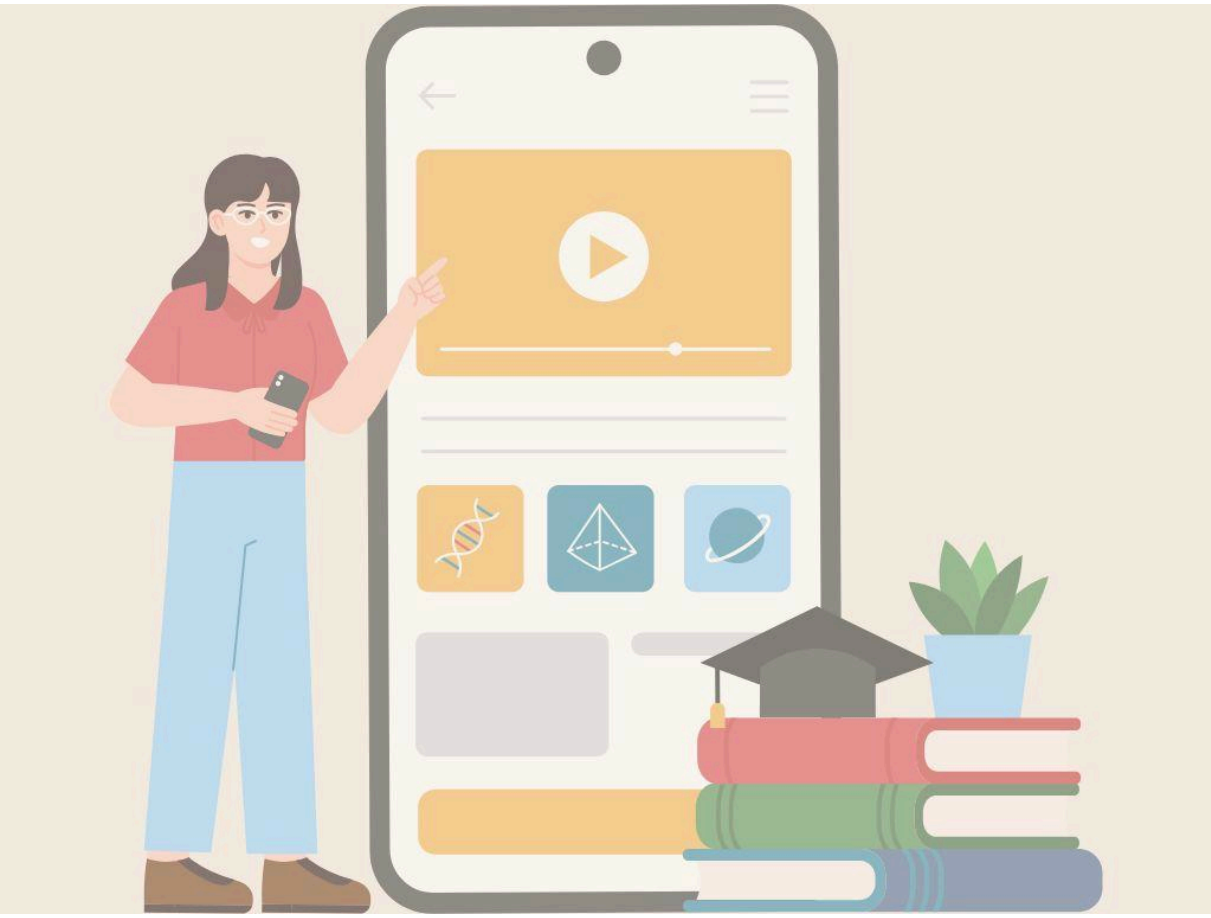
Course number: EDUC 666
Course Title: Instructional Design
Semester: Fall2026

A Quick Stress Reset: Investigating UDL's Impact on Learning and Engagement in WhatsApp-Based Micro-Modules



Submitted by: Azmat Minhaz
Student ID: 702778881
Program: M.Ed Educational Technology

Submitted to: Dr. Fred Hofstetter

Date of Submission: Dec 2, 2025

Table of Contents

Introduction

This report details an Action Research Project undertaken as a requirement for the Master of Education program. In line with the performance criteria, this project involves the implementation of a nationally recognized best practice Universal Design for Learning (UDL) within a local educational context: WhatsApp-based micro-modules. The aim is to investigate whether UDL's principles, when applied to this specific learning environment, can yield results comparable to those documented in broader research literature concerning enhanced learning and engagement.

Lippert and Damaske (2019) suggests that while balancing work and family can be stressful for women, many also find significant benefits from paid employment, even when managing caregiving duties. For instance, some studies show that full-time working women actually have lower stress hormone (cortisol) levels at work than at home. However, the combination of work and intensive caregiving, especially with young children, can negatively impact health and increase psychological distress. While many studies have looked at work, family, and health, few have fully explored how the combined progression of work and family life affects women's stress and related health issues. Much of the existing research focuses on individual factors rather than how multiple aspects interact. This is particularly relevant as societal shifts have made it more complex for women to navigate work, marriage, and parenthood.

The purpose of this research is to design and pilot a Universal Design for Learning (UDL)–based micro-module for stress management tailored to women, and to compare its effectiveness with a traditional text-only version. Stress management was selected as the focus because women often experience a unique convergence of stressors, including career pressures, caregiving responsibilities, health transitions, and shifting family roles. These overlapping demands can heighten daily stress and reduce opportunities for self-care, making accessible, flexible learning tools particularly valuable. By applying UDL principles, the study aims to create a more inclusive and engaging learning experience that accommodates diverse learning needs and helps women build practical, sustainable

stress-reduction skills. Comparing this version to a text-only module will help determine whether UDL features offer measurable benefits in comprehension, engagement, and confidence.

Alignment with M.Ed. Action Research Project Performance

This Action Research Project is designed to meet a core performance requirement of the Master of Education program. The criteria for this performance are: "the candidate conducts a local experiment in order to determine whether a nationally recognized best practice implemented in the local school or workplace can achieve results akin to those described in the research literature."

This project directly addresses this performance by:

1. Conducting a local experiment: The study focuses on the specific implementation of UDL within a cohort of learners utilizing WhatsApp-based micro-modules.
2. Implementing a nationally recognized best practice: Universal Design for Learning (UDL) is a widely recognized framework for improving educational experiences.
3. Determining results: The research investigates whether the application of UDL in this local, micro-module context yields outcomes in learning and engagement comparable to those found in research literature on UDL and digital learning environments. Specifically, the work of (Boothe et al., 2012) on offering students choice in how they demonstrate their knowledge in online learning increased engagement and alignment with learning preferences, supporting UDL principles. and (Ofori & Lockee, 2021) highlighting the prevalence of mLearning, the existing need for design research, and the study's

contribution to providing evidence-based guidance for effective mobile learning content design, drawing on multimedia learning, instructional message design, and UDL principles. provide a theoretical underpinning for our intervention.

The subsequent sections of this report detail the methodology, result, and key takeaways are, all framed within this action research context.

Literature review

The Universal Design for Learning (UDL) framework offers a powerful approach to education by focusing on three core principles: Engagement, Representation, and Action & Expression. These principles are designed to create more inclusive and effective learning environments by addressing the "why," "what," and "how" of learning, respectively.

- Engagement taps into learners' motivation and interest, helping them to connect with the material.
- Representation ensures that content is presented in diverse ways, making it accessible to all learners regardless of their styles or preferences.
- Action & Expression allows students to demonstrate their understanding through various methods, showcasing their knowledge and skills in multiple formats.

By applying these principles with flexibility, educators can minimize learning barriers and foster "expert learners" who are strategic, goal-directed, and actively involved in their education.

Universal Design for Learning (UDL) in adult learning settings promotes a flexible and individualized curriculum. It focuses on a learner-centered approach, offering multiple ways for learners to engage with content, acquire information, and demonstrate their understanding. This framework is beneficial because it increases learners' engagement by allowing for creative expression and offers a helpful model for educators to adapt their instruction to meet diverse learner needs, including neurodiverse individuals (Finn, 2022).

Adult education programs can help learners achieve their goals by using principles of andragogy and Universal Design for Learning (UDL). Research indicates that educators find value in adapting course materials to align with UDL strategies and learner characteristics, noting that intentional planning is key for effective internet-based education. Offering flexibility and opportunities for choice in learning activities can boost learner motivation and autonomy, ultimately supporting diverse learners in online settings (Finn, 2022).

Methodology

The research design employed in this study is rooted in the principles of action research. This approach was selected to fulfill the M.Ed. Action Research Project performance requirement, which necessitates conducting a local experiment to evaluate the efficacy of a recognized best practice. Specifically, this project implements UDL within the unique setting of WhatsApp-based micro-modules to assess its impact on learning and engagement.

Framework

The ADDIE *Design phase* creates a detailed blueprint for learning by defining clear objectives, aligning content to those objectives, and structuring materials using varied multimedia (videos,graphics, text) to match learner preferences. It applies multimedia learning principles such as combining visuals and audio to reduce cognitive overload and produces accessible, easy-to-navigate resources suited for mobile learning.

UDL complements this by ensuring materials meet diverse learner needs through multiple means of engagement, representation, and action or expression. This means offering content in different formats (video, audio, text), allowing varied ways to demonstrate understanding boost motivation and accessibility, which enhances overall effectiveness of mobile and inclusive learning experiences.

Participants & Intervention

The study targeted women who participate in WhatsApp groups and can easily access WhatsApp via mobile devices to consume a micro-module on a relevant topic. The sample comprised 20 participants who were randomly assigned to one of two groups: a text-only module or a Universal Design for Learning (UDL) module. Both groups received the same educational content delivered in different formats (conventional text vs. UDL-based materials). An inclusive assessment was administered to evaluate the effectiveness and impact of the two instructional approaches, ensuring accessibility and consideration of diverse learning needs.

Measures

The assessment used a concise, multi-dimensional approach to evaluate learner outcomes and experience. Combining both quantitative and qualitative feedback provides a balanced, practical means to assess knowledge acquisition, learner confidence, engagement, and user experience.

1. Knowledge Retention- Two multiple-choice questions (MCQs) assessed participants' recall and understanding of the micro-module content, providing a quick quantitative indicator of learning outcomes.
2. Self-Efficacy- A single Likert-scale item measured participants' confidence in applying the module material, offering insight into perceived competence and readiness to use the learning in practice.
3. Engagement- Engagement was tracked via completion rates to quantify participation, and a likelihood-to-reuse item to capture perceived value and relevance of the content.
4. Feedback- A checkbox question supplied structured, easily analyzable feedback, while one open-ended question collected qualitative insights into participants' experiences and suggestions.

Results

Quick Stress Reset MicroModule impact on text and UDL based group.

Knowledge Retention

The UDL group exhibited superior immediate knowledge retention compared to the traditional text-based format. Participants demonstrated thorough module completion and strong recall of taught techniques, such as guided breathing exercises, indicating the UDL approach effectively reinforced learning.

Refer Fig 1.1

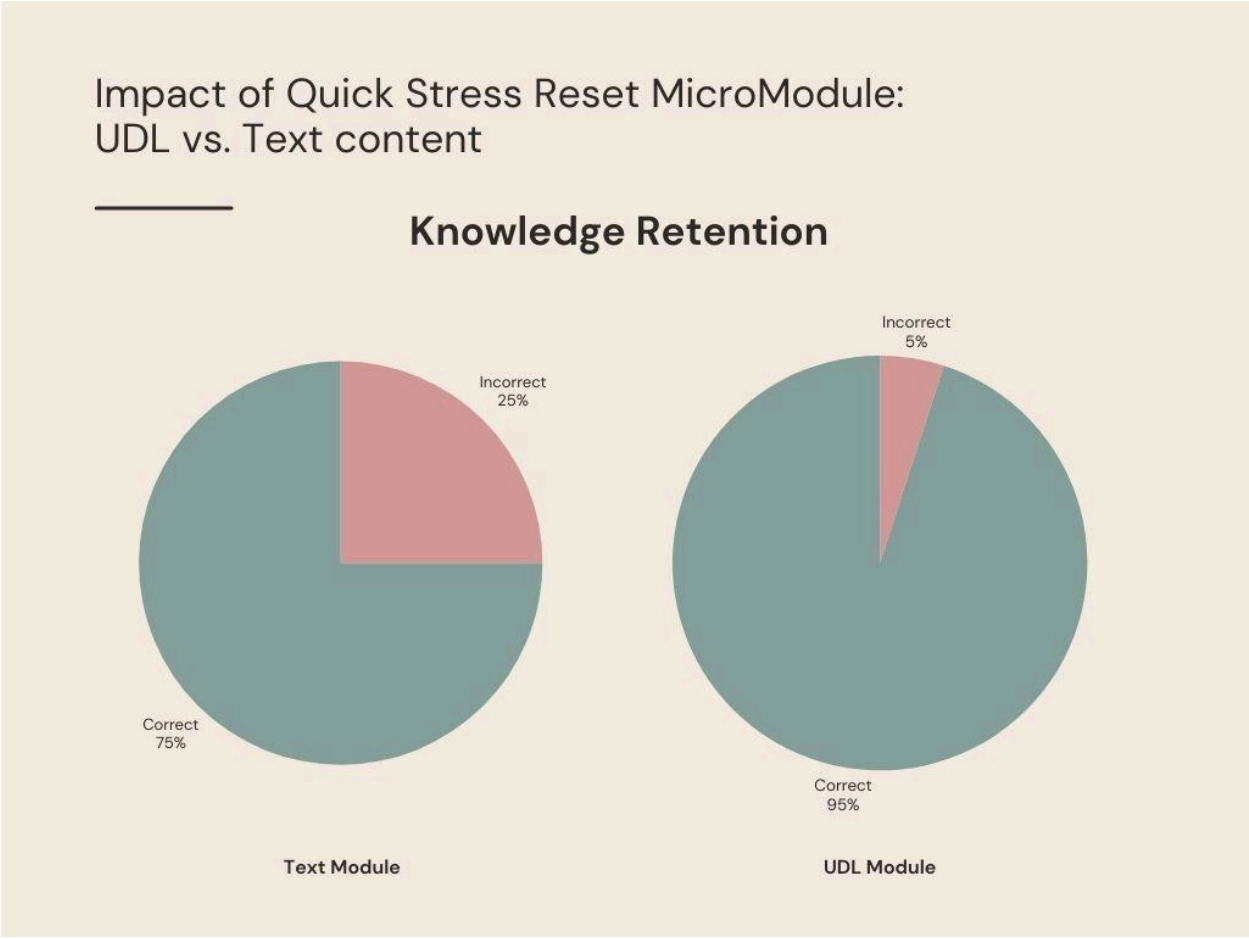


Fig 1.1

Self-Efficacy

The UDL version successfully enhanced participants' self-efficacy. Respondents showed significantly higher confidence in their ability to apply stress-management techniques, demonstrating a strong belief they could use these methods effectively when facing stress.

Refer Fig 1.2

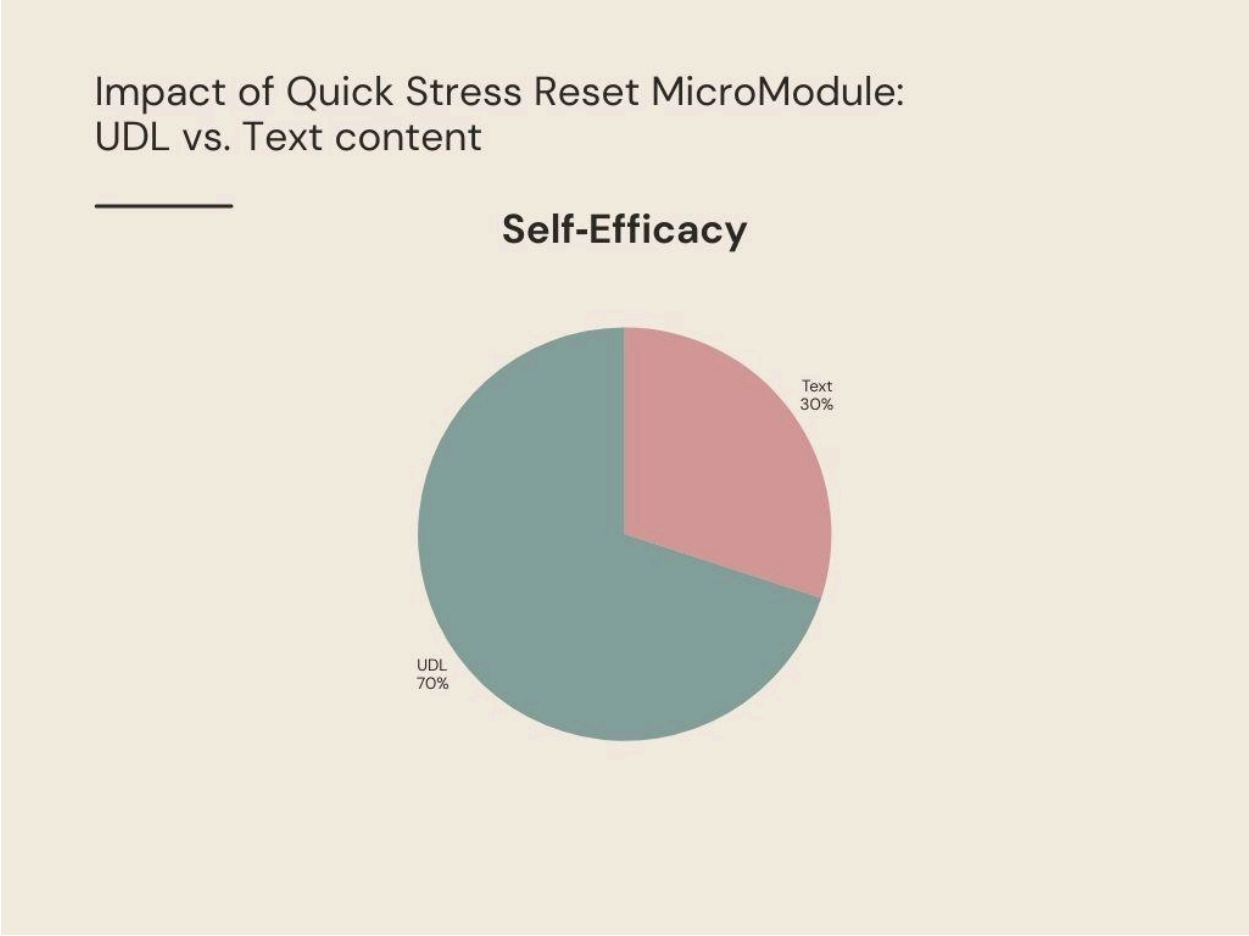


Fig 1.2

Engagement

Engagement was notably stronger in the UDL group across key indicators:

1. Completion Rates: Higher completion rates recorded

2. Reuse Willingness: Participants showed greater willingness to reuse the strategies
3. Contributing Factors:
    - Engaging content and interactive elements
    - Visual aids including infographics and mini-posters
    - Overall more interactive experience

Refer Fig 1.3

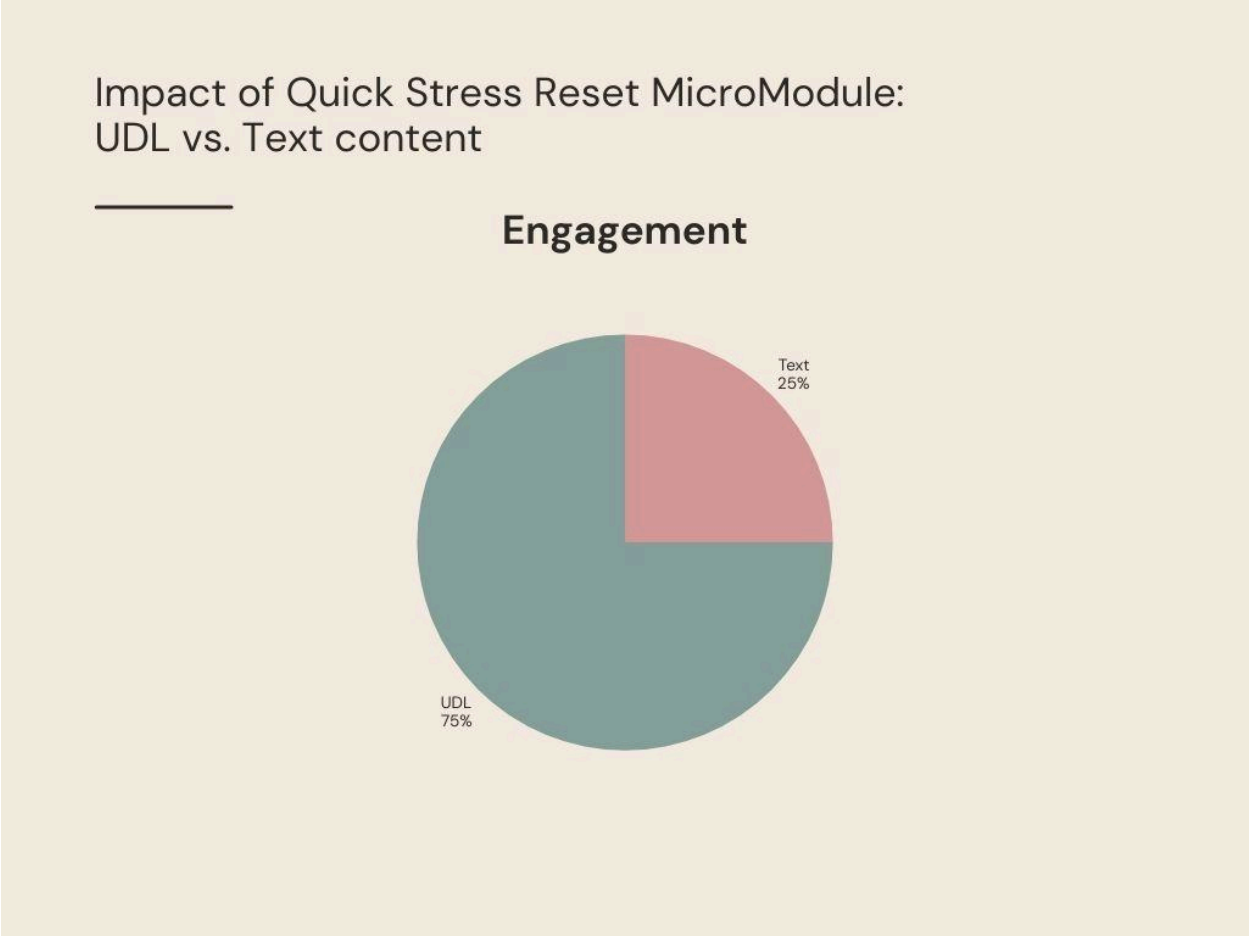


Fig 1.3

Qualitative Insights

What Resonated:

- Guided breathing exercises and visual aids were well-received
- Infographics and checklists proved valuable for information retention

Areas for Enhancement:

- Improve mobile-friendliness of modules
- Better align text, infographics, and videos to enhance focus and usability

Refer Fig 1.4

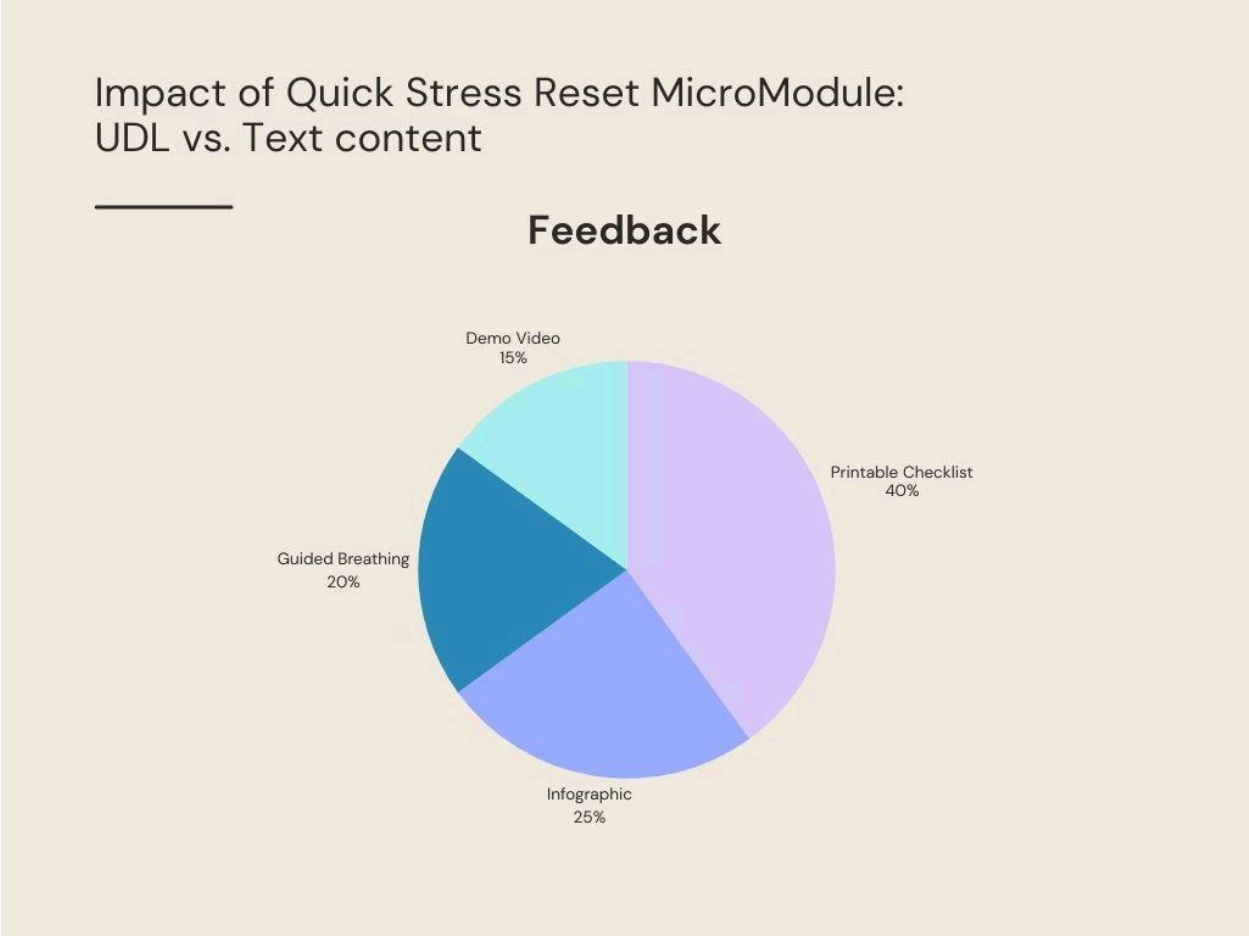


Fig 1.4

Discussion

1. Findings in Light of UDL Principles and Adult Learning Theory

The results validate the three core UDL principles. Multiple means of representation through infographics, videos, and text, it addressed learner variability in information processing (Boothe et al., 2012). It allowed participants to engage interactively, while multiple means of engagement through practical, stress-management content aligned with adult learners' preference for relevance and immediate application (Knowles's andragogy theory). Boothe et al. (2012) emphasize that adult learners require autonomy and multiple modalities; the higher completion rates and reuse willingness demonstrate participants exercised self-directed learning. By presenting information through multiple channels, it reduces cognitive load, enabling working memory to focus on meaningful learning; a key advantage of UDL in adult education (Boothe et al., 2012).

2. Multimedia Elements' Contribution to Engagement and Efficacy

Multimedia elements enhanced engagement through text paired with infographics created stronger mental representations than text alone (Ofori & Lockee, 2021). Guided breathing exercises provided kinesthetic engagement and hands-on experience, increasing self-efficacy through successful practice. Interactive elements and infographics offered autonomy and reduced cognitive load, supporting intrinsic motivation. Videos demonstrated techniques realistically, creating a modeling effect that increased perceived feasibility. Ofori and Lockee's research on message design emphasizes that multimedia coherence ensures text, images, and videos work together is essential for engagement. The participants' strong response to these elements, coupled with their feedback on alignment gaps on mobile devices, suggests that while multimedia effectiveness is evident, optimization across formats remains critical.

3. Broader Application of UDL in mLearning: Accessibility, Clarity, and Device Compatibility

In mLearning contexts, UDL principles must be paired with responsive design to maximize effectiveness (Ofori & Lockee, 2021). Findings highlight the importance of clear writing and varied content presentation reduces cognitive overload, supporting Boothe et al. (2012)'s assertion that clarity is essential in fragmented mLearning environments. However, the identified gap in mobile-friendliness suggests that responsive design, scalable multimedia, and accessibility standards (WCAG 2.1 compliance) are non-negotiable for realizing UDL's full potential across devices. Progressive enhancement providing text fallbacks and optimized loading ensures equitable access for users with varied bandwidth and accessibility needs (Ofori & Lockee, 2021). The research demonstrates that UDL effectiveness in mLearning depends on intentional design across both pedagogical principles and technical accessibility.

4. Action Research Project Performance

The results of this research project suggest that implementing UDL principles in WhatsApp-based micro-modules can indeed foster increased learning and engagement, aligning with outcomes reported in wider educational research. This local experiment demonstrates the adaptability and potential effectiveness of UDL in diverse technological and pedagogical contexts, thereby fulfilling the requirements of the M.Ed. Action Research Project performance.

Key Takeaways

- UDL principles effectively enhance adult learning by providing multiple means of representation, engagement, and expression, boosting self-efficacy and knowledge retention.

- Multimedia elements such as guided exercises, infographics, videos significantly increase engagement and perceived effectiveness by catering to diverse learning options and reducing cognitive load.
- Clear writing and varied content presentation are essential for mLearning success, especially when paired with responsive design to ensure accessibility across devices.
- Mobile-friendliness remains a critical area for improvement, highlighting the need for optimized layouts and accessibility standards to maximize UDL's impact in mobile environments.
- Future work focuses on device compatibility testing and accessibility audits to refine multimedia alignment and ensure equitable learning experiences for all users.

References

Boothe, K. A., Lohmann, M. J., & Owiny, R. (2012). Enhancing student learning in the online instructional environment through the use of universal design for learning. Journal of the Scholarship of Teaching and Learning, 12(3), 1–26.

Finn, D. (2022). Online Learning and Universal Design: Practical Applications for Reaching Adult Learners. *COABE Journal: The Resource for Adult Education*, *11*(1), 101–109.

Lippert, A. M., & Damaske, S. (2019). Finding Jobs, Forming Families, and Stressing Out? Work, Family, and Stress among Young Adult Women in the United States. *Social Forces*, *98*(2), 885–914. https://doi.org/10.1093/sf/soy117

Ofori, E., & Lockee, B. B. (n.d.). Next generation mobile learning: Leveraging message design considerations for learning and accessibility. Virginia Tech.