



Universal Design for Learning Mathematics

Rhenssa Lynne Cabudol
University of Hawaii West Oahu



Abstract

The focus of this study was to determine how Universal Design for Learning in Mathematics will create inclusion in the classroom. According to The Center for Applied Special Technology, Universal Design Learning is a framework used in instruction focusing on creating learning experiences for all types of learners in different ways, so that they will achieve academic success in a meaningful way (2021). This framework was created based on three sets of principles that was created based on an analysis conducted by professionals and their research of what learning really is (Cast Inc., 2021).

Along with maximizing learning for all students, Universal design for learning works on eliminating barriers and minimizing individual accommodation needs by having multiple ways to benefit all learners through learning experiences (Andreasen & Hunt, 2011).

Introduction & Research Question

A Universal Design Learning framework for mathematics embedded in the classroom and instruction is done through flexibility in the educator’s methods and materials used for instruction. By being flexible within the lesson, instruction, and classroom environment; students of all learning styles, learning needs, abilities, and disabilities will have the opportunity to gain learning experiences while supporting the curriculum and inclusion (Cast Inc., 2021).

How to create an inclusive math environment in the classroom using the Universal Design Learning Framework in instruction?



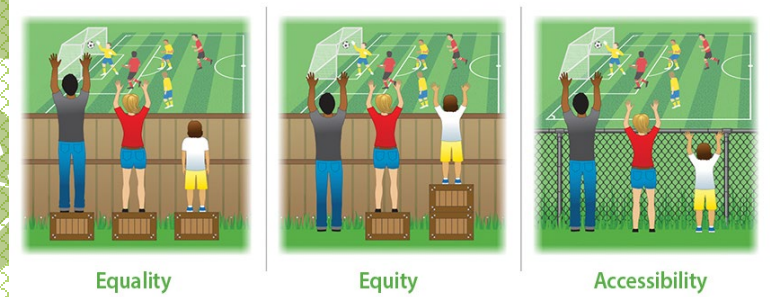
Contact

Rhenssa Lynne Cabudol
University of Hawaii West Oahu
Email: rcabudol@hawaii.edu

Research Design

To assist with locating the necessary information to following the question; research was conducted on the topic “Universal Design for Learning Mathematics in Elementary Education”. The resources used was through peer reviewed journal articles found in The University of Hawaii West Oahu Library’s Online Database and the National Council of Teachers of Mathematics organization. Research was conducted to show how the three principles in Universal Design Learning for Mathematics could create engagement and inclusion.

Universal Design Learning Guidelines	Instructional Strategies	Purpose
Engagement (The WHY of learning)	<ul style="list-style-type: none"> Games Technologies Manipulatives 	<ul style="list-style-type: none"> Motivation Interests WHY?- reason Connection to life. Self reflection Personal Goals
Representation (The WHAT of learning)	<ul style="list-style-type: none"> Images Videos Textbook Digital books Music 	Allow students to choose the type of methods to use to intake information = interaction.
Action & Expression (The HOW of learning)	Alternative paper/ pen assessment: <ul style="list-style-type: none"> Video essay Drawing Digital test format w/audio Group demonstration Physical model build 	Manner of Expression=Show what they learn (Knowledge of subject). <ul style="list-style-type: none"> Goal setting Monitor progress



Equality

Equity

Accessibility

Discussion

Based on the research, the guidelines that follows Universal Design learning can be applied to any subject area. The purpose of UDL is to have understand why, what, and how they are learning. UDL is also used to motivate students to learn. The problem that can occur in math is through ineffective instruction; however, with UDL instruction will have a variety of learning experience opportunities that will open engagement and inclusion to all learners (Nisbet, 2019).

Conclusions

By getting to know your students through their barriers, strengths, interests, and areas of improvements; planning a Universal Design Learning framework for math will help improve their learning, participation, and engagement in mathematics. Teachers can build an optimal learning environment and make the most of Universal Design Learning by following its principles for any subject area to enhance their student’s learning experiences, engagement, and inclusion (Eichhorn, DiMauro, Lacson, & Dennie, 2019).

References

- Andreasen, J.B. & Hunt, H.J., 2011. *Making the most of Universal Design Learning*. The National Council of Teachers of Mathematics, Inc. Retrieved on www.nctm.org
- Buchheister, K., Jackson, C., & Taylor, C. E. (2017). Maths Games: A Universal Design Approach to Mathematical Reasoning. *Australian Primary Mathematics Classroom*, 22(4), 7–12. Retrieved from <https://files.eric.ed.gov/fulltext/EJ1163821.pdf>
- Eichhorn, M. (. S., DiMauro, P. J., Lacson, C., & Dennie, B. (2019). Building the Optimal Learning Environment for Mathematics, *The Mathematics Teacher* MT, 112(4), 262-267. Retrieved Apr 3, 2021, from <https://pubs.nctm.org/view/journals/mt/112/4/article-p262.xml>
- Nisbet, J. (2019). *Universal Design for Learning: Principles and Examples for 2019*. Prodigy Website. Retrieved from <https://www.prodigygame.com/main-en/blog/universal-design-for-learning/>
- The Center for Applied Special Technology (CAST) retrieved from <https://www.cast.org/impact/universal-design-for-learning-udl>
- Wilson Language Training. (2021). (**Equity Image**) *Accessibility and Universal Design for Learning*. Publication date, 18 December 2018. Retrieved from <https://www.wilsonlanguage.com/accessibility-and-universal-design-for-learning/>