ENGAGING STUDENTS IN ACTIVITIES THAT LEAD TO DEEP STUDENT LEARNING AT THE SECONDARY AND TERTIARY LEVEL

Susan Orme, EdD; Danae Romrell, PhD; Elaine Wagner, EdD
Brigham Young University – Idaho (all three presenters)

Short description of the Discussion Group: aims and underlying ideas

"When students connect mathematical ideas, their understanding is deeper and more lasting, and they come to view mathematics as a coherent whole" (NCTM, n.d.). To answer this call for deeper student understanding, we propose a discussion group on teaching methods that lead to deep student learning at the secondary and tertiary level. We propose this deeper learning can occur through the use of carefully designed activities, questions, and assessments.

Well-designed activities occur when students engage with content before, during, and after class. We will begin by discussing activities and questions students can engage in to begin developing an understanding of the concepts prior to coming to class. Then, we will discuss activities and teaching methods that build on preparatory activities and can be used in class to lead to a richer understanding of mathematical concepts. Finally, we will discuss assignments, activities, and assessments that occur after class to help students solidify and demonstrate their understanding.

As noted by the NCTM (n.d.), "students require frequent opportunities to formulate, grapple with, and solve complex problems that involve a significant amount of effort". The purpose of this discussion group, will be for participants to share activities that have worked well for promoting deeper understanding.

Planned structure:

Tuesday, 16.30-18.00: Planned timeline	Topic	Material / Working format / presenter
16:30-16:45	Introduction	What is deep learning? **Danae Romrell**
16:45-17:00	Before Class Preparation Activities	Presentation: An introduction to example generation as one possible method to encourage deep learning. **Elaine Wagner**
17:00-17:30	Before Class Preparation Activities	Discussion: What types of activities and questions have you used prior to class to help your students develop deep learning? **Susan Orme**
17:30-17:40	During Class Activities	Introduction: An introduction to activities we have used to encourage deep learning. **Danae Romrell**

17:40-18:00	During Class Activities	Discussion: What type of activities and questions have you used during class to help your students develop deep learning? **Elaine Wagner**

Friday, 16.30-18.00: Planned timeline	Topic	Material / Working format / presenter
16:30-16:35	Introduction and Review	Brief review of earlier session. **Susan Orme**
16:35-16:50	Example Generation Activity	Activity: Have participants complete an example of a short in-class activity that is designed to promote deep learning. **Susan Orme**
16:50-17:00	Discussion of Example Generation Activity	Discussion: Discuss activity and conclude discussion of in-class activities. **Susan Orme**
17:00-17:10	After Class Activities	Presentation: A presentation of some activities we have successfully used to encourage deep learning. **Danae Romrell**
17:10-17:25	After Class Activities	Discussion: What type of activities and questions have you used after class to help your students develop deep learning? **Danae Romrell**
17:25-17:40	After Class Activities	Discussion: How do you assess deep learning? **Susan Orme**
17:40-18:00	Conclusion	Link the three types of activities. Summarize the discussion. **Elaine Wagner**

References

National Council of Teachers of Mathematics. (n.d.). *Executive Summary*. Retrieved from https://www.nctm.org/uploadedFiles/Standards_and_Positions/PSSM_ExecutiveSummary.pdf