DATE: April 2, 2021

TO: Faculty and Students

FROM: Professor(s) Carla van de Sande
Chair/Co-Chairs of Jana Vandenberg
Defense for the MA in Mathematics
Committee Members Dina Verdin
Donald Jones
Fabio Milner

DEFENSE ANNOUNCEMENT

Candidate: Jana Vandenberg
Defense Date: 04/16/2021
Defense Time: 12:30 PM
Virtual Meeting Link: https://asu.zoom.us/j/85673407739
Title: Keeping in School Shape: A Descriptive and Interpretive Analysis of the Activity of Ten Students in a Calculus Review Program Conducted Over an Academic Break

Please share this information with colleagues and other students, especially those studying in similar fields. Faculty and students are encouraged to attend. The defending candidate will give a 40 minute talk, after which the committee members will ask questions. There may be time for questions from those in attendance. But, guests are primarily invited to attend as observers and will be excused when the committee begins its deliberations or if the committee wishes to question the candidate privately.

ABSTRACT

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Keeping in School Shape: A Descriptive and Interpretive Analysis of the Activity of Ten Students in a Calculus Review Program Conducted Over an Academic Break

By: Jana Elle Vandenberg

Learning loss occurs during academic breaks, and this can be detrimental to student success especially in sequential classes like Arizona State University’s Engineering Calculus sequence in which retention of the concepts taught in a prior class is expected. The Keeping in School Shape Program (KiSS) is designed as a cost effective, efficient, and accessible way of addressing this problem. The KiSS program uses push technology to give students a way to regularly review material over academic breaks while also fostering a growth mindset.

Every day, during an academic break, students are sent a link via text message or email to access a multiple-choice daily review problem which represents material from a previous course that is requisite for success in an upcoming course. Before solving the daily problem, students use a 5-point scale to indicate how confident they are that they can solve the problem. Students then complete the daily review problem and have a variety of resources to support them as they do so, as well as options after they complete it. Students are able to view a hint and try a problem again, view a solution, and attempt a challenge problem. On Tuesdays (aka 2’s-Days) students are given the opportunity to complete either an additional daily review problem or an additional challenge problem, and on Sundays (aka Trivia Days) students can decide between completing only a mathematics trivia question or trivia along with the daily review problem.

There is much to be learned from each individual student who participates in the KiSS program. Three surveys were conducted throughout the Winter Break 2020 KiSS program that gave insight into students’ experience in the KiSS program along with their personal background and mindset regarding mathematics. Ten students responded to all three of these surveys. This
thesis will present a case study for each of these ten students based on their data from program participation and survey responses. Conclusions will be drawn regarding ways in which the KiSS program is helping students and ways in which it can be improved to help students be better prepared for their upcoming studies.