

Boise State University

ScholarWorks

2020 Undergraduate Research Showcase

Undergraduate Research and Scholarship
Showcases

4-24-2020

Faculty Perspectives on the Impact of Virtual Office Hours in Engineering Courses

Brooke-Lynn Andrade
Boise State University

Krishna Pakala
Boise State University

Diana Bairaktarova
Virginia Polytechnic Institute and State University

Harish Subbaraman
Boise State University

Doug Hagemeyer
Boise State University

Faculty Perspectives on the Impact of Virtual Office Hours in Engineering Courses

Abstract

Instructor-student interaction is an important element of the course design, but office hours can be challenging owing to time and space limitations and are underutilized by students. Virtual office hours provide a low stakes environment for learning and yield productive interactions between all enrolled students and the instructor. This study reports on three engineering instructors' perspectives on the efficacy of virtual office hours compared to the traditional face to face option. These classes ranged from sophomore to junior level covering two classes in mechanical engineering and one in electrical and computer engineering and had a total enrollment of 150 students across all courses. The purpose of this study was to understand how virtual office hours can impact engineering student's learning, if it is an efficient use of time, and the differences between traditional and virtual office hours. The instructors' perspectives were gathered via interview after implementing virtual office hours for at least a semester. Analysis of the interviews concluded that the implementation of virtual office hours was mutually beneficial to both the instructors and the students.

Faculty Perspectives on the Impact of Virtual Office Hours in Engineering Courses

PRESENTER:
Brooke-Lynn Andrade

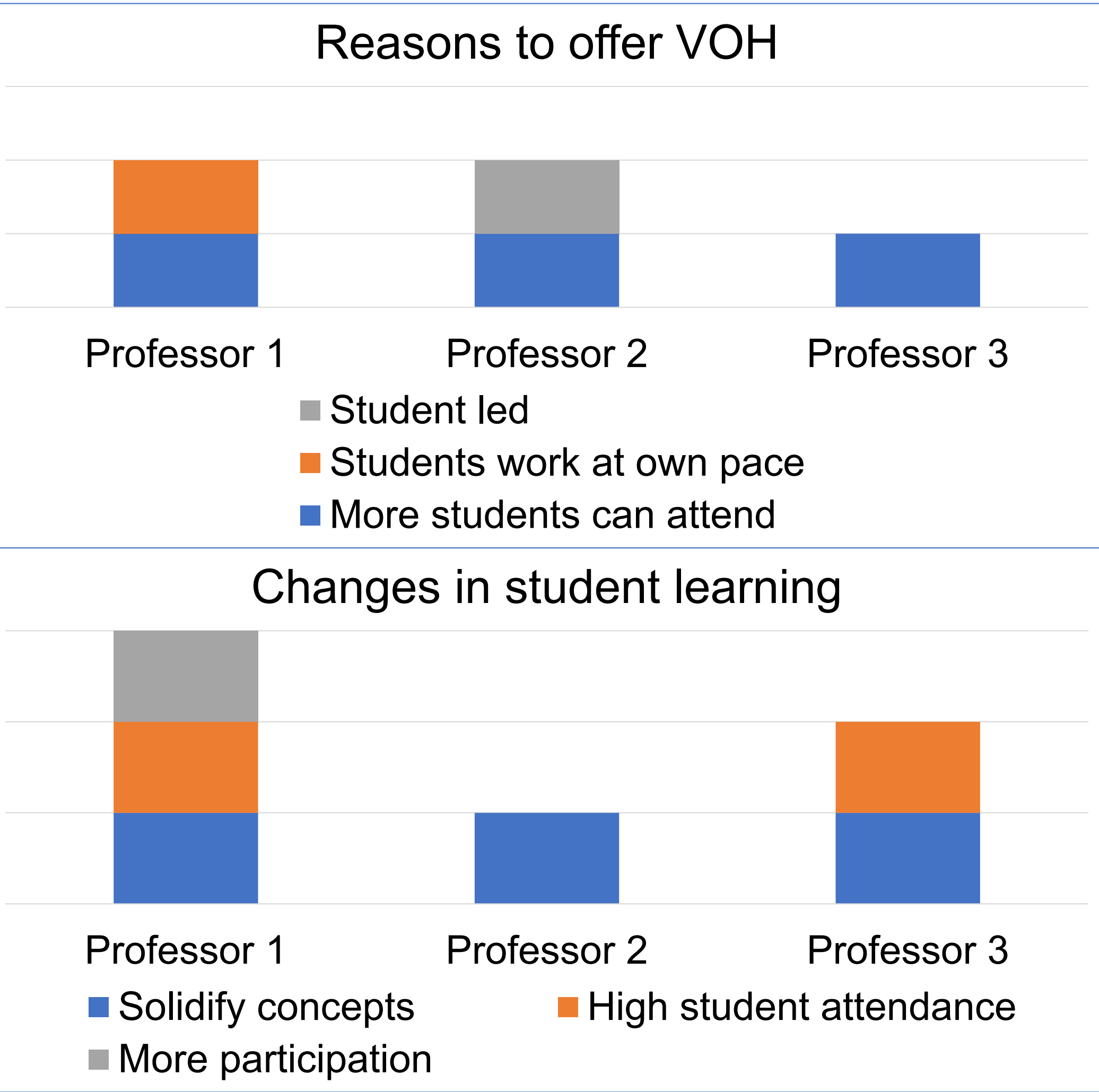
INTRODUCTION

This study reports on the faculty opinion of holding office hours remotely. Virtual office hours (VOH) possess qualities that make students more likely to to attend than face-to-face meetings. Meeting virtually via Zoom with professors provides a low stakes environment, and more productive interactions with several students at a time. With several studies revealing that office hour attendance is often low, it is important to gain an understanding of how this method of interaction is beneficial to student learning.

METHODS

- 1.Interviewed three professors that had used VOH for at least a semester
 - 1. Heat Transfer
 - 2. Dynamics (2 Sections)
 - 3. Circuit Analysis and Design
- 2.Transcribed interviews and analyzed responses
- 3.Thematic coding revealed correlations and individual opinions
- 4.Documented instructor perceptions

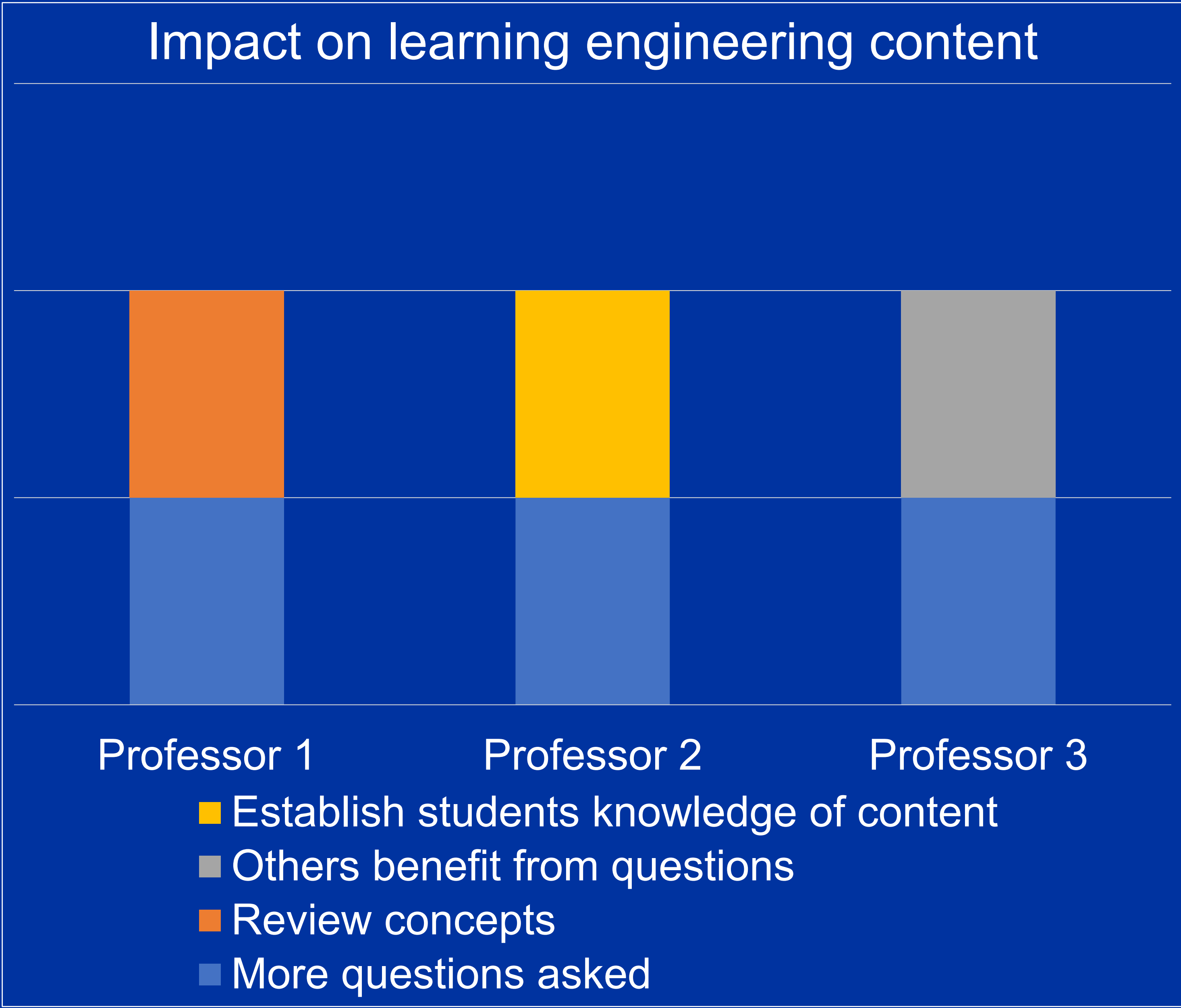
RESULTS



CONCLUSIONS

This study revealed that VOH were mutually beneficial to professors and students. They concurred that there was better student comprehension of material with the aid of this platform. The professors benefitted from less repetition of material, better accommodation, meetings were more productive, and more student participation.

Professors found virtual office hours more accommodating, productive, and to have increased participation.



Instructor quotes

“We need to offer students more flexibility and offer me more flexibility as the instructor.”

“There are people who can now make mistakes in a low stakes environment.”

“In this scenario people are more likely to ask questions.”

“The students can benefit from the questions of others.”

“For many students, that barrier is removed where they are now more comfortable to talk, even in the class.”

INSTRUCTOR PERCEPTIONS

- 1. What are your reasons for choosing to offer virtual office hours as compared to traditional face-to-face office hours?
 - a. Every student can attend, not limited to office space
 - b. Student led meeting
 - c. Helped teach students content
- 2. In what ways do you think attending virtual office hours will impact the learning of engineering content?
 - a. Students ask more questions
 - b. Review concepts from previous lecture
 - c. Passive student participation
 - d. Baseline for student knowledge
- 3. What are your observations/perceptions of changes in student learning as a result of attending virtual office hours?
 - a. Better comprehension
 - b. More participation
 - c. Higher office hour attendance
- 4. What are your perceptions on whether and/how attending virtual office hours is an efficient use of the instructor and the students’ use of time?
 - a. Eliminate redundancy, don’t have to repeat oneself to several students
 - b. No waiting for students to arrive
 - c. No commuting
 - d. Helping several students simultaneously
- 5. Based on your experience of teaching using virtual office hours, what are some lessons you have learned regarding the most efficient use of virtual office hours?
 - a. Student led problem solving
 - b. Thorough understanding of technology
- 6. What are some ways in which you changed your course design to make the most efficient use of virtual office hours?
 - a. Added participation to grading
 - b. Solving additional problems with students
 - c. Reducing face-to-face office hours
- 7. What is the difference between virtual office hours and traditional ones?
 - a. Less intimidating setting
 - b. More constructive
 - c. Talk to more students at once

Brooke-Lynn Andrade
Krishna Pakala, Diana Bairaktarova
Harish Subbaraman, Doug Hagemeyer
Approved under IRB#126-SB19-130