Concept Maps Impact on Learning

Utilizing Peer-Assisted Learning Models in Combination with Concept Maps to Facilitate Student Academic Goals.

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Introduction

Creating concept maps helps students in developing an understanding of college course material along with making connections (Machado & Carvalho, 2020). If students are provided with the time to create concept maps to further improve their understanding and retain material, there will be an increase in their understanding of the material. In addition, concept maps should be considered a priority for students to complete since studies show that they promote the development of critical thinking skills and promote student collaboration, can lead to better academic scores, and can be used as a tool for the learning progress and assessment (Biniecki, 2016). As Peer Assisted Learning (PAL) facilitators, our goal is to create an environment where students can thrive in and provide beneficial study skills that will impact their undergraduate careers. Researcher Chei-Chang Chiou notes that "Students were satisfied with using concept mapping in advanced courses... [it] help them to understand, integrate and clarify accounting concepts and also enhance their interests in learning... and could be usefully used in other curriculum areas" (Chiou 2008). Therefore, we aim to examine how concept maps and setting specific goals will aid students do better in their respective classes.

Methodology

Students formed individual Specific Measurable Achievable Relevant Time-bound (SMART) goals they hoped to achieve with the concept maps they built in their class groups before each exam period. Students were guided in concept maps the first time by their PAL (Peer Assisted Learning) facilitator in making their concept map and forming insightful and useful connections. In each PAL session, students had 10 minutes in class to work on their concept maps. During the first four weeks of the semester, the idea of concept maps was explained and rehearsed with the students, prior to having them work in groups independently from their PAL facilitator. The concept maps were intended to help develop their understanding and interconnectedness between all the materials they learned in their class. Students continued to build these concept maps in their groups as they progressed toward their exam, and they ended up with a concept map that connected most or all key concepts as they entered their exam. Photos of each concept map were taken (Figure 1). After each exam, students were surveyed (3-5 questions) asking about their SMART goals and if the concept map helped achieve these goals. Seven PAL sections were randomly designated to either the concept map group or the control (no concept maps); control group formed SMART goals but did not have the assistance/practice of the concept maps to work towards them. Qualitative and quantitative data were collected regarding if students reached their SMART goals. Students were given time in their PAL class to complete these surveys. To avoid survey fatigue, the maximum number of questions on the survey was limited to 5 questions, and 2 surveys were given to the students. The survey was used to assess student's SMART goals results and determine how concept maps assisted in reaching their goals. Many students had SMART goal around reaching a certain score on their exams.
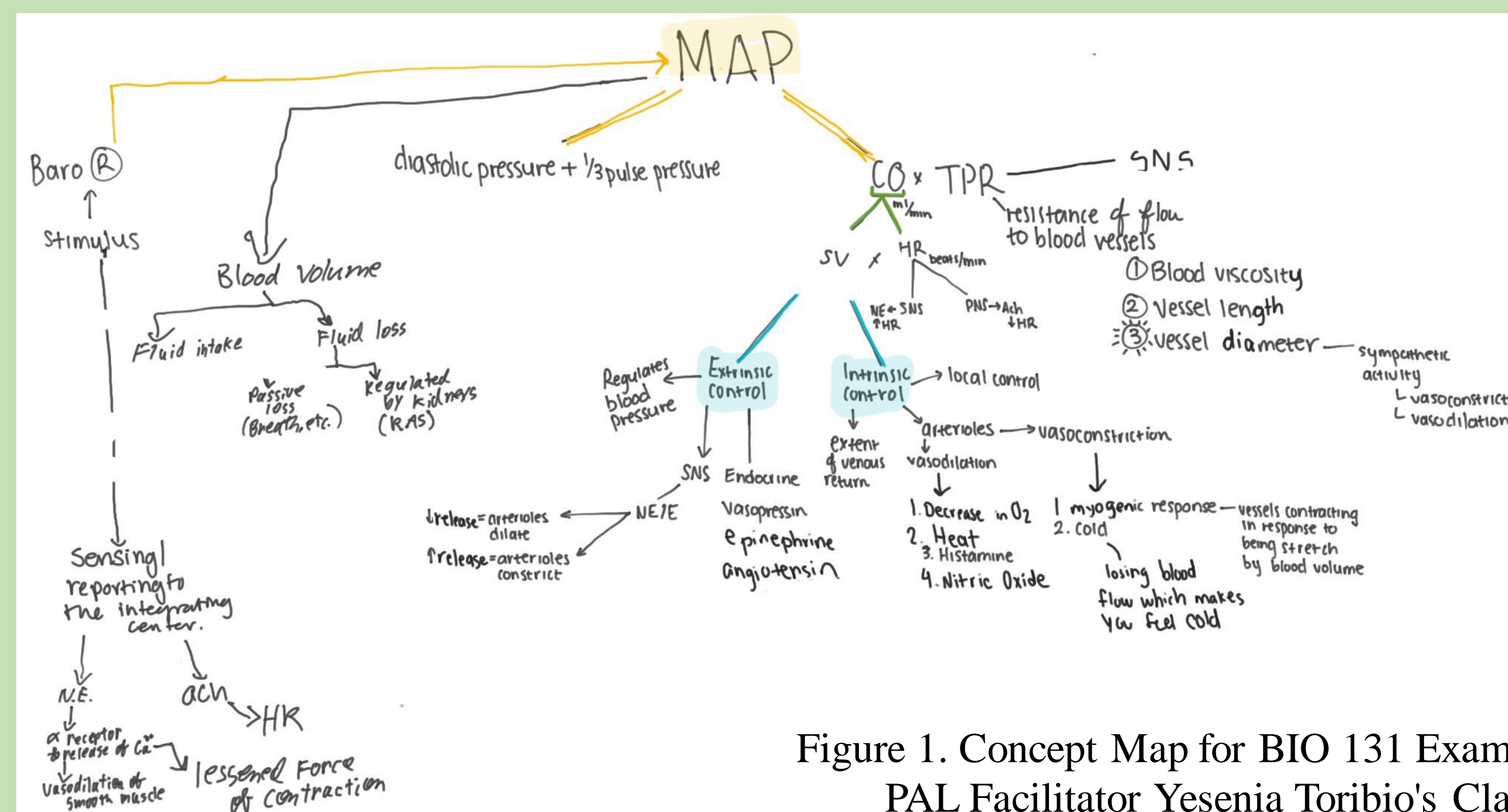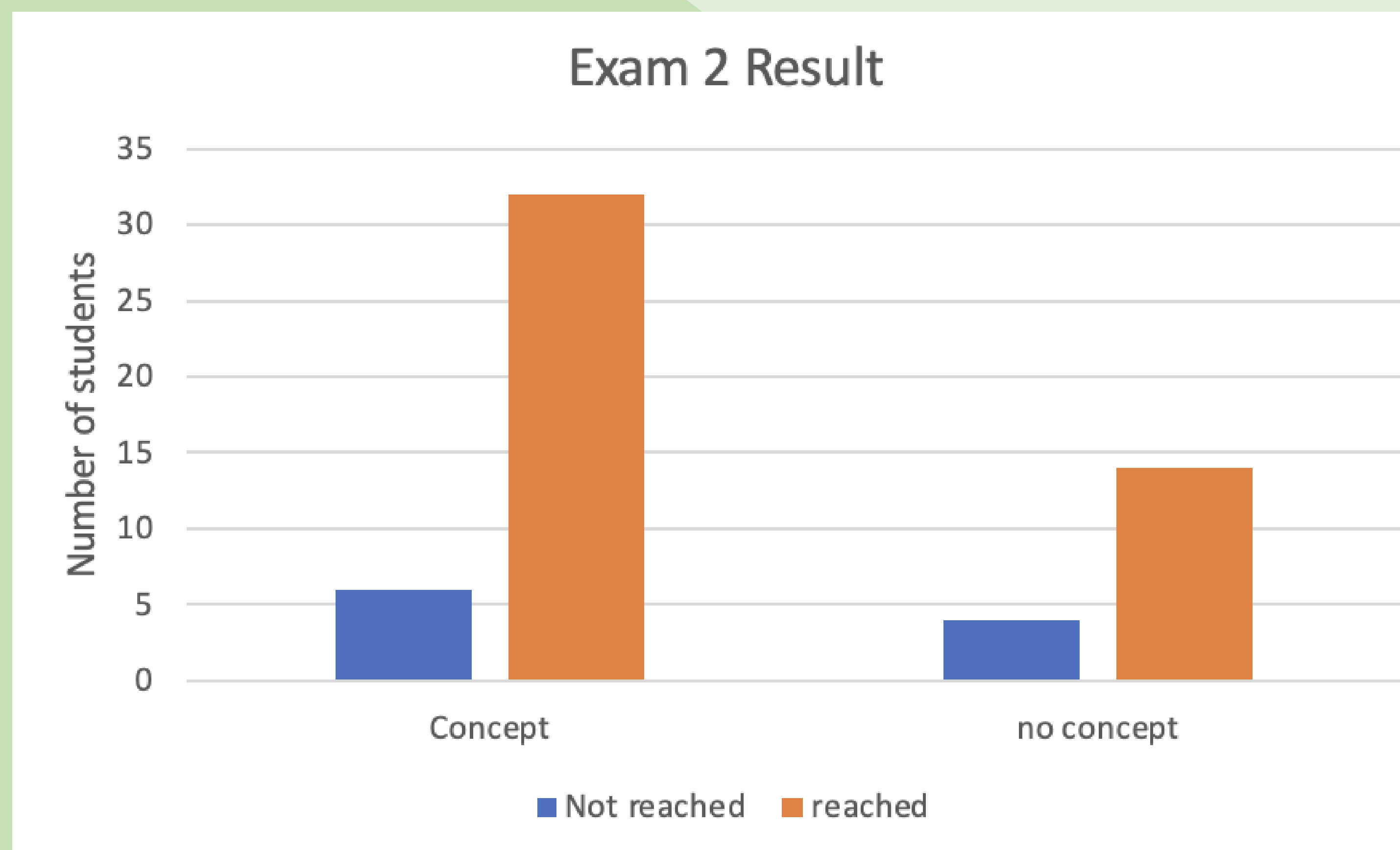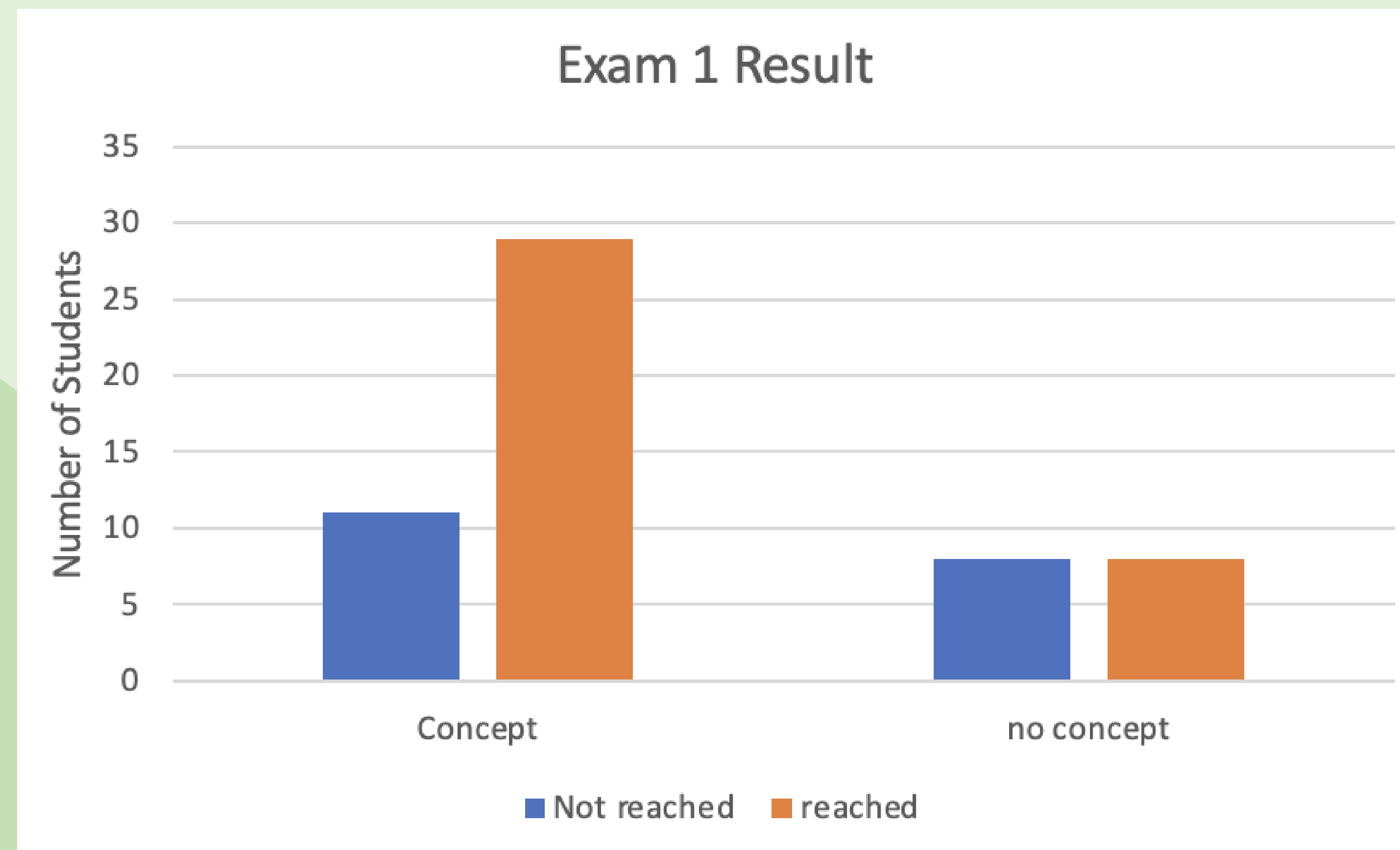

Exam 1 Result

Exam 2 Result

Figure 1. Concept Map for BIO 131 Exam 2
PAL Facilitator Yesenia Toribio's Class

Survey Questions

The data responses are based off surveys given to the students post exam one and exam two.

1. Were you able to attain your SMART goal for the exam?
2. What was your SMART goal?
3. Did you create concept maps in your PAL class to help you achieve your SMART goal?
4. If you answered "YES" to the previous question, how helpful do you think the concept maps were in achieving your SMART goal?

Analysis/Conclusion

Of the 51 participants, 32 of the participants reached their SMART goal as well as found the concept map at least somewhat helpful. Of the 51 participants, 14 reached their SMART goal.

Based on the data collected, as seen on the graphs to the left, the number of students who created concept maps were more likely to reach their SMART goals. The data suggests that concept maps can be useful tool in obtaining goals. The data responses are based off surveys given to the students post exam one and exam two.

References

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