

# Bridging The Learning Gap Between Cardiac Electrical Activity, Function and ECGs

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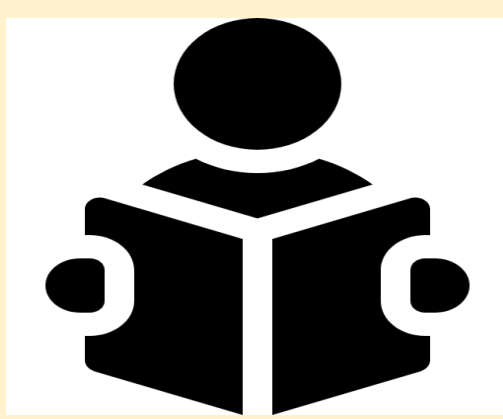
## Background

- Electrocardiogram (ECG) interpretation is an important skill that can be difficult to learn. Graduating medical students lack confidence in this area.<sup>1,2</sup>
- Lack of student confidence stems from challenges in understanding the foundations including anatomy, physiology, and basic ECGs.<sup>1,3</sup>
- To bridge the gap, the use of an online learning simulation, in a blended learning environment, may improve knowledge, understanding, and confidence in the early learners.<sup>4</sup>
- Currently, in the pre-clinical medicine course at Monash University, there is no learning simulation available that aligns with the curriculum, and that is specifically aimed at the early learners.

## Research Aims

- To explore students' and lecturers' perceptions of challenges when learning and teaching the foundational learning topics and basic ECG interpretation.
- To design a learning simulation pilot targeted at the early learners in the pre-clinical years.

## Methods:



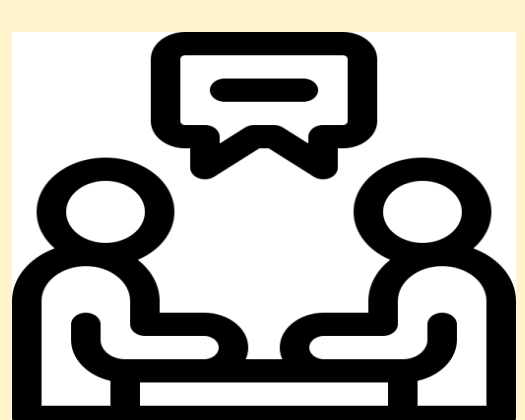
Monash University Medical Students in Years 1, 2, and A (Early learners;  $n = 77$ ; from Churchill, Clayton, and Malaysia)



Lecturers: Physiologists ( $n = 2$ ) & Clinicians ( $n = 3$ )



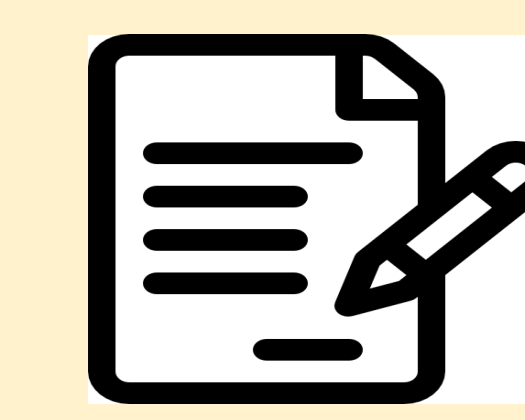
Online survey



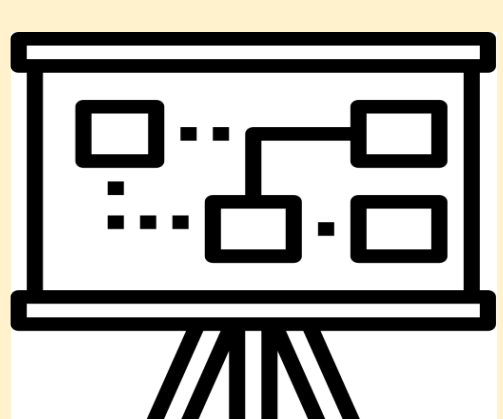
Interviews with lecturers



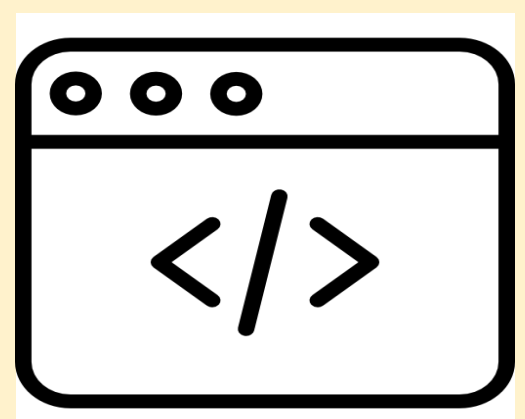
Descriptive and Thematic analysis<sup>5</sup>



Interviews transcribed



Storyboarding (simulation design)

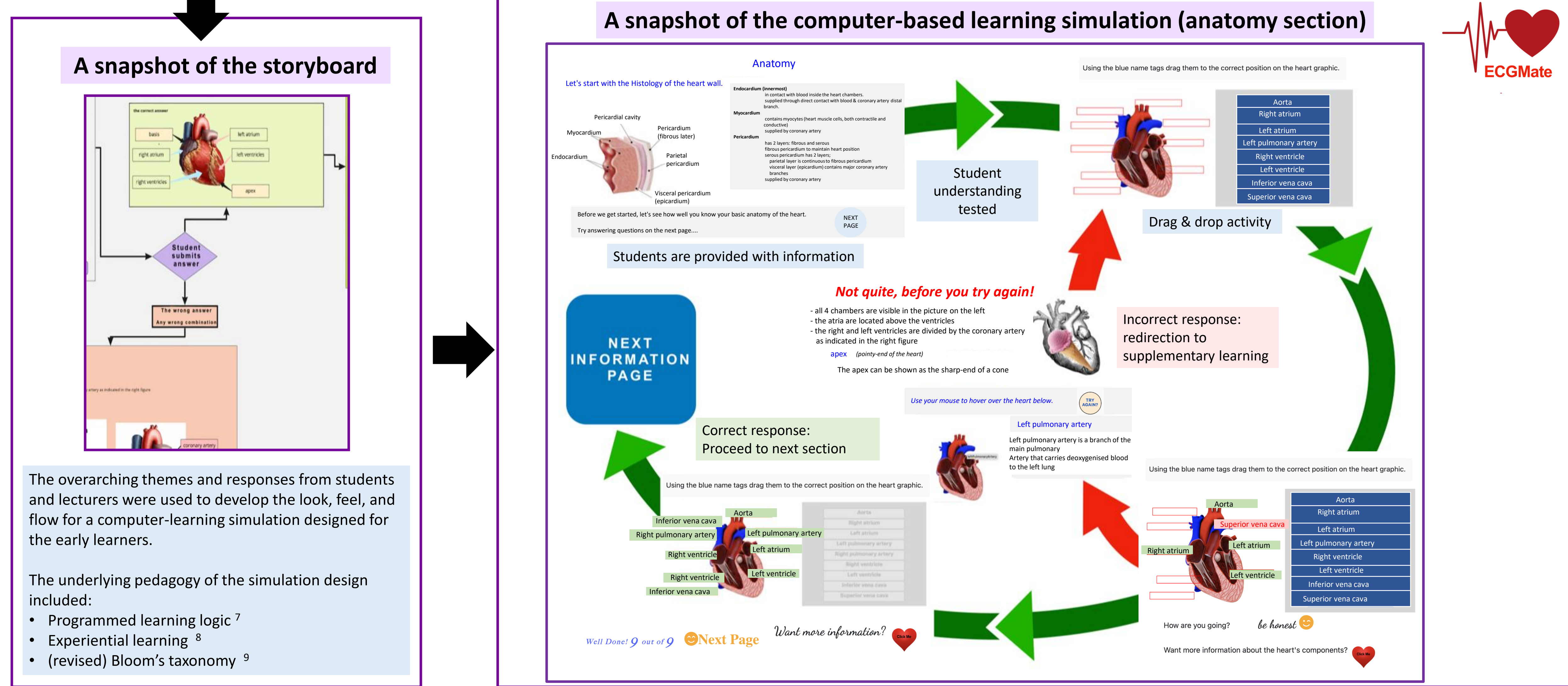
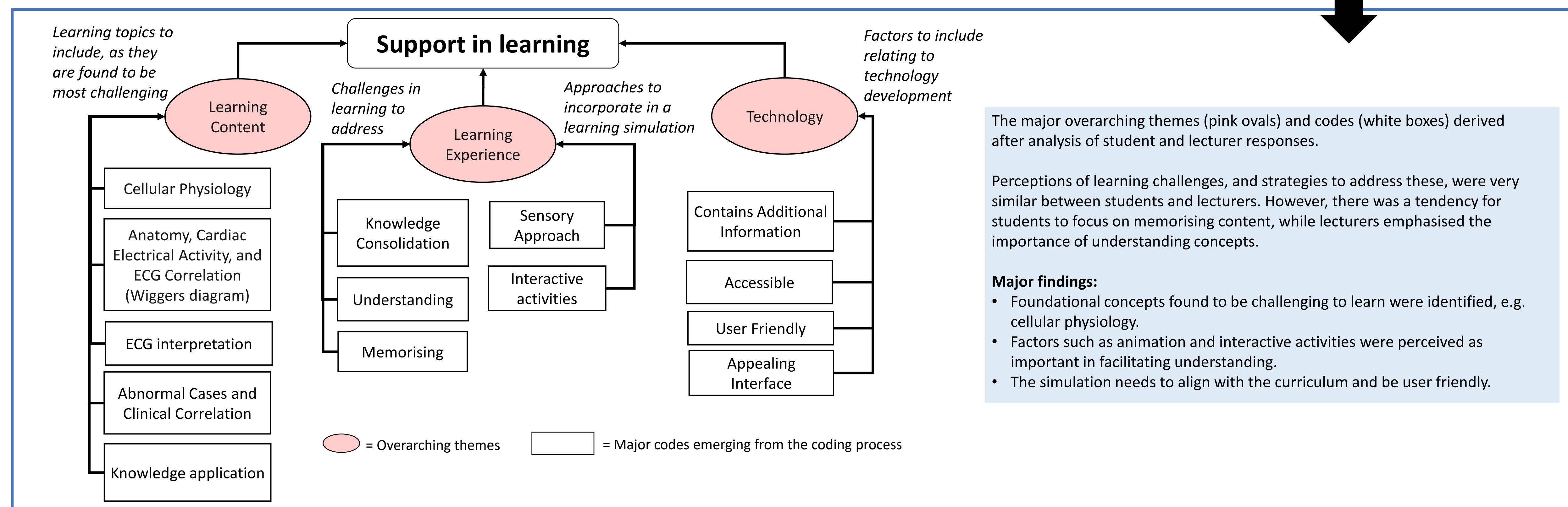
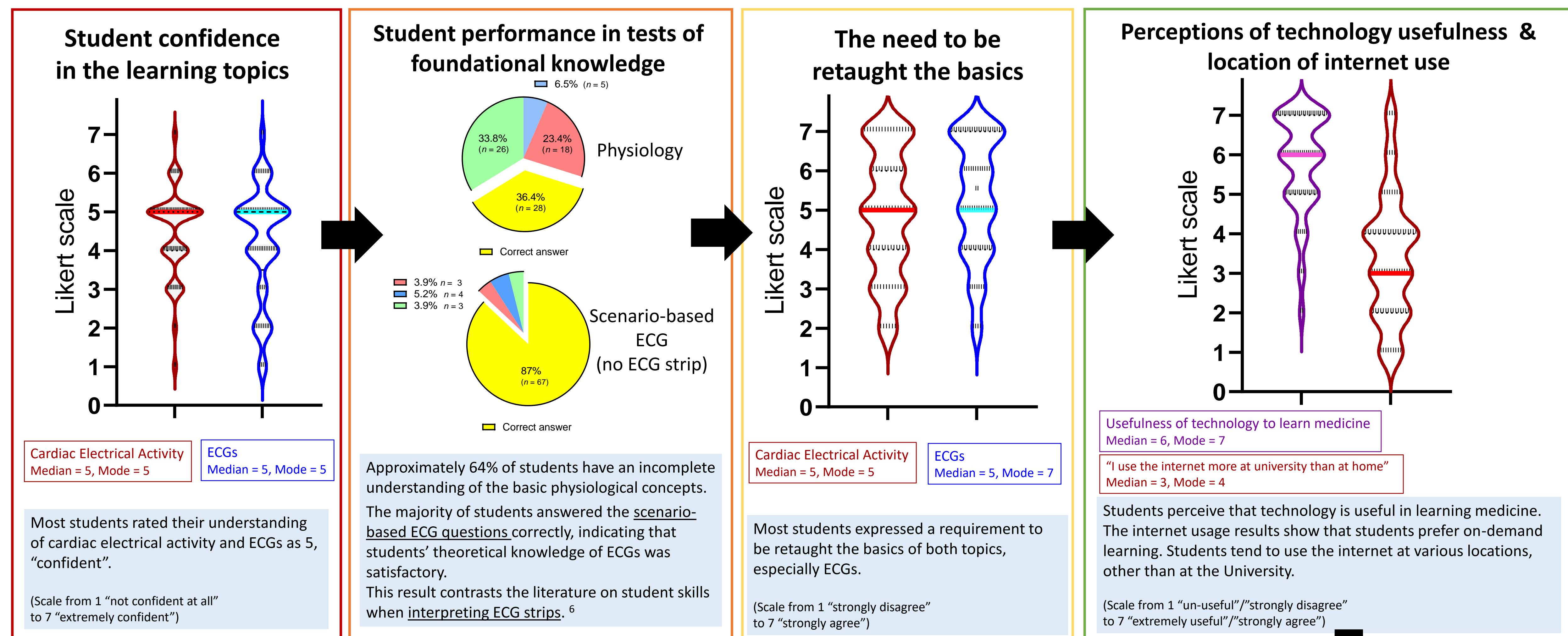


Simulation development

( $n =$  number of participants)

## Results

**Most early learner medical students find learning about basic physiological concepts (91%;  $n = 70/77$ ) and ECGs (100%;  $n = 77/77$ ) challenging.**



## Conclusions:

- The majority of early learners find learning about cardiac electrical activity, function, and ECGs challenging.
- There is a need for a computer-based learning simulation specifically for **early learners**, as an on-demand resource, to facilitate understanding and knowledge consolidation.
- Improving students understanding and confidence in the foundations of cardiology will likely benefit ECG interpretation skills.

## Future directions:

- Complete simulation development
- Prototype testing & student survey post-interaction with simulation
- Evaluation of the tool for promoting learning and knowledge consolidation in the early learners

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