

# Teaching Communication and Subjective Assessment Skills Using AI-Powered Conversational Agents in Physiotherapy Education

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# Acknowledgements to the experts in the team



**A/Prof Mark Merolli**  
Director of Innovation,  
Department of Physiotherapy  
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Enterprise MDHS



**Dr Christopher Honig**  
Senior Lecturer  
Department of Chemical  
Engineering  
GEM Scott Fellow



# Background: physiotherapy teaching context



**Communication** and **clinical reasoning skills** comprise the foundation for all physiotherapy skills





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**Key learning outcome** of first year is to be able to conduct a **subjective assessment** interview that supports **rapport building**

- Structure of a subjective assessment (all key components)
- Be responsive to the patient in front of them
- Develop a therapeutic rapport through person-centered active listening techniques (e.g. reflection, restatement)



**Remember the structure**  
**Online resources**

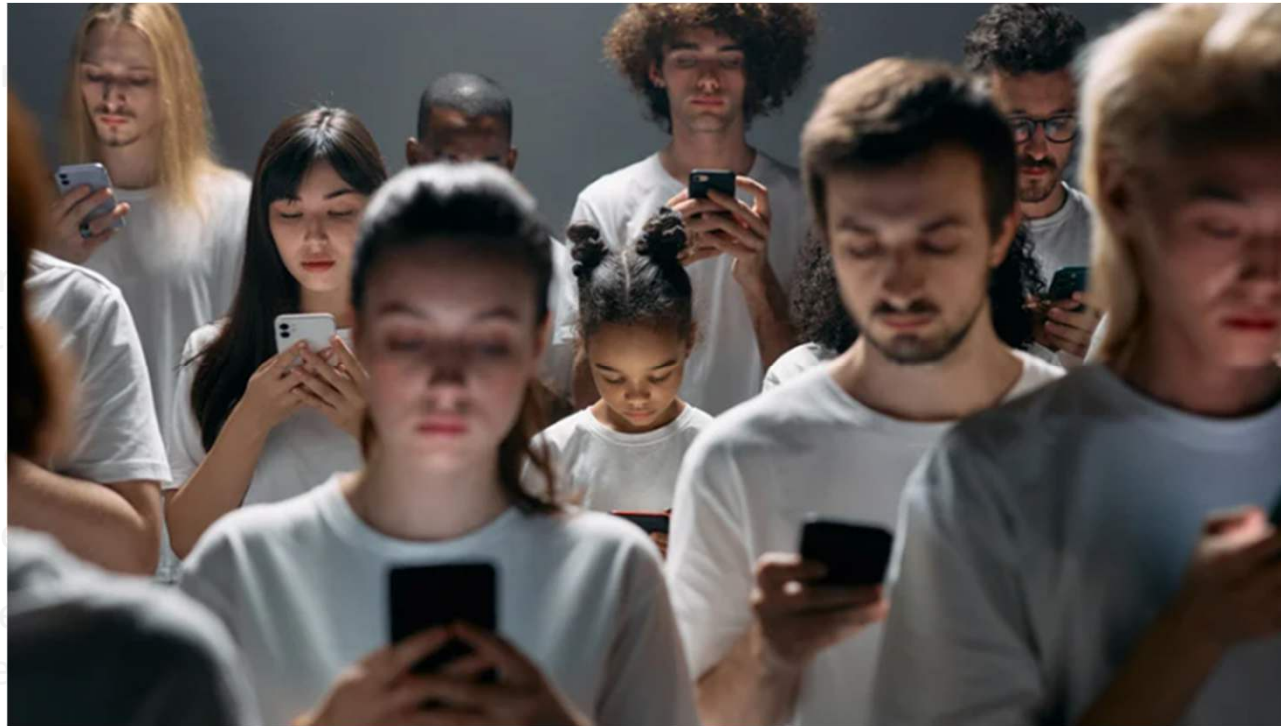
**Understand the construct**  
**Expert modelling, Workshopping**

**Near-peer practice application**  
5





# Background: physiotherapy teaching context



Communi

physiotherapy skills

Key learn  
support

assessment interview that

- Stru
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techniques (e.g.



Some new challenges to teach through peer-to-peer simulation in early years of the degree



# Background: physiotherapy teaching context



**Challenging to provide all students with authentic, constructive feedback**





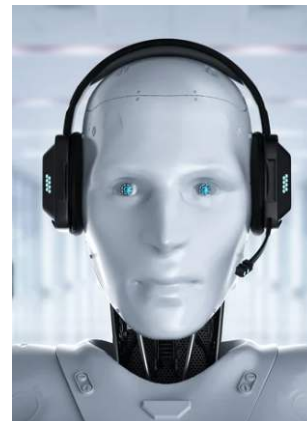


# Gap & Opportunity





**Gen-AI chat bot to support subjective assessment and communication skills among Doctor of Physiotherapy Students**



**GPT-based virtual supervisor**

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# ..Introducing our first physiotherapy conversational agent

Home  
Patient  
Supervisor


Fork  

## Chat with an AI Patient


Hel




 That's good. May I ask if the pain wakes you up at night?


 Yes, I do wake up a few times a week due to the pain. It usually takes about 10 minutes for me to get back to sleep after that.


 Are there certain sleeping positions that are better than others?

 I can't answer that.

 Why not?

 I don't understand the question; can you please rephrase it?

 I'll try....are there certain positions in the bed that are more comfortable, such as lying on your back or, front, or side lying for example?

 I still can't answer that.

[Home](#)[Patient](#)[Supervisor](#)

## Chat with an AI Supervisor

 please give me feedback on my last subjective?

 Certainly, Mark! Here's your feedback on your subjective assessment:

### Open-ended Questions

You did well in initiating the conversation with relevant open-ended questions, such as "What has brought you in to see me?" This effectively encouraged Tau to elaborate on their issue. However, consider incorporating more open-ended questions throughout the assessment, which could enrich the discussion and provide deeper insights.

### Restatement

While you acknowledged Tau's feelings with phrases like "I'm sorry to hear that," you could improve by summarizing their statements in your own words. Brief paraphrasing can help ensure understanding and encourage the patient to share more.

### Reflection

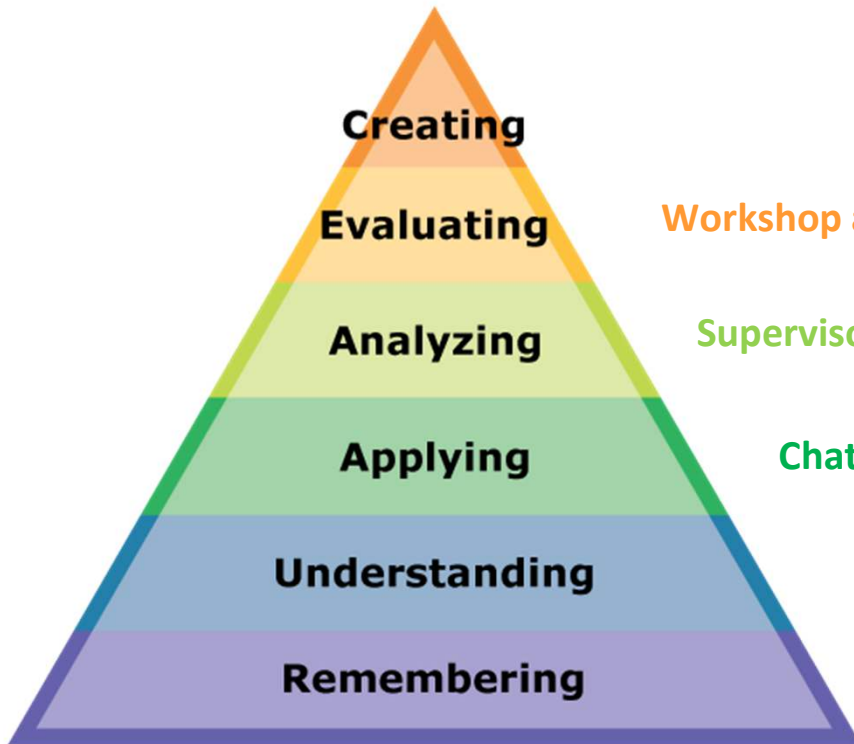
You began to acknowledge Tau's emotions by stating, "It sounds painful." To enhance your

Write a response here 





# Subjective assessment learning support



**Creating**

**Evaluating**

**Analyzing**

**Applying**

**Understanding**

**Remembering**

**Workshop activity:** Review a peer's transcript and provide feedback

**Supervisor Chatbot:** Review their own feedback from the supervisor

**Chatbot:** Engage in a conversation with a chatbot

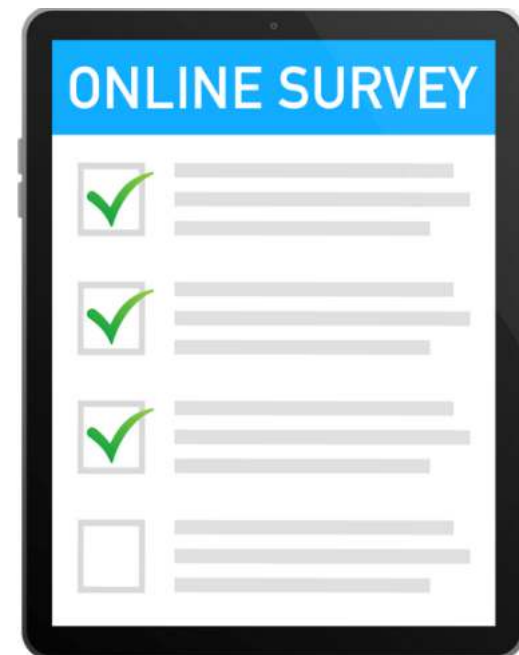
**Collaborative workshop** – live examples by educator-classifying examples, live polling etc

**Online learning materials & quizzes** – subjective assessment structure



# Evaluation: Acceptance and Perceived Learning Value

- First year physiotherapy students (n=135), survey responses 88 (**65% response rate**)
- Modified Unified Theory of Acceptance and Use of Technology framework (Venkatesh et al., 2012), alongside **Likert and open-ended questions** assessing learning experience and perceived value
  - **Performance Expectancy** (is it effective for learning)
  - **Effort Expectancy** (how hard to learn to use)
  - **Facilitating Conditions** (supports provided)
  - **Social Influence** (who influenced students - teachers or peers)
  - **Hedonic Motivation** (pleasure derived from the software)
  - Price Value
  - Habit

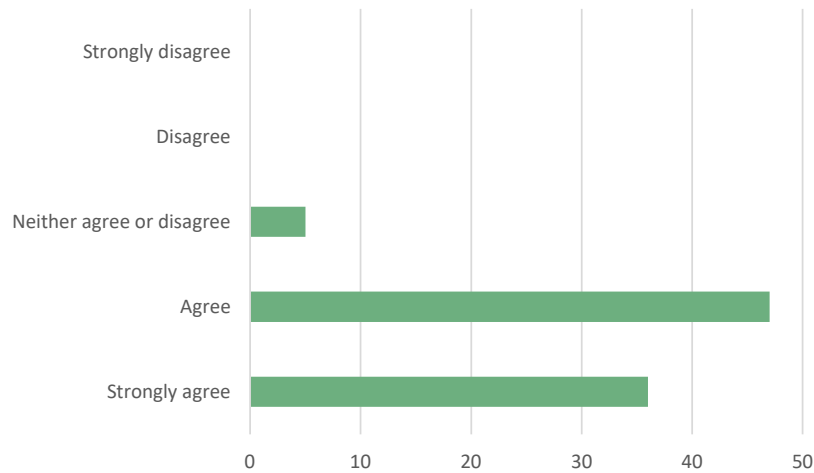




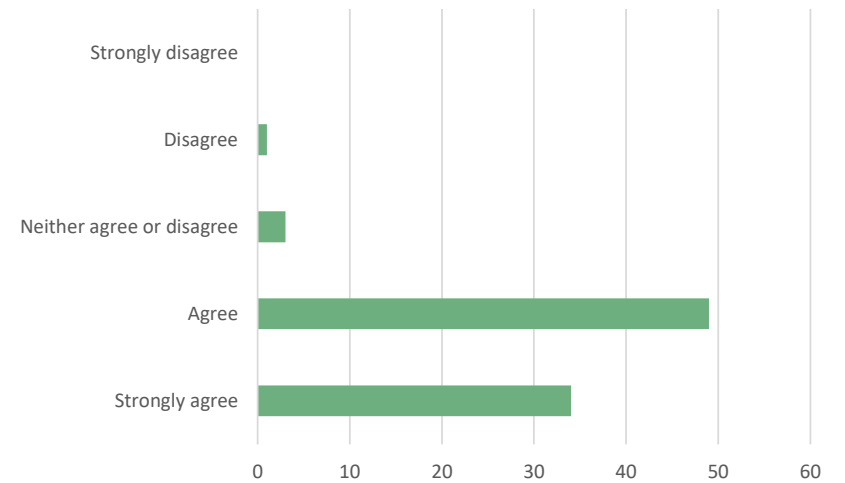
# Results: Performance Expectancy

Using the simulated chatbot:

**Improved my clinical reasoning skills**  
(94% agree/strongly agree)



**Enhanced my ability to conduct a thorough subjective assessment** (94% agree/strongly agree)

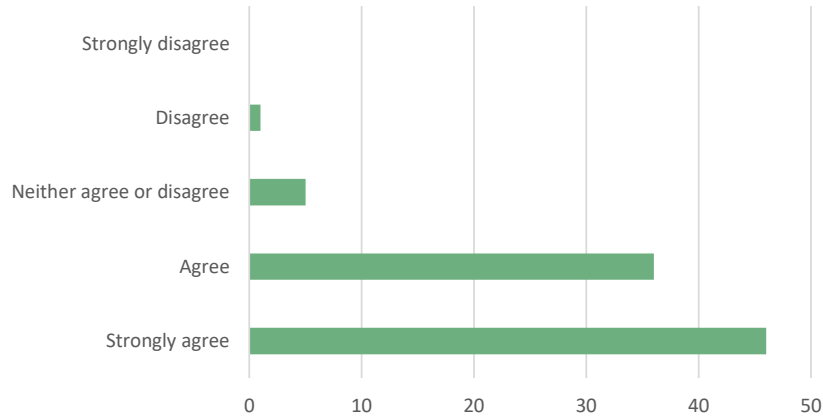




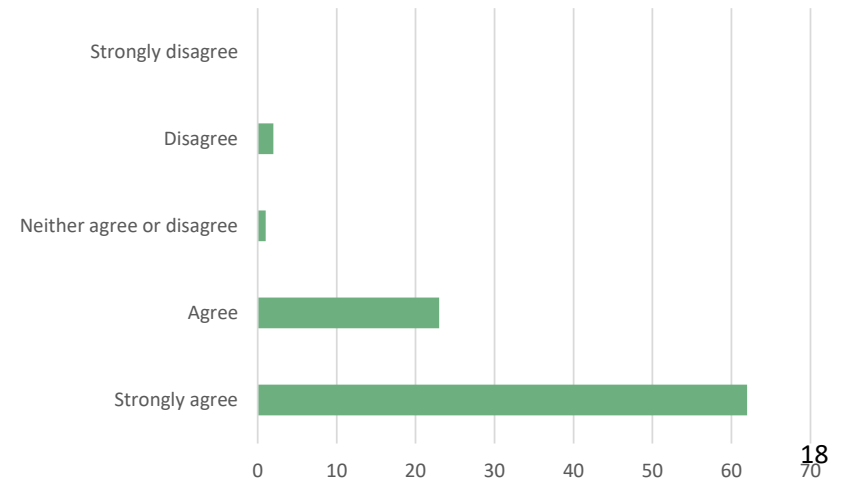
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(95% agree/strongly agree)



**Offered a low stakes environment to practice clinical assessment** (96% agree/strongly agree)

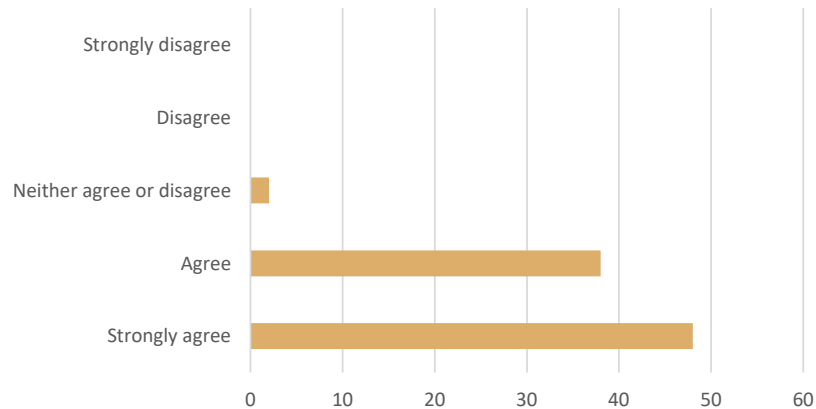




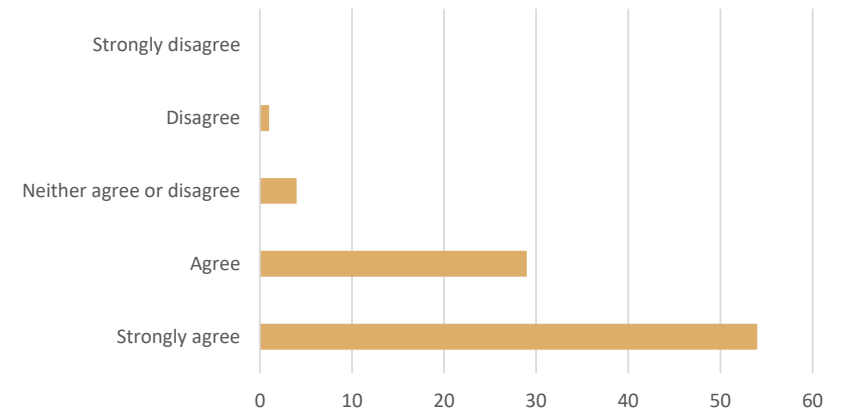
# Results: Effort Expectancy

94%

**It was easy for me to learn how to use the simulated chat bot**  
(94% agree/strongly agree)



**The instructions provided for using the chatbot were clear and understandable**  
(94% agree/strongly agree)

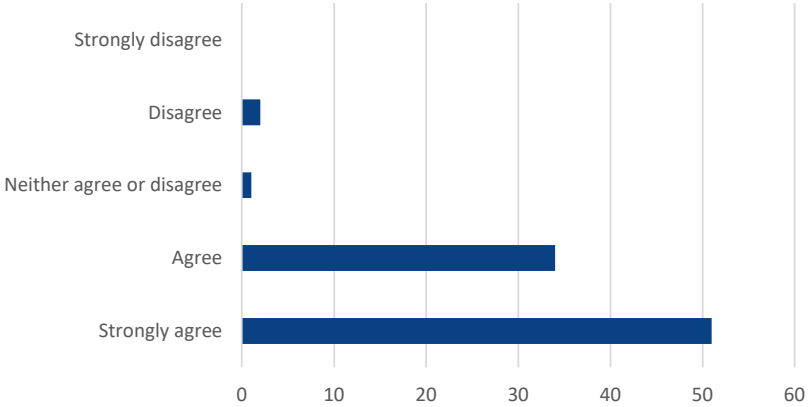




# Results: Facilitating Conditions & Social Influence

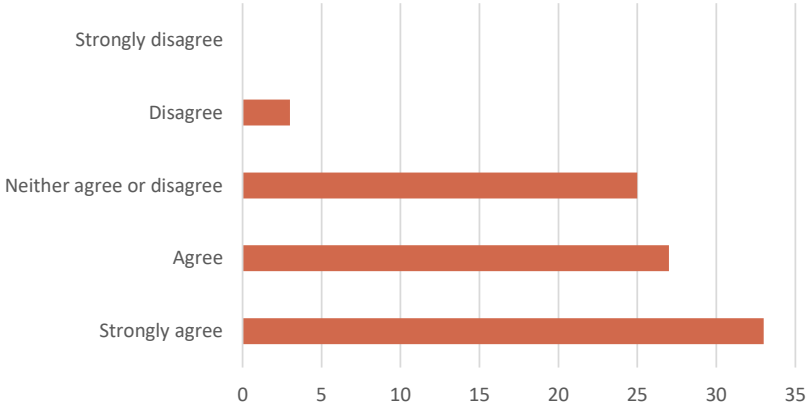
95%

I had the necessary resources (equipment, internet access etc)  
(95% agree/strongly agree)



68%

My peers encouraged me to use the simulated patient chatbot  
(68% agree/strongly agree)



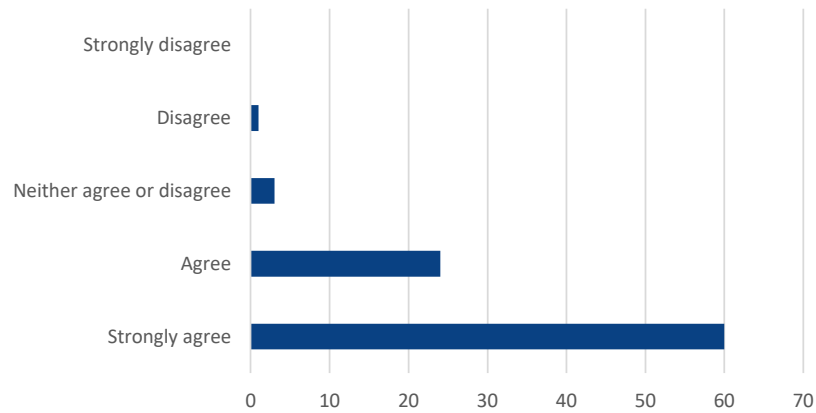


# Results: Hedonic motivation

95%

**Using the chatbot was a fun way to develop my professional skills.**

(95% agree/strongly agree)

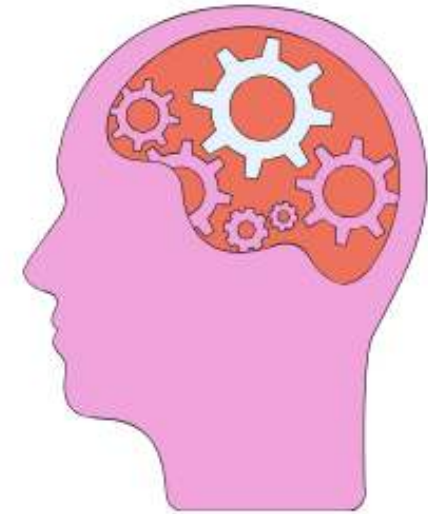




## Student perspectives: fun, risk free rehearsal

“It was a **good low stakes fun activity** to practise asking question and listening to a simulated patient

“The chatbot was definitely a **great learning tool** to be able to practice communication skills, and how to use the clinical assessment framework in a real-life context **without the stakes of doing so in a real-life context**”



# Student perspectives : **Digital empathy gap**

“ The only thing was that it was **hard to treat the patient as a human** and reply and ask questions without the human element. the typing and lack of visual cues, such as a photo of the patient or an animation of the patient made it hard to feel like I was actually treating someone.”

“It **was hard to provide empathetic** responses due to it being a chatbot”

“It was okay, just **really hard to build that patient/therapist trust** when you can't really see or hear who you're talking to.”



# Student perspectives : Modality mismatch

“I found that **due to typing I was less likely to restate/reflect** on what my patient was telling me.”

“**Maybe using sound/voice** to feel as though you are interacting with a person instead of typing”



# Student perspectives : Supervisor feedback mixed

“Make sure the chatbot is picking up everything I ask because **I’m not sure all my feedback was accurate – I did ask things!**”

“**The supervisor said I didn’t do WOCSSNOR** when I did include it!”

“I didn't put much effort into my more personal approach and emphasising empathy **which was highlighted in my feedback and that was great,** I put all my brain space to ask the questions rather than remembering what is the key, which is the person in front of me, which **I will definitely take into my first real life subjective.**”



# Student perspectives: constructive feedback



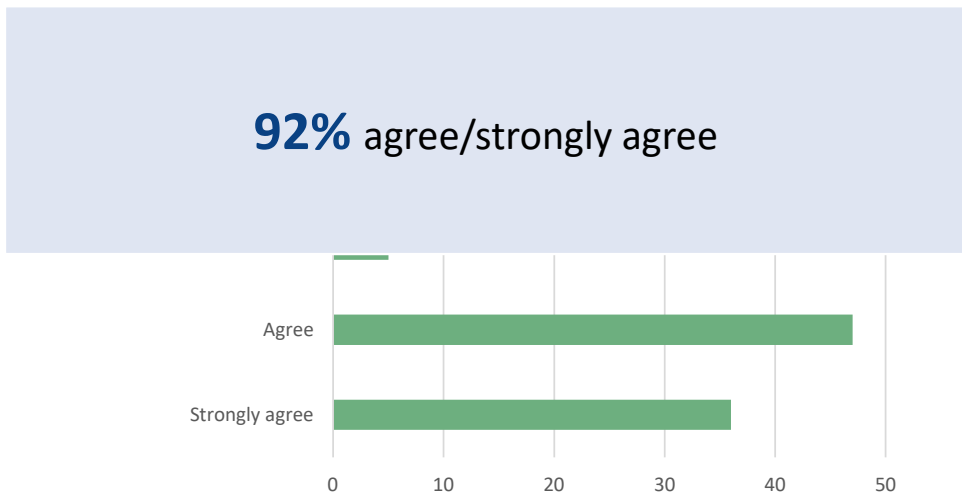




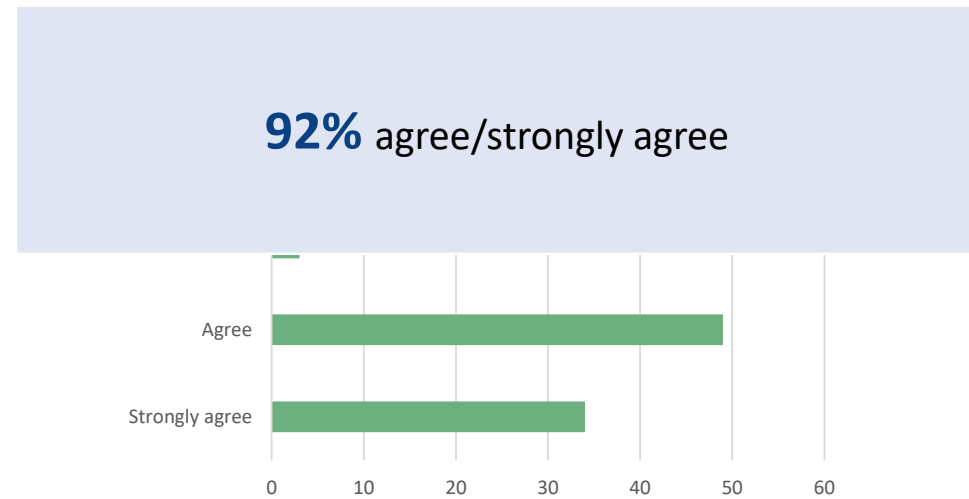
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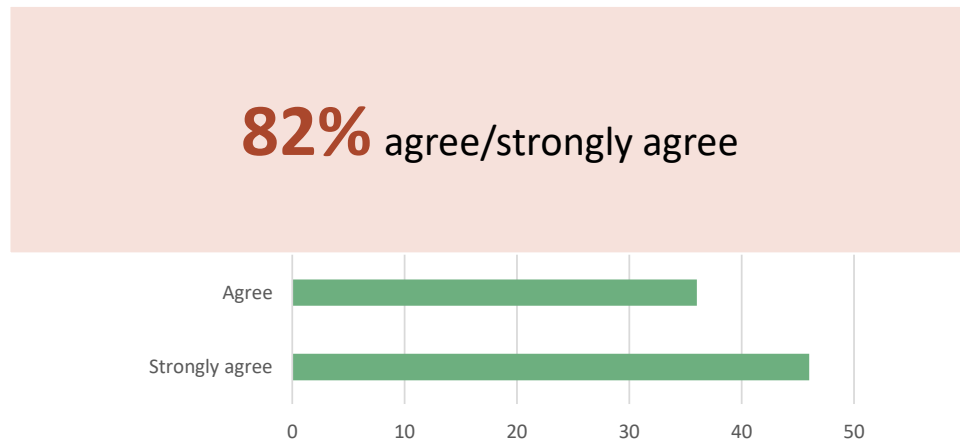




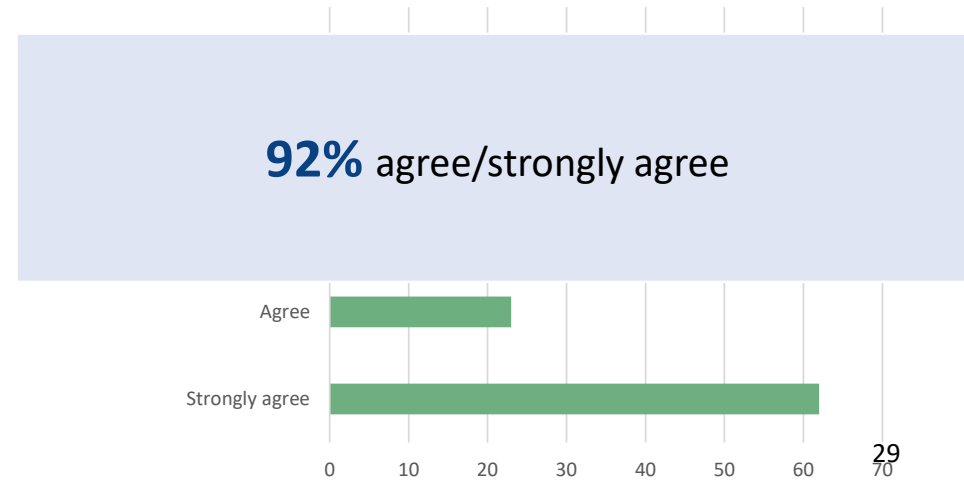
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- ✓ Students engage with, and enjoy, the use of the chatbot
- ✓ Chatbot is useful to support practice of subjective framework elements in novice physiotherapy students
- ✓ Less useful to support communication skills and therapeutic rapport



- Future iterations building for voice to text





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- Future iterations building for voice to text
- Greater scope of cases
- Exploration with learning outcomes – motivational interviewing mental health support
- Exploration for use of assessment



THE UNIVERSITY OF  
MELBOURNE

# Thank you

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