The effect of an augmented reality educational tool on the motivation towards learning in Pharmacy students: An evaluative survey

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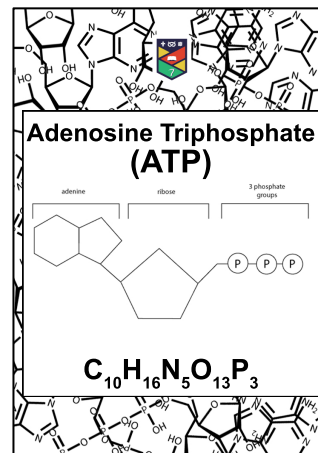
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Introduction

- Motivation in education is vital in determining an individual's effort towards their learning (1)
- Educational technologies have been shown to increase collaboration, critical thinking and motivation in post-secondary education students (2)
- Developments in technology have led to novel augmented reality (AR) educational tools, however, they have not been widely implemented or researched in the education of pharmacy students in the United Kingdom

Aim

- To identify changes of pharmacy students' self reported intrinsic motivation towards learning after using the 'Pharma Compounds AR' (PCAR) educational tool

Methods

- Ethical approval was obtained from Keele University School of Pharmacy and Bioengineering
- PCAR is an image-based educational AR mobile application that displays 3D models and animations of complex molecules
- Participants completed an online pre-questionnaire before receiving the PCAR tool to use for a duration of at least two months
- Participants were advised they could use the tool in any way they felt would appropriately support their learning
- After the intervention period, participants completed an online post-questionnaire
- Changes in self-reported intrinsic motivation towards learning were identified by comparing pre- and post-questionnaires responses to adapted intrinsic motivation inventory (IMI) Likert scale statements

Adenosine Triphosphate (ATP)

$C_{10}H_{16}N_5O_{13}P_3$

Adenosine Triphosphate (ATP) is a nucleotide derivative that consists of adenine, a ribose molecule and three phosphate groups. Energy is released when the third phosphate group is removed through a hydrolysis reaction catalysed by ATP hydrolase. The result of this reaction is ADP and a phosphate molecule. The

Results

- 58 % of stage two pharmacy students (68/118) completed the online pre-questionnaire
- Most students who completed the pre-questionnaire were aged between 18-21 (82.4%), female (70.6%) and domestic (94.1)
- 44% of students (30/68) then went on to complete the online post-questionnaire
- Most students who completed the post-questionnaire were aged between 18-21 (83.3%), female (70%), and domestic (86.7%)
- Participants ranked their agreement to each Likert statement from 1 (not true at all) to 7 (very true)
- Mean agreement motivation scores significantly increased after the use of the PCAR tool from 3.88 to 5.29 (dependent T-test; p=0.000)
- Mean agreement usefulness scores increased after the use of the PCAR tool from 4.69 to 5.29 (dependent T-test; p>0.05)

Conclusion

- Incorporating the PCAR tool into the education of stage two pharmacy students significantly increased their reported motivation towards learning when compared to conventional methods
- The incorporation of the PCAR tool into students' learning was found to be more useful than participants conventional methods alone
- Education AR tools such as the PCAR tool could provide students with more engaging learning experiences

References

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