

Using games to clarify interprofessional roles and build a repository of curricula activities

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Background. Game-based learning has emerged as an exciting innovation for teaching and learning outcomes. Educators have built engaging and immersive experiences which help students learn about the health professions and roles, by integrating game theory and gamification. Learning about these roles will help students collaborate more effectively in the future. Educators can create a dynamic learning experience for their students by introducing gaming aspects into instructional activities. Artificial intelligence (AI) could be leveraged to accelerate the broader use of these technologies in teaching and learning.

Methods. An interactive computer-based game was designed for interprofessional education and teaching, to identify the roles of nine healthcare professions.

Results. In the development of the game, six of the learning principles namely identity, interaction, production, customisation, challenge and consolidation and pleasantly frustrating, are applied from conceptualisation of the game and throughout the game, to ensure that gameplay and learning is achieved.

Conclusion. The use of games can be a powerful tool to clarify interprofessional roles, and this contribution supports the building of a repository of curricula activities that incorporate games and can be valuable for educators looking to enhance their teaching methods. Overall, incorporating games into interprofessional education has the potential to improve learning outcomes and prepare future healthcare professionals for collaborative practice. Educators and institutions alike need to consider the benefits of using games as part of their educational strategies.

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In recent years, game-based learning has emerged as a promising innovation for teaching and meeting learning outcomes for interprofessional education.^[1] Numerous studies have demonstrated the excellent benefits of games for learning and facilitating the development of skills required by students in the 21st century.^[1-3] As an educator, exploring the use of games in my teaching has required me to explore literature dedicated to designing educational games, exploring game genres and game design aspects, as well as learning theories. From the literature, game theory provides a framework for understanding how games work, including the rules, strategies and incentives that motivate players. By applying these concepts to educational activities through gamification, educators can create an environment that encourages active participation and rewards progress. Game-based learning is particularly effective in interprofessional education, which involves collaboration between professionals from different fields. Through games, students can learn to work together effectively, communicate clearly and understand the perspectives of others. As an innovation for teaching, game-based learning offers a few advantages over traditional methods such as increased engagement, active learning, collaboration and social interaction, motivation and immediate feedback.

Gamification has become a popular approach to teaching and learning, based on the principles of game theory. According to van Gaalen et al.^[4] gamification involves the use of game design elements such as points, badges, leaderboards and challenges in non-game contexts such as education. It can motivate learners to achieve their goals by tapping into their intrinsic motivation and desire for achievement. Through

gamification, educators can create a more immersive learning experience which encourages students to take an active role in their own learning. Gamified lessons can help improve students' retention of information, problem-solving skills and critical thinking abilities.

Edutainment combines entertainment for educational purposes, breaking traditional teaching barriers and engaging students' senses within the classroom, fostering curiosity and imagination.^[5] With the adoption of artificial intelligence (AI) technology as a tool to enhance teaching and learning, it is expected to significantly impact education, improving not only the virtual assistance for content creation and design, but also contribute to personalising the learning opportunities and experiences with the use of these sophisticated technologies. Expanding AI education research will lead to practical instructions and new teaching approaches with interactive data analysis and predictive analytics to identify patterns and trends to save time and access high quality resources. Despite these opportunities AI is still being reviewed with some scepticism and concerns for the teaching and learning environment.

This short report aims to share the development of a game in the context of application of game use in current teaching of interprofessional education. The developed game is intended for the role clarification of healthcare professions and is a learning tool intended to contribute to the repository of curricula activities.

The IPE role Clarification Game

A computer-based game was created for first-year level for the role clarification of healthcare professions with the aim of application in the

interprofessional learning. This level can be used as a refresher for all students and educators wanting to clarify their understanding of the healthcare professions roles. The games' objective is to know the roles and functions of the different health professions. Currently, the game has nine different health professions (Fig. 1). The player chooses three professions during a round in the game.

Once three professions have been chosen, the round commences with a role/function appearing at the top of the screen. The player is expected to assign the role to the correct profession by dragging it to the character. For example, "advises on dietary intake to support treatment plan". This is the role of the dietician and is therefore dragged to the dietician. The character reacts positively if the player is correct, and a point is scored. If the player is incorrect the character reacts negatively, and no point is scored. A total of 9 different roles are assigned for the easy level. Level 1 enables three roles for each of the three professions. Level 2, the intermediate level, enables six to nine roles and Level 3, the difficult level, enables ten to fifteen roles.

At the end of each round, the players' correct score is displayed. Once a combination of all the professions have been completed at 100%, the player has the option to proceed to the next level. If the player does not complete the selection of all nine professions at 100% the player cannot proceed to the next level. The player can choose to replay the round of professions where 100% was not obtained, in a second attempt.

The selection of level also changes the speed at which the roles appear at the top of the screen, and the combination of three professions involved in the clarification of their roles.

The game has been produced to record the scores via analytics that has been filtered in. On the backend of the game, each player records their name or student number as a player ID. The combination of professions and the round score is captured. This is recorded for each combination of

play at each level. The record aims to record what professions were played and the scoring of accurately assigning the roles. These analytics can be used for assessment.

Lessons as a result of developing the game

For the study, the game was developed to integrate purposeful learning. As Ke proposes in designing learning-play integration in digital learning games, the game-based learning actions need to be considered.^[6] In the study, the learning principles were applied from conceptualisation of the game and throughout the game to ensure that gameplay and learning is achieved.

While Gee proposes that in game development multiple learning principles can be applied for good games,^[7] similarly in the development of this game, learning principles were applied. Six of the learning principles proposed by Gee for good games was applied in the development of this game namely, identity, interaction, production, customisation, challenge and consolidation, and pleasantly frustrating to provide a description of the game design and considerations.^[7] The application of these principles is illustrated for the game development in this study.

Identity

The game expectation supports deep learning by requiring learners to make a self-extended commitment to their new identity/professional role, valuing work, the roles played by other health professionals and the world. As a video game, it captures players through identity/professional role, by allowing the player to choose based on their understanding which role, characters are built on. This commitment to the role identity allows them to live, learn and act in an application as it allows learners to identify the role of others in the health professional team.



Fig. 1. Nine healthcare professions upload.

Interaction

In the game, nothing occurs unless the player responds and makes decisions. Game feedback is provided by the icon responding to a correct or incorrect choice. This is useful in giving learners a sense of what they are doing (learning). Players participate in the game by making decisions and responding to the scores, and are afforded the opportunity to go back or increase the level of complexity.

Production

Characters have been produced with the contextual roles taken from the scope of practice documents provided by the Health Professions Council of South Africa (HPCSA).

Customisation

Players are allowed to personalise the game by choosing the characters to meet their learning and playing preferences. The game has varying levels of difficulty and allow players to overcome a lack of understanding the roles by re-playing the level challenges in a variety of ways. The distinct characteristics that players choose for their characters in the role-clarification game affects how the game is played.

Challenge and consolidation

In the game, players are presented with a list of different roles and the challenge is for them to assign them correctly. The game allows them to increase the complexity by posing more professions and more roles to assign at a faster pace. This means that players, are forced to reconsider their now-assumed understanding of the roles, learn something new and integrate new learning with previous knowledge. This new skill is established by repetition (with variation), only to be challenged once more. This process allows for sufficient opportunities to consolidate.

Pleasantly frustrating

Many of the preceding criteria ensure that good games remain within, but on the periphery of the player's 'competence'. That is, they are 'doable' but difficult. This mood is extremely encouraging for players. In the game, players are afforded opportunity to be tested but embrace the concept of play as they do so. This is highly motivating for players.

Conclusion

The use of games can be a powerful tool to clarify interprofessional roles and build a repository of curricula activities. Games provide an engaging and interactive way for students to learn about different professions and their roles within healthcare teams. Games offer an innovative approach to teaching that aligns with modern-day learners' preferences for interactive and engaging experiences. By participating in games, students can develop a

deeper understanding of how each profession contributes to patient care and can better appreciate the importance of collaboration and communication. Furthermore, this contribution of a learning tool, supports the building towards a repository of curricula activities that incorporate games and can be valuable for educators looking to enhance their teaching methods. These activities can be used as standalone lessons or integrated into existing curricula to reinforce key concepts related to interprofessional education.

Overall, incorporating games into interprofessional education has the potential to improve learning outcomes and prepare future healthcare professionals for collaborative practice. As educators continue to explore new ways of engaging students in the classroom, gamification is likely to become an increasingly popular tool for achieving learning outcomes. As such, it is important for educators and institutions alike to consider the benefits of using games as part of their educational strategies.

Declaration. Consent to share the image has been obtained from the copyright holder. The author is the copyright holder of the content as it was produced as part of the Intellectual Property in the design of the game. Images were created via animation technology and paid for by funding source.

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