The Potential of Serious Gaming in Online Interprofessional Education

Pedagogiskt docenturarbete

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**Background**

In interprofessional education, two or more professions come together to learn with, from and about each other. Interprofessional education is important, as good communication between professions is a precondition for good interprofessional cooperation. Poor communication could lead to conflicts, role stress, lack of interprofessional understanding, and diminished inter-professional interaction. Ineffective interprofessional cooperation could lead to adverse events, medical errors and delays in patient care. Respectful communication and good relationships among colleagues contribute not only to gains in quality of patient care and provider outcomes, but also to increased patient satisfaction.

During the COVID-19 pandemic, I was an educator in interprofessional education where students from Nursing, Medicine, Physiotherapy, Logotherapy and Occupational Therapy received a communication assignment online through a video conference platform. In this assignment, five patient cases were described, and the students had to come to an agreement on which patients will be prioritized to receive care. Before the discussion, students got assigned roles which they did not share in the group. They could be assigned to be a leader, a critical thinker, to act neutral, to be positive, an observer or to be passive in the discussion. A video conference platform, such as Zoom, was a great solution in many of the teaching moments, but I felt that during this interprofessional education assignment, this platform was not optimal. There was a lack of social present and I felt that discussions on an online discussion platform were not as engaging or rich as they can be in a classroom. But in online interprofessional education as in traditional in classroom education, it could also be challenging to engage students in discussion. Some students could feel uncertain to engage, maybe even anxious about expressing opinions or felt it challenging managing group dynamics.
One alternative option for interdisciplinary education could be the use of gamification. Serious games are games that do not have entertainment, enjoyment, or fun as their primary purpose.\textsuperscript{7} Serious games usually ensure fun, motivation and educational value.\textsuperscript{8} These games can be board games, but could also be electronic games with human-computer interaction with the purpose to educate and train.\textsuperscript{9} Therefore, in this pedagogical reflection, I explore serious games as an alternative for the communication assignment in interprofessional education.

**Potential of serious gaming in inter-professional learning**

Serious gaming has the potential to provide students with opportunities to be part of active learning, retain knowledge, change their attitudes and behaviors, solving clinical problems, and gaining experience in risk-free surroundings.\textsuperscript{10,11} A systematic review reported comparable learning between serious games and several other educational methods in important outcomes of health professions education including knowledge, cognition, skills, behavior, and engagement during learning activities.\textsuperscript{12} Studies in gamification in interprofessional education demonstrates positive outcomes for teamwork, communication, understanding interprofessional roles and learning through serious gaming is seen as enjoyable.\textsuperscript{13-17}

Four studies included board games.\textsuperscript{13-15,18} The boardgames aimed to simulate the interprofessional teamwork that occurs in “real” settings, aiming to increase healthcare provider's ability to identify and understand his/her role as well as the roles of others and knowledge of competences in interprofessional communication. Students who played the games, felt that their understanding of other professional roles had improved and playing was effective in increasing knowledge about other professions, understanding roles of the healthcare team, and creating an environment of teamwork.\textsuperscript{13-15,18}
Two other studies\textsuperscript{16,17} included virtual serious games within hospital settings, one including a virtual emergency room, the other challenged teams of four to manage a busy hospital during a simulated 24-hour period. Both games aimed to enhance interprofessional communication and collaborative efforts by providing feedback on their engagement. The emergency room game\textsuperscript{16} included learning goals such as competency in history taking, physical assessment skills, diagnostic skills, alertness, and treatment skills in medical and nursing students. Playing the game enhanced teamwork attitudes.\textsuperscript{16} In the game where students needed to run a hospital\textsuperscript{17}, playing contributed to their competence as an interprofessional team member in the areas of teamwork, communication, and creative problem solving.

Although serious gaming has much potential, studies show a potential that the games become a distraction rather than a facilitator of learning.\textsuperscript{19} Despite the previous evidence and theory supporting serious game, the development of games for interprofessional education is complex.\textsuperscript{20,22} Game development requires expertise in medicine, education, and technology development to create an effective game. Challenges in developing serious games for interprofessional learning are: (1) Limited medical knowledge by the developer; (2) poor transfer of medical concepts and management strategies; and (3) misaligned expectations for game scope and functionality between clinicians and developers.\textsuperscript{21,22}

A systematic review show the importance of employing a theoretical framework to support the development of a serious game design.\textsuperscript{12} Essential elements of serious games for interprofessional learning are: (1) specific learning outcomes; (2) rules that provide limits to learner’s path toward achieving the learning outcomes; (3) feedback that informs learners of progress toward outcomes; (4) voluntary participation; and (5) game “flow” or the skill of the learner must grow in direct proportion to the difficulty of the game.\textsuperscript{23} A framework that could be used in creating serious games for medical education is the structural framework for game developing proposed by Olszewski & Wolbrink.\textsuperscript{24} When evaluating serious games in
interprofessional education it is important to keep in mind the desired outcomes. The four pillars of learning, a model developed by Kirkpatrick\textsuperscript{25} could be used: Level 1 Satisfaction, Level 2a Modification of attitudes and perceptions, Level 2b Acquisition of knowledge and skills, Level 2c Retention of knowledge and skills over a period of time and Level 3 Behavioral change (3), and eventually level 4a Change in organizational practice and 4b Patient outcomes.

Conclusions and implications for education

The use of serious games in interprofessional education, could have in both face-to-face as online education potential to increase motivation, satisfaction, and engagement of students. Students may also be more open for interaction, that can lead to more diverse discussion, problem solving and could provide context for collaborative, interactive decision making. Sharing of opinions and receiving feedback from the games in real time could lead to a more positive attitude towards interprofessional cooperation. When we want to use serious games in interprofessional education, the quality of assignment or training must be the focus, not the capability of the technology uses. When we would like to develop a serious game for interprofessional education, we should consider the four pillars of learning to avoid the development of a serious game which does not fulfil its educational objectives.

To implement gamification within interprofessional learning at Linköping University, as an alternative for the communication assignment described in the background, I would like to advice to use a template of a game that is already developed and evaluated. I contacted the developers of IPE Challenge\textsuperscript{15} and they allowed us to use their game board template, question cards and game instructions. This board game\textsuperscript{15} utilizes a team approach with questions focused around the Core Competencies for Interprofessional Collaborative Practice\textsuperscript{26} and was designed to enable the understanding of professional roles and
responsibilities in patient/client care settings.\textsuperscript{13,15} This board game format was readily accepted and provided an adaptable method for introducing, evaluating, and reinforcing concepts related to interprofessional education.\textsuperscript{13,15} In this boardgame\textsuperscript{15}, interprofessional teams are formed which are challenged to answer questions related to interprofessional roles and responsibilities. Players on the same interprofessional team are allowed to discuss each question to reach consensus. When the interprofessional team answered correctly, the team would be awarded. In my opinion, it would be beneficial when the team answers the question (correct or incorrect) there would be time to discuss the question with the other teams. These discussions could be led by an educator.

Gameplay could be the duration of a scheduled tutorial group allowing for approximately 5 min for game set up at the beginning of class and 15 min at the end of class for cleanup and discussion. In the development of the IPE Challenge! board game\textsuperscript{15} they described that it took three hours to develop the game, after the competency domain and professions to be included were identified.

For the implementation of this game in the Swedish context, we should evaluate the questions composed in the IPE Challenge! on appropriateness and translated for the first years’ students in the interprofessional course at Linköping University. We could develop additional question cards with help of faculty survey of each discipline's roles and responsibilities. Although we don’t need to develop the game from scratch, with creating new questions and translating the game, I estimate that this would take approximately one day of work. Read more about the IPE Challenge! elsewhere.\textsuperscript{15} We could evaluate the gamification with a pre-game and post-game survey developed by the IPE Challenge! developers (see Appendix C in\textsuperscript{15}) and analyse the observations of the educators during the tutorial group with keeping in mind the four pillars of learning, a model developed by Kirkpatrick.\textsuperscript{25}
References


7. Michael DR, Chen SL. Serious games: Games that educate, train, and inform: Muska & Lipman/Premier-Trade; 2005.


