

Pedagogic development of a gamified approach to enhancing engagement in interprofessional education

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Abstract

Inter-professional education (IPE) is an integral part of learning for undergraduate healthcare students. From the evidence in the literature about the benefits of linked learning, collaboration between the health professions early in student development can lead to improved patient outcomes. This article reflects on the adoption at Keele University in the United Kingdom (UK), of a novel approach to introducing inter-professional education – with the intention of increasing interest in undergraduate health students across the Health faculty. A card-based scenario game (a 'Braincept' game) in the style of a pub quiz introduced elements of gamification, in order to engage students and increase their awareness of various healthcare professionals' roles and interactions. This article assesses the impact of using gamification elements and outlines pedagogic principles underpinning development of this novel intervention.

Keywords:

interprofessional education, gamification, learning and teaching, pedagogy

Introduction

In 'inter-professional education' (IPE), two or more professions come together to learn with, from and about each other (Buring *et al.*, 2009). The literature strongly suggests that effective inter-professional clinical practice reduces the length of patients' stays in hospital; such practice is also linked with fewer reported medical errors and therefore with overall improved patient care (Greiner *et al.*, 2003). The main aim of IPE is to facilitate whole-group student collaboration and learning, so that when these learners eventually find themselves in the workplace environment, they have already had personal experience of communicating with those in other health professions and are thus aware of the entire range of roles in providing quality collaborative patient care. However, as professions have not yet become secure within their own disciplinary identity, early exposure to this may risk stereotyping – and therefore possibly erroneous perceptions of roles – by students, who may then perform to what they *think* is expected of them in their profession. So, until disciplinary identity has become embedded in students' understanding and awareness, educators must, in their

teaching, take steps to prevent the possible adverse impact of such misconceptions about roles on students' professional development at a critical time in their academic and clinical careers. To take account of this risk, our interventions in the approach we adopted, as we explore later, deliberately incorporated the management of student expectations. As a key aspect of their acquisition of these IPE skills, university healthcare students must be exposed at the earliest point in their training to the work of the full range of healthcare professionals; in various ways, including bespoke, facilitated, inter-professional activities and also reflection on inter-professionalism in practice, they must then cumulatively build on this experiential learning as their respective disciplinary curricula unfold (Reeves *et al.*, 2013). 'Gamification' (a term used to describe gaming elements in non-game contexts) has been used in a variety of educational subject settings to enhance engagement and some such approaches show evidence of learning gain (Deterding *et al.*, 2011; Aynsley *et al.*, 2017 and 2018). The pedagogic literature shows that games can, beyond their intended gains, also enhance – through, essentially, 'metagaming' – such skills as communicating, interacting, listening and team-building, all with significant professional potential (Veltsos, 2017; Bodnar and Clark, 2017) and therefore constituting an essential outcome of IPE.

Rationale for the approach to IPE at Keele University

Our prior experience and formal evaluation of the IPE programme at Keele University have demonstrated that healthcare students sometimes lack interest in the IPE philosophy and highlighted that some students might fail, at this point in their training, to see how IPE is linked to their courses. To address both of these, the programme has, since its inception, undergone several redevelopments.

At Keele University, the IPE curriculum is ambitious, involving all students from all five schools of the Health Faculty and one school in the Faculty of Health Sciences and delivering whole-cohort events simultaneously across multiple sites. In the first year (level 1 IPE), students are provided with facilitated sessions in multi-professional groups, with the aim of enhancing their team-working skills, increasing their grasp of roles and interactions in healthcare and developing knowledge of the principles of ethical and compassionate care. The activity has changed and evolved in response to student and facilitator feedback (it was initially a physical poster, group-created, and then became, after the feedback, a group presentation), each iteration with the aim of improving the overall experience of level 1 IPE. However, one consequence of changing the format of IPE between the years during which the programme has run has been that students have requested more opportunities to explore the diverse healthcare roles of others in their groups, according to the mode of group work (poster or presentation) they experienced. The introduction of gamification was one suggested avenue, in order to unify and facilitate exploration of roles and enhance the changes already made to level 1 IPE. The rationale was that gamification would introduce a task that would enable discussions to take place in an engaging and informal manner, encouraging students to discuss and share ideas and experiences with each other. This paper qualitatively evaluates the use of this gamified approach to increase awareness of various aspects of healthcare roles, with, as the particular focus, the students' views of how engaging and informative they found the gamified elements.

Developing the gamified elements

Two gamification approaches were implemented – a team challenge in the form of a ‘pub quiz’ and a scenario-based group board game. The first was developed as an awareness-raising, ice-breaker activity, while the latter focused on the roles and decision-making of an inter-professional team. To have implemented both proved useful because they addressed student feedback from previous IPE evaluation data, which had indicated little or no understanding of the roles of others and a desire to learn about those roles in a meaningful way.

Gamification for basic information delivery

Using gamification for topics which are usually taught by rote learning (defined as memorising, based on repetition) or which contain key information can be particularly effective in encouraging students to engage in their learning (Aynsley 2018). To this end, a competitive quiz was chosen as an ideal way to introduce students to common healthcare acronyms and specialist professional roles. In an effort to limit or prevent possible side-lining of participants in what was intended to be an ice-breaker activity, each of three rounds – ‘Common acronyms’; ‘Where am I?’; ‘Who am I?’ – had questions relating to the whole spectrum of healthcare professions, enabling individual members of the groups to share their own specific expertise. The ‘Who am I?’ round encouraged students to match statements of job roles with titles of health professionals and aimed to introduce students to other health professions beyond the ones represented in the student body and encouraged them to think of UK healthcare more holistically – something that would have otherwise been delivered as a list.

Virtual or physical?

Studies have indicated that gamification of learning can lead to improved engagement, increased motivation and enhanced learning for students (Yildirim, 2017; Sailer *et al.*, 2017). Historic references in the literature to the term ‘gamification’ suggest it was first used in the pedagogic lexicon sometime in the 1980s, with the first academic papers in the higher education (HE) context emerging around that time (Malone, 1980). From a more contemporary viewpoint, gamification as a pedagogic concept has grown to encompass both the physical and the virtual modes (i.e., defined respectively as: games using physical components and played in person; digital-based games played synchronously but not necessarily in person), conserving critical key educational design concepts that are required to be present, irrespective of the mode of game delivery. Although the virtual and electronic gamification literature has been growing in quality and quantity over the last half decade, physical games (viz., games that use more traditional game components to structure play) have been quietly gaining momentum as well, despite broad misperceptions in the HE community that gamification is synonymous with electronic games (Gentry *et al.*, 2019). The decision to use a physical board game was made for logistical and educational reasons. With over 600 students across multiple sites with varying degrees of IT access, having a physical intervention permits delivery with minimal infrastructure and IT support. Clearly, in a post-COVID context, this might have proved challenging from a social-distancing perspective and our continuing work with all our games is now looking at synchronous and asynchronous implementation routes which preserve, as far as possible, the benefits of playful learning at safe distance. From an educational perspective, a physical game encourages development of a myriad of positive learning skills under broad pedagogic outcomes, such as cognitive (textual/non-textual learning), motor (compilation and synthesis), affective (attitude and

motivation) and communicative (co-operation and negotiation) (Wouters *et al.*, 2009). Designing these interventions in this way has allowed us to incorporate this range of beneficial learning gains into the sessions to underpin the inter-professional learning inherent in the event's design.

Degrees of freedom?

The rules inherent in pre-determined games mechanics allow play to be experienced in a “*structured, contextual and thematic*” way (Miller, 2013). Furthermore, with careful game-design decisions, play strategies can evolve to allow players to access the range of enhanced learning benefits provided by gamified approaches to learning (Iosup and Epema, 2014). One of the pedagogic benefits of the decision to create physical – rather than virtual – games was to have the gameplay centred on small-group learning as the key mode of play. The literature shows that this is a reliable way for learners to explore and create knowledge collaboratively (Nevin *et al.*, 2014) and, even in a post-COVID context, there are extremely convincing educational benefits to having elements of social interaction either replicated or simulated as part of an enhanced student learning experience, as articulated by Raj Phani in his blog on the subject of gamification in the pandemic (<https://www.peoplemattersglobal.com/blog/life-at-work/advantages-of-gamification-amid-the-pandemic-27526>).

For the scenario-based game, the key design questions considered for the rule set of the game concerned complexity and structure of play (Morford *et al.*, 2014): with too many rules, players cannot keep track; with insufficient rules, the goal is obscured. The creation of game rules and play-testing were therefore core steps in generating an enjoyable and rewarding play experience. We opted to have the game unfold in stages and to conserve the rules' progression for each stage, ensuring that, once the first stage in the first game has been played, each subsequent stage in every other game is now familiar and that learners are not struggling with the rules at the expense of the learning (Garone and Nesteriuk, 2019). The game is constructed to have ‘model’ answers, rather than correct answers, to encourage players to challenge and discuss the answers generated.

Implementation

At Keele, the inter-professional education programme (est. 2007) adopts an activity-based model at levels 4 and 5, to be undertaken by cohorts of around 600 students. The institutional IPE strategy develops mutual understanding and respect between professional groups and promotes inter-professional learning across the various schools within the faculties of Medicine and Health Sciences and Natural Sciences. In recent years, level 1 IPE (Year 1 undergraduates from eight different schools across Keele University) fed back that the development of new activities for the event had deprived them of the opportunity to find out about each other's roles and to learn from each other. Level 1 IPE was delivered to the 2018/19 cohort across seven sites on campus with fifty-four groups of twelve to fourteen students from across the mentioned faculties. Following welcome and introductions, the game activities were facilitated in the morning session, with students playing the pub quiz before moving on to the roles and decisions game. In the afternoon, students worked in groups to explore scenarios based on cases reported in the Mid-Staffordshire NHS Foundation Trust Public Inquiry (Francis, 2013). The aim was to encourage students to explore the core NHS and social care values of care, compassion, courage, communication,

competence and commitment, known as the '6Cs' (Cummings, 2012). Each of the sessions was led by an IPE facilitator familiar with the games, who promoted discussion in the groups. The inclusion of our game-based intervention for students at the start of activities encouraged groups to start thinking about roles and sharing their understanding of each other's professions. The game explores these core ideas through the completion of up to six scenarios (including model answers and case review questions to prompt further and deeper discussions within the team), to complete which the players work together. After playing, students consented to complete Likert feedback forms related to their play experience.

Reflections

Feedback was broadly positive, with over 85% of students feeling able to challenge and question the views of others in their team. We have reflected on a series of questions related to our project to cover the main evaluation points our IPE intervention aimed to improve:

Did the quiz element help students to learn more about other health professions and, by extension, to avoid stereotyping?

Over 80% felt that they knew more about the role of other healthcare professionals in patient care, with those who did not agree citing a high starting level of knowledge gained either from placement or from having previously worked as a healthcare professional. When we talked with students after gameplay, we were able to detect a strong positive feeling that the play experience increased awareness of the roles of various healthcare professionals. Future work will explore the nuances of these positive perceptions, for they may derive from a range of factors from group dynamics to clarity of the games' rules of play.

Was our game-based approach more inclusive and was it accessible to the students?

IPE facilitators across the sites observed a high level of interaction between group members. An issue raised by students in previous iterations of Level 1 IPE was, for some specialists, the lack of inclusivity of scenarios. Student midwives, in particular, struggled historically to relate the various IPE scenarios to their practice and risked becoming disengaged during group work. After our introduction of the gamified approach and ensuring that the scenarios played involved a broad range of professionals, students said that they felt more included in decision-making. For example, a physiotherapy student, in conversation with a facilitator, had felt able to be involved in the discussion and to contribute knowledge that the rest of the group did not have. It is worth reiterating here that the core aim of IPE is to facilitate students' learning with, from and about each other, as this student's response demonstrated very well.

What did the students think about the degrees of freedom embedded into the game design?

Interestingly, the informal student post-gameplay feedback that most closely matched our 'degrees of freedom' related to the complexity of the game rules, with some students feeling that the game was confusing. However, upon examination, it became apparent that all of those comments came from the same large venue (one of many) where the task was being run and coincided with comments about neither being able to hear the facilitators' explanation nor see the screen outlining the game. It is likely that much of the confusion was down to the way by which some groups were introduced to the game. In relation to the game's having model answers, rather than a 'right' answer, our discussions with the

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students indicated they liked that aspect the most, as it meant that an element of negotiation was present in the scenario and that some students felt empowered by being able to present their perspective as a 'case' to be considered by the group.

Are there any changes we would make in a future development of our approach here?

In a post-COVID world, the major change to our gamified approach to IPE learning must centre on the delivery model of the gaming experience and how to manage the scale of this game-based intervention within a world that will be feeling the impacts of social distancing for many years to come. Adopting a multi-model approach akin to a 'blended play experience' is one of our most recent lines of game development (using a hybrid of online synchronous interaction and print-and-play mechanics for the physical experience), but we also steadfastly adhere to the core physical aspects of gameplay in person, a critical element we are loathe to see lost, especially given our positive perception of impacts on IPE learning evidently working at scale in this study.

Summary

Overall, using a gamified approach encouraged discussion and sharing of experience; it allowed students an opportunity to contribute to a group experience, thereby both enhancing shared knowledge and imparting lived experience of inter-professional practice.

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