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Birley Place: A virtual community for the delivery of health and social care education

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1 **ABSTRACT**

2 **Background:** Virtual simulation can provide high quality learning experiences
3 through innovative and engaging activities, whilst also overcoming some of the
4 constraints associated with physical simulation.

5 **Method:** We developed a virtual community, called Birley Place, to facilitate
6 simulation-based learning activities. Adopting a novel approach, we modelled the
7 virtual community on the large metropolitan city in which our institution is based.
8 Publicly-available health and population data was used to ensure that the homes,
9 businesses and services in the community were representative of distinct socio-
10 economic areas of our city. The residents of the virtual community were also
11 matched with the real-world areas based on health and lifestyle data.

12 **Results:** Our virtual community is used to facilitate learning activities across our
13 health and social care degree programmes. In this article, we summarise how we
14 developed Birley Place, before providing one example of how it is used to facilitate
15 the delivery of a large-scale interprofessional education project.

16 **Conclusion:** Birley Place is an innovative tool for delivering online and virtual
17 simulation. The use of this virtual community facilitates learners' understanding of
18 the connection between settings and health status.

19

20 *Keywords:* Simulation, Education, Interprofessional Education, Computer Simulation

1 INTRODUCTION

2 Simulation uses guided interactive learning activities to replicate real-world
3 experiences, often in an immersive manner[1]. Simulation typically involves practical
4 scenarios that replicate real-world professional or clinical experiences. Learners
5 interact and make decisions as they would in real-life, but in a safe and supportive
6 environment without real-life consequences. Alongside physical simulation, virtual
7 simulation is gaining popularity[see 2-4]. Virtual worlds enable multiple users to
8 interact and collaborate in educational activities in real-time. They can be effective
9 for creating immersive, experiential simulation-based learning experiences that are
10 transferrable to real-world healthcare practice[5]. Virtual and computer-based
11 simulation can also overcome several barriers associated with providing physical
12 simulation to large cohorts, where staff availability, equipment costs, timetabling, and
13 space constraints pose challenges to educators[6]. Virtual simulation[7] and virtual
14 worlds[4, 7], enable learners to engage and interact synchronously and
15 asynchronously from any location, using accessible technology. These technologies,
16 therefore, have the potential to serve as an ideal forum for learners to collaborate in
17 communities of practice[8]. Communities of practice provide a space for both social
18 support and the development of knowledge and skills over time. Such communities
19 act as a space to pursue shared enterprise and engage in peer learning,
20 development, and reflection.

21 DEVELOPMENT OF A VIRTUAL COMMUNITY

22 Principles of simulation-based education and experiential learning were used
23 to develop an online virtual community at our institution. Although persistent virtual
24 worlds have been used effectively[5], these platforms are expensive and were not

1 created specifically for educational purposes. Our virtual community, called *Birley*
2 *Place*[9, 10], is a web-based bespoke virtual world[4], specifically designed to
3 facilitate health and social care education at our institution. Content for Birley Place,
4 including scenarios and role profiles, are co-created by academic and e-learning
5 development staff, often with input from service users, students, and in collaboration
6 with colleagues with relevant clinical experiences from different disciplines. This
7 multi-disciplinary approach enables learners to engage in experiential, interactive,
8 and realistic scenarios that enhance both their traditional learning and physical
9 simulation. In its original form, Birley Place consisted of a series of interlinked
10 simulated scenarios, featuring people living on a single street. To develop this
11 concept, we expanded the community to model a larger area to create a more
12 realistic context within which further simulated people or services could exist. Using
13 an innovative approach, we modelled the virtual community on publicly-available
14 population and health data related to three distinct socio-economic areas of our city.
15 The fictional neighbourhoods are represented on a map (see Figure 1a), and provide
16 realistic representations of the housing, businesses, and health and social care
17 services that exist in those real-world areas (Figure 1c). For example, more affluent
18 neighbourhoods contain bigger homes and premium shops and services, whilst less
19 affluent neighbourhoods contain smaller multi-occupancy homes and a higher
20 proportion of fast-food outlets. The healthcare services are also modelled to ensure
21 their size and services offered are representative of the real-world areas of our city.
22 Statistical data also informed the development of people who 'live' in Birley Place.
23 This ensured that the people are representative of the populations on which the
24 neighbourhoods are based, matched proportionally for age, sex, race, education,
25 health, and employment status. The data allows accurate representation for long-

1 term health conditions and lifestyle habits relating to smoking, alcohol consumption,
2 exercise, and diet. The people also interconnect with others, enabling family groups
3 and social networks to be represented. Finally, these data were used to create
4 simulated neighbourhood profile documents containing statistical health and
5 population data for each neighbourhood, further modelling the real-world areas of
6 our city.

7 The map can be used as a way for learners to engage with the community;
8 learners click on the map to visit buildings to access information about the people
9 who live or work there. Background information is provided for each person in the
10 form of a role profile, containing details relating to their personality, age, occupation,
11 hobbies, and lifestyle (Figure 1d). Narrative context related to their health status is
12 provided through scenarios (Figure 1e). These include text and/or audio-visual case-
13 based interactive media that bring the people ‘to life’ by describing events from the
14 person’s life or depicting interactions they had with health or social care services.
15 Interactive scenarios with embedded reflection and decision-making also allow
16 learners the opportunity to ‘stop and think’, act, and react to the scenario presented
17 to them. The virtual community differs from traditional online learning and computer-
18 based simulation, as learners interact socially and academically to explore the
19 outcomes of their decisions.

20 Using authentic data to create and populate a virtual community enables
21 learners to construct a realistic picture of the people who live there. As our simulation
22 activities are based on real-world areas, learners develop an understanding of their
23 local setting and its inhabitants. As the virtual community represents realistic people,
24 learners gain an implicit appreciation of the factors that influence the health and
25 social status of the service users for whom they provide care, both on placement and

1 in their future careers. The consideration of these issues early during their education
2 encourages them to place the service user at the forefront of their decision-making
3 when providing care. In addition, the virtual community affords a flexible and safe
4 option whilst maintaining authenticity; there is no requirement to visit communities
5 physically to understand the concepts, which can be logistically challenging and
6 present ethical and health and safety barriers. However, it is possible for the
7 residents to be introduced as simulated patients in physical simulation activities,
8 allowing the characters to exist both virtually and physically.

9 The cost of Birley Place is approximated to be £10,000 for initial set up
10 (including web development and software licenses) and £3500 to maintain annually
11 (for web domain, hosting, and maintenance). In addition, the faculty employs an e-
12 learning developer to manage and develop the platform, and this accounts for ~50%
13 of their workload. Costs associated with academic staff time for planning and
14 developing the learning activities used within Birley Place, as well as funded projects
15 with specific remit for developing Birley Place, are not included within this
16 calculation.

17 **USE OF THE VIRTUAL COMMUNITY TO FACILITATE HEALTH AND SOCIAL** 18 **CARE EDUCATION**

19 Birley Place facilitates virtual simulation across our degree programmes
20 related to health and social care. In this section, we provide one example of how we
21 have used Birley Place to facilitate a large-scale interprofessional education project.
22 Interprofessional education (IPE) involves learners from a minimum of two different
23 professions learning together and from each other, with the aim of improving
24 collaboration and care provision[11]. Inclusion of IPE within health and social care

1 education has benefits, including the development of learners' communication and
2 teamwork skills, perceptions of other professions, and knowledge of the roles of
3 professionals from other disciplines[see 12, 13]. Despite these benefits,
4 requirements for large groups to learn together at the same place and time present
5 logistical challenges to scheduling IPE. Virtual delivery of IPE can alleviate these
6 constraints, whilst providing a quality learning experience[6]. Importantly, the more
7 flexible approach afforded by virtual simulation-based IPE can achieve similar
8 learning outcomes to traditional IPE activities. For example, virtual simulation has
9 been effective in helping learners understand the importance of interprofessional
10 collaboration in improving care outcomes, and raising their awareness of the roles of
11 other professionals[6].

12 Our IPE provision, led by the third author, comprises a mandatory seven-
13 week programme, integrated into the timetable of first year undergraduate students
14 studying Adult Nursing, Mental Health Nursing, Physiotherapy, Speech and
15 Language Therapy, Social Work, and Integrated Health and Social Care (800
16 students in total). The purpose of the IPE provision is to support the development of
17 skilled graduates with an enhanced understanding of the health and social care
18 landscape and the interactive team approach that is required to become effective
19 health and social care practitioners. To achieve these aims learners are assigned to
20 interprofessional teams of 10 students, and collaborate in communities of practice in
21 either face-to-face or remote tutor-facilitated sessions. The interprofessional groups
22 are assigned a neighbourhood, directed to meet the residents, and explore the local
23 amenities and services. They also visit the virtual Town Hall to review the statistical
24 information contained within the neighbourhood profile documents (see Figure 1b),
25 which enables the groups to develop a community profile. Accessing and scrutinising

1 the data within the context of the virtual community helps learners to visualise and
2 interpret these data in a meaningful way. This encourages learners to develop an
3 understanding of how the settings in which people live and wider determinants of
4 health and social wellbeing interplay to influence health and social status. Learners
5 discuss this information in their interprofessional groups to produce the community
6 profile, before identifying a health and social care issue affecting their neighbourhood
7 and developing an interprofessional strategy to address that issue, in a similar
8 manner to Ching and Amidi-Nouri[14]. Learners collaborate and share opinions on
9 scenarios from the perspective of their own profession. Academic staff are involved
10 in the interprofessional discussion which contributes to the sharing of perspectives,
11 although leadership is shared across the group. This encourages interprofessional
12 teamwork and communication[12] and promotes the belief that all perspectives are
13 equally valuable. Through this process, learners begin to develop an understanding
14 how professionals from other disciplines may approach a care-related issue, which
15 facilitates a deeper awareness of the roles and values of other professionals
16 involved in care provision[6]. Initial student evaluation data from the IPE programme
17 indicates that learners' perceived their interactions with Birley Place positively, as
18 they reported that "the virtual community was well established and really easy to
19 use" and they "enjoyed analysing the profiles". In addition, most learners responded
20 in agreement to a statement that the Birley Place website and resources aided their
21 learning, with free-text responses indicating that "learning from other professions"
22 and "sharing our understanding of roles, values and goals" were among the most
23 enjoyable aspects of the IPE programme.

24 **CONCLUSION**

1 We developed a virtual community, containing people, housing, and services
2 representative of real-world health and population data relating to our city. Birley
3 Place provides an innovative and novel tool for delivering online and virtual
4 simulation. The use of Birley Place allows us to overcome many of the constraints
5 associated with the delivery of simulation activities and IPE on a large-scale, whilst
6 providing a platform for learners' to collaborate as a community of practice and
7 develop team-working skills. The use of real-world statistical information, detailed
8 narrative to enhance role profiles, and realistic scenarios helps to foster an engaging
9 virtual community. This innovative approach challenges learners to explore the wider
10 factors that contribute to health and encourages them to develop an enhanced
11 awareness of the importance of interprofessional collaboration for effective care
12 provision. A full research evaluation of student and staff experiences of the use of
13 Birley Place to facilitate the delivery of IPE is currently ongoing and the findings will
14 be communicated in due course.

15

16 **Contribution Statement:** The initial idea for the article emerged following
17 discussions between all authors, and all authors contributed to the planning, writing,
18 and editing of this article. David Wright, Leah Greene, and Kirsten Jack conducted
19 the literature search for the article. David Wright was responsible for writing the full
20 draft, with Leah Greene, Kirsten Jack, Eleanor Hannan and Claire Hamshire all
21 contributing to editing and revising the manuscript. Eleanor Hannan was responsible
22 for creating the figure. David Wright is the guarantor for the article.

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