Impact case study (REF3)

REF2021

Institution: Buckinghamshire New University

Unit of Assessment: 23 Education

Title of case study: Creating authentic education experiences with work-related simulation in collaboration and interdisciplinary partnerships

Period when the underpinning research was undertaken: September 2014 – November 2018

Details of staff conducting the underpinning research from the submitting unit:

Name(s):	Role(s) (e.g. job title):	Period(s) employed by submitting HEI:
Helena Chance	Assoc. Prof. - Design studies	Sep 2008 – present
Jon Jackson	Course Leader - Computing	Jan 2015 – present
Nic Fryer	Senior Lecturer - Performing Arts	July 2010 – present
Richard Jones	Assoc. Prof. – Computing	Jun 2000 – present
Richard Mather	Assoc. Prof. – Computing	Sep 1996 – present
Rebecca Rochon	Course Leader - Education	Aug 2008 – present

Period when the claimed impact occurred: September 2016 – September 2020

Is this case study continued from a case study submitted in 2014? N

1. Summary of the impact (indicative maximum 100 words)

This impact case study concerns application of a novel pedagogical approach that combines elements of collaboration, simulation and interdisciplinarity in academic and stakeholder partnerships. These provide immersive workplace experiences for nursing, performing arts, computing and art-and-design students. The primary impact has been to build educator and student confidence by replacing knowledge-centric teaching with scenarios that replicate communication and cross-disciplinary challenges associated with employment. Evidence and testimonies indicate that academic performance and workplace preparedness of graduates is enhanced when this approach is adopted. The reach and transformative nature of impacts are testified by professional bodies, employers, students and local stakeholder organisations.

2. Underpinning research (indicative maximum 500 words)

Applications of the combined workplace simulation and interdisciplinary partnership approach brought together students from contrasting subject areas. Students were placed in authentic real-life situations that exercised communication and problem-solving skills. In both studies the pedagogic approach and impact on student development was evaluated by students engaging in self-reflection and peer review. Evaluations were undertaken using a variety of media and settings. These included: student and staff debrief sessions; audio and video recordings and their transcripts; and the written reflections and peer-reviews of students.

(i) Nursing and Performing Arts

The first application of interdisciplinary partnership is underpinned by the work of Fryer and Boot (2017) who in their exploration and development of communication training for nurses, identify a need to develop a socially aware reflection-in-action that demonstrates deeper understanding of other patient perspectives and, thereby, cultivates a greater ability to engage with patients. For this reason, the authors propose the use of role play and the improvisation it engenders to assist attending nurses to gain such awareness, particularly in difficult clinical situations such as end-of-life care.

Edwards, Fryer and Boot (2018) describe how this work is further developed by creating 'capstone' assessments to provide two different student groups, nursing and performing arts students, with a lived experience of learning together about their own fields of practice. Capstone assessments combine 'live' human simulation with self-reflection and peer review. A capstone assessment is the integration of a body of relatively fragmented knowledge and learning to form a whole and can be used as a transitional assessment and a bridging experience to connect knowledge between modules or courses. The engagement with an alternative set of perspectives and priorities from a different discipline brings the students' own unconscious bias, expectations and priorities into sharp focus, enabling new insights to be revealed. The capstone assessments involved two faculties and four modules, three nursing modules and one from performing arts. Case studies were designed to represent real-life situations that students were likely to encounter during their careers, either playing a patient as an actor or performing a caring role as a nurse. Assessments for the capstone simulation were formative, and involved the students engaging in self-reflection and peer review. Videos were available to enhance the self-reflection and peer-review process.

Evaluation was undertaken through verbal feedback during debrief, written feedback, video footage and nursing student and acting student peer review. The experience of capstone assessments for two diverse student groups provided valuable learning from their own group and from the partnering group outside their subject area.

This work was supported by competitive award (£7,000) from Health Education England, North West London.

(ii) Computing and Art & Design

The second application of interdisciplinary partnership concerned improving the work-readiness of graduates by delivering authentic work-related experiences and aligned with the then HEFCE (now OfS) themes for interdisciplinary curriculum innovations. This addressed weaknesses in mono-professional higher education live briefs through use of interdisciplinary curricular briefs that better reflected real-life practice. It also responded to widespread concerns surrounding the soft-skill capability of computing and creative professionals to work in multi-professional teams to rapidly develop solutions for clients.

Studies were underpinned by Mixed Method (Mather, 2015a) and Canonical Gradient Analysis (Mather, 2015b; Mather et al., 2016) findings that collaborative behaviours enhanced learning progress amongst computing students while working in immersive simulated problem-solving environments. While gradient analysis demonstrated correlation between conventional assessment indices and peer collaboration (Mather 2015b), workplace observations (Mather 2015a) indicated how computer programming in a simulated landscape engaged students in meaningful and focussed communication by "providing visual cues for problem-solving discussions and for progress through sharing discoveries" (Mather 2015a).

In 2016 a HEFCE Catalyst award "Traversing digital-creative perspectives: preparing design and technology students for interdisciplinary work" (£39,000) was applied to further embedding simulation and collaborative spaces in other modules, and to extend these by adding dimensions for industry brief work in interdisciplinary partnerships. Key student learning experience themes for the project were: (1) the use of interdisciplinary live briefs; (2) team-based learning and collaborative working within cross-disciplinary student teams; (3) managing different levels of partnership and communication with clients, academic staff and downstream stakeholders; and (4) progressively greater student-team autonomy and responsibility for self-directing projects.

The project working context was the development of two Web/mobile-ready applications (across two academic years) drawing on the digital, creative and design skillsets of computing, advertising and design students. The work assignments were formally contracted by the local District and County Councils and comprised: (1) a location-sensitive "Heritage Trail App" to aid

interpretation of town centre historical sites; and (2) a web-based service to support businesses offering premises as safe havens for vulnerable members of the local community.

3. References to the research (indicative maximum of six references)

Chance, H., Mather, R., Rochon, R., & Jones, R. (2018) *Traversing digital-creative perspectives: preparing design and technology students for interdisciplinary work*. Report and post-project addendum in fulfilment of HEFCE Catalyst A Project PK62. Available at http://bucks.repository.guildhe.ac.uk/id/eprint/18097

Edwards, S. L., Fryer, N., Boot, M., Farquharson, M., McCormack, S., Sluman, K., & Tigar, K. (2018). Results of cross-faculty 'capstone' assessments involving nursing and performing arts students. *Nursing Management,* **25**(4).

Fryer, N., & Boot, M. (2017). Beyond you and I: role play and reflection-in-action in communication training. *Reflective Practice,* *18*(1), 112-122. (*200+ reads on ResearchGate*)

Mather, R.A., Day, N., Jones, R., Lusuardi, C., Maher, K., & Dexter, B. (2016) Canonical Explorations of 'Tel' Environments for Computer Programming*. Proceedings of the European Conference on Technology in the Classroom* (ECTC, 2015), pp265-282.

Mather, R. (2015a) A mixed-methods exploration of an environment for learning computer programming. *Research In Learning Technology,* **23***.* doi:http://dx.doi.org/10.3402/rlt.v23.27179

Mather, R.A. (2015b) Multivariate Gradient Analysis for Evaluating and Visualizing a Learning Platform for Computer Programming. *IAFOR Journal of Education,* **3**(1), pp17-30.

4. Details of the impact (indicative maximum 750 words)

This approach combines learning with work-simulation and partnerships to cultivate graduate attributes of creative problem-solving, critical and reflective thinking and effective communication. Work by Edwards, Fryer and colleagues ("Live human simulation: nurses and actors learning together") was nominated for a Nursing Times "Teaching Innovation of the Year Award" [1]. Fryer & Boot (2017) is cited as evidence that reflection-in-action is vital to many professions in the influential text (> 11,000 citations) "Learning in adulthood: A comprehensive guide" by Merriam and Baumgartner [2]. Edwards and others draw on peer to peer student reviews to attest to the immersivity and authenticity of the approach. An education participant summarises a key value that "*By working with humans, the nursing students are challenged. They have to engage with the complexities of real-life interactions and improvise. This has value for both groups of students – having to really engage with sensitivity, where pre-rehearsed responses are inadequate*" [3].

Geographical and subject reach is evidenced by Michigan State University who report that Fryer and Boot's work "… *was used to support our efforts to build interactive curriculum materials to build communication, teamwork and leadership skills in CyberInfrastructure (CI) professionals. This project, called the CyberAmbassadors Program, is supported by the National Science Foundation (NSF) in the United States (Award #1730137) and has trained more than 500 participants and 50 facilitators to date. This training makes frequent use of role-playing exercises, for which we drew on your work*" [4].

In the UK, the application of performance to exploring and simulating nursing contexts involved the "Human Story Theatre" company. Gaye Poole (Actor/Writer and Artistic Director with Human Story Theatre) explains the influence of the simulation by performance approach as follows: "*We were asked to perform an extract of our play about dementia to both nursing and acting students and then run a workshop enabling the actors to simulate such 'real' patients. The acting students*

were enormously keen and talented. They realised that this medical role-play was both a possible future income source but also importantly that they were contributing to the safe and realistic learning of healthcare workers. They also saw the benefits of inhabiting real patient's lives, helping future portrayal of more realistic characters onstage" [5].

Aspects surrounding partnership and development of learning-autonomy are under ongoing investigation as they are trialled in other modules. Initial findings indicate some success in engaging students and helping them to grow confidence as effective communicators, team workers and subject specialists. The value of the approach was recognised by students, albeit with reservation that conventional assessment may not adequately represent the development of soft skills; one student reflects "… you can't mark what happened inside us. So, for example, we improved our communication skills, we improved our time managing skills, and I think you can't check it, you can't mark it" [6].

The approach was valued for the opportunity it provided students to form partnerships with academic colleagues and become involved in the research, design and shaping of their education environments. Undergraduates also presented their experiences at two national conferences and a workshop [7].

Communications with graduates after 2-3 years in employment, indicate that the impacts of the approach have persisted. One graduate concisely states this was a … "Really good module! Best one and my favourite at uni.". Another recollects that "This module provided many opportunities to exercise the soft skills needed to work as a software developer. I've been able to discuss the module in interviews, share a link to the web app and use examples of working in this cross-disciplinary team to answer competency-based questions". Through partnerships students have developed the 'graduate attributes' required at work and widely valued by society. Student feedback to this effect include that: "Soft skills improved a lot and it gave me a foundation on how to handle discussing projects with people who aren't developers". Regarding developing a receptive attitude, "Being able to listen to opinions. You will always work in a team in the web world and it won't always go your way", and the need for compromise in teams, "it gives you an idea of how groups of people can and sometimes cannot work together. Having the ability to adapt and overcome issues within a brief is key to being able to cope with large departmental dealing within businesses". Another student also appreciated having greater team-responsibility "It gave me an opportunity to work with graphic design students and allowed the software engineering students take a little bit of a leadership within the project i.e. assigning tasks to graphic students with requirements and deadlines" [8].

Employers also testify to the effectiveness of the same graduates in the workplace. The founder and CEO of an online ticketing service reports that "xxx has been one of our best employees. He has showed leadership as well as being able to look after big projects" [8]. The Head of Development for an online expense management service "xxx is extremely adaptable and has shown a real "can do" attitude. He has a great work attitude and will put himself forward for tasks, despite their complexities … His interview was exceptional and he even developed and presented a UX project (based on our own product) he had been working on in his own time. Of all the attributes I would say his communication skills, ability to listen and adapt, and energy in the workplace have been key to his success so far" [8].

Wider recognition of the University contribution to both the Heritage Trail and Safe Places Apps is acknowledged by Buckinghamshire Council [9], and in part, a 2020 NTF award to research team member, Richard Jones, recognising "a particular drive for impact demonstrated by our winners and applicants in championing equality, diversity and inclusivity within approaches to curriculum design, teaching delivery and collaborative working" (Advance HE, 2020) [10].

5. Sources to corroborate the impact (indicative maximum of 10 references)

[1] Nursing Times (2018) *Shortlist for this year's Student Nursing Times Awards revealed*. Accessed at https://www.nursingtimes.net/news/education/shortlist-for-this-years-student-nursing-times-awards-revealed-20-02-2018/

[2] Merriam, S. B., & Baumgartner, L. M. (2020). *Learning in adulthood: A comprehensive guide*. John Wiley & Sons.

[3] Edwards, S. L., Fryer, N., Boot, M., Farquharson, M., McCormack, S., Sluman, K., & Tigar, K. (2018). Results of cross-faculty 'capstone' assessments involving nursing and performing arts students. *Nursing Management,* **25**(4). doi: 10.7748/nm.2018.e1777

[4] Assistant Dean, Michigan State University. *'Beyond You and I' article* [email]. (Personal communication, 4 May 2020; supplied).

[5] Founder/Director, Human Story Theatre. *'Request'* [email]. (Personal communication, 7 May 2020; supplied).

[6] Chance, H., Mather, R., Rochon, R., & Jones, R. (2018) *Traversing digital-creative perspectives: preparing design and technology students for interdisciplinary work*. Report and post-project addendum in fulfilment of HEFCE Catalyst A Project PK62. Available at https://bucks.repository.guildhe.ac.uk/id/eprint/18097/

[7] Student participation in conferences and workshop, see Hucks et. al, (2017); Chance, et. al (2018); Deacon, et. al (2018) (Details of unpublished conference presentations supplied.)

[8] Communications relating to Graduate Destinations and Graduate Reflections. (Details supplied).

[9] Buckinghamshire Council recognitions of University contribution through project work. (Personal communication; details supplied).

[10] Advance HE (2020) *Outstanding teaching recognised in the 2020 Teaching Excellence Awards for Higher Education*. Accessed at https://www.advance-he.ac.uk/news-and-views/Outstanding-teaching-recognised-in-the-2020-Teaching-Excellence-Awards-for-Higher-Education