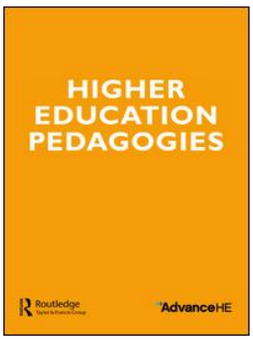

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The exploration of students' learning gain following immersive simulation – the impact of feedback

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ABSTRACT

With an increasing emphasis on the importance of real-world learning in higher education, coupled with demand for placement experience, simulation has become an increasingly popular pedagogy. However, literature is scant on how students feedforward their learning from the simulation debrief into placement. A mixed-method study of 108 student nurses explored how feedback from the debriefing contributed to students' learning from immersive simulation and whether students used this learning in the placement that followed. In this case, authenticity, realism and interaction were achieved through the use of actors, high fidelity mannequins, clinicians, medical equipment and replicated clinical environments. Results indicated barriers to feedforward at the two stages of the simulation feedback process and the transition of learning into practice. Recommendations identify measures to strengthen the formative feedback phases between the university and practice settings and further enhance the potential of simulation pedagogy.

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Simulation; feedback; debriefing; feedforward; self regulation

Introduction

Simulation enables students to safely practice skills and develop knowledge in a learning environment that closely replicates clinical practice (Cook, 2014). This pedagogic approach immerses students in real-life situations, which engages their senses and emotions, requiring them to act, behave and think as if in clinical practice (Lopreiato et al., 2016).

A fundamental part of simulation is the debriefing process, a formative feedback process, whereby the student has the opportunity to reflect on the scenario and the learning therein, following participation (Reierson, Haukedal, Hedeman, & Bjørk, 2017). The debrief is guided by a suitably qualified facilitator who has observed the student undertake the scenario and will focus the student on the learning aims for that particular simulated scenario. Within nursing, the discipline of this simulation study, there is an emphasis on the promotion of simulation in educational guidelines for student nurses (NMC, 2018) and it is viewed as an alternative to practice hours undertaken in the clinical setting.

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The organisation and resourcing of an immersive real-time simulation event is a significant investment and it is important to consider the value of this pedagogic approach to justify the time and cost involved. Self-reported levels of student satisfaction alone do not provide an assessment of the overall impact of the immersive simulation experience (Levett-Jones et al., 2011). An undeveloped aspect of this pedagogic approach is understanding how students use the insights gained following simulation and specifically the feedback within the debrief, to feedforward into their own professional practice. This became the impetus for successfully applying to the Schools of Health Sciences Clinical Innovation Fund, to enable a more detailed research study in 2017.

Literature review

The focus on assessment and feedback in higher education has endeavoured to make feedback more accessible, meaningful and relevant to students' future progress (Boud & Molley, 2013; O'Donovan, Rust, & Price, 2016). Concepts such as 'sustainable feedback skills' (Carless, Salter, Yang, & Lam, 2011) and 'feed-forward' (Murtagh & Baker, 2009; Orsmond, Maw, Park, Gomez, & Crook, 2013) have emerged in higher education pedagogy in response to this. The student has been repositioned as a partner in a socio-constructivist learning relationship with academic staff acting more as a coach (O'Donovan et al., 2016), rather than a traditionally hierarchical based expert. By using this model, the student is given responsibility to use feedback to inform their own longer-term development in order to achieve learning gain for future employability and lifelong learning (BIS, 2016). For the purposes of this study, learning gain is defined as the improvement in knowledge, skills, work-readiness and personal development (HEFCE, 2018) that has resulted from students' own unique and individual involvement in the immersive simulation both in the immediate and long term.

The recognition of the importance of sustainable feedback skills for academic and personal goals has resonance for vocational degrees, such as nursing, where students are studying for both an academic qualification and professional registration. The characteristics of sustainable feedback skills, as described by Carless et al. (2011), emphasise the importance of dialogic feedback where the student has agency to be self-reflective and self-regulating of their own feedback. These qualities, coupled with the ability to set goals and plan for learning, are mirrored in the professional attributes required of both students and registered nurses (NMC, 2017).

Despite this natural alignment between sustainable feedback skills as an integral part of the professional development, students still struggle to proactively use feedback effectively (Carless & Boud, 2018). In response, an internal industry has sprung up within higher education that looks for creative ways to encourage students to use their feedback. O'Donovan et al. (2016, p. 942) suggest that this impasse is bridged by giving students the rationale, practice and support to address feedback themselves. Curriculum design, that incorporates formative feedback, is, therefore, more likely to have beneficial consequences on student engagement (Carless et al., 2011) as it gives feedback purpose and relevance.

Immersive simulation is conducted using the principles of formative feedback where students receive powerful and immediate feedback on their performance. The term 'feedback' is rarely used in simulation as 'debriefing' is the preferred name for the postsimulation discussion where the simulation is re-examined for the purposes of

improvement going forward. By making the link between debriefing and professional reflection, Levett-Jones and Lapkin (2014) and Chan (2014) suggest that debriefing improves clinical reasoning and critical thinking by giving the participant new and positive experiences to draw upon when in clinical practice.

One challenge related to feedback following simulation is that students receive this in one location (the simulation suite) and are then required to feedforward their resultant learning to a second location of real-life practice. Essential differences exist between the learning experienced in the two settings (Morley, 2018), and although simulation can act as a conduit between the two, students need to have the appropriate skills and support to apply their learning from simulation to the 'embodied, authentic and relational learning' (Trede, Mischo-Kelling, Gasser, & Pulcini, 2014, p. 1003) of clinical placement. Additionally, a different set of assessors for students in practice may view their teaching role as secondary to their clinical responsibilities (Morley, 2015) with a different approach to feedback and student support. Further literature recommends that the debriefing process does not stifle discussion as this can enhance greater inclusivity and comprehensive feedback (Dufrene & Young, 2014) and that delays are avoided that may dilute learning opportunities (Wickers, 2010).

Evans, Guile, Harris, and Allan (2010) highlight how theoretical knowledge acquired at university needs to be carefully 're-contextualised' to make it available to students firstly in their university learning and then to enable them to transfer their learning to a practice context. Thus, the theory of academic learning (content re-contextualisation) needs to 'travel and alter' through the curriculum development of the simulation (pedagogic re-contextualisation), be applied to clinical practice within the work-based setting (workplace re-contextualisation) and then made accessible and usable by the student whilst in practice (learner re-contextualisation) (Table 1).

This learning journey, and the reinterpretation of knowledge through these different stages, assists to bridge the theory – practice gap, where students experience a dissonance between their 'espoused learning' taught at university and the 'theories in use' that dominate the work setting (Argyris & Schon, 1974). The pedagogy of simulation is an opportunity to bridge this gap between university and placement and alert students to the innovation and creativity that may need to be applied to their original learning in the different context of real-life practice (Morley, 2015).

Ensuring effective strategies are in place to enable students to re-contextualise and transfer knowledge and insights gained into practice, is vital to fully realise the learning from simulation. Shinnick, Woo, and Evangelista (2012) stress the importance of debriefing, or formative feedback following simulation. They argue that gains in knowledge are only achieved if effective feedback takes place between students, their peers, and academics during the debriefing session. What is not understood, is whether the learning gained immediately following the debrief is lost between the simulation event and the opportunity for students to use these skills and knowledge again in practice. There currently seems to be

Table 1. The application of Evans et al. (2010) theory of re-contextualisation to the immersive simulation process.

The setting	University		Workplace	
Level of re-contextualisation	Content	Pedagogic	Workplace	Learner
Application to immersive simulation	Nursing theory	Pedagogy of simulation	Clinical practice	Learner

a disconnect between the benefit of the simulation and the benefit to the student due to challenges associated with feeding forward learning into real-life practice.

The research conducted is also positioned against the present context of assessment and feedback in higher education. The utilisation of feedback by students for their longer-term learning gain is challenging and this study seeks to look further at the use of sustainable feedback skills and feedback literacy as students move from the university setting to that of the real-world learning on placement. The design and pedagogy of the immersive simulation is examined as a learning tool to aid the transition of knowledge and learning feedback into professional practice within a different context.

Methodology

A real-time immersive simulation event was introduced into a BSc Nursing Studies programme in a university in the south of England, following students' requests for additional preparation prior to their final placements. Two formats for clinical settings in the simulation suite were developed; ward settings for adult and child field nursing students and a drop-in environment for people experiencing mental health issues, which was managed by the mental health nursing students. These environments enabled students to experience scenarios relevant to their own areas of practice.

Several clinical scenarios were applied in the simulated clinical settings and used to enable achievement of learning outcomes which incorporated a plan of the expected and potential course of events for the immersive simulation experience. This plan included details of the individuals involved in the scenarios, briefing notes and instructions, patient information, environmental conditions, related resources, equipment, and documentation. The simulation event lasted one and a half hours and consisted of approximately 15 parallel scenarios that allowed the inclusion of the three different nursing subspecialties (Adult, Child and Mental Health).

The student participants were asked to act as newly qualified nurses whilst caring for their patients; if the students wanted additional clinical support, they could use the phone to contact switchboard to make this request. Patients, relatives and carers, doctors and outreach teams were played by staff, practice partners and actors. Students cared for patients and managed the situations they found themselves in, as if they were working in real-world practice. A small number of students also played the role of patients within the adult ward setting.

During the simulation, experienced practitioners acted as non-participatory observers of the students' activities. Notes taken during their observations, and subsequent discussions with the actors involved in the simulation, formed the basis of the students debrief, with the observer acting as the facilitator. The debriefing session occurred immediately following the simulation experience. Group feedback involving approximately 15 students and one facilitator occurred in separate rooms. Students were asked for their initial reactions to the simulation, their learning and how they would develop as a consequence. Due to time pressures, peer feedback was generally not included in these sessions.

The research design was based upon a mixed-method approach to collect data to evaluate both student satisfaction following the immersive simulation event and the longer-term impact of their learning and perceived learning gain. The research objectives were:

(1) To explore students' perception of their learning from the immersive simulation experience.
(2) To develop an understanding of the nature of feedback and the debriefing session from students
(3) To identify if students transferred learning from the simulation into their clinical practice.

The authors followed the internal, ethics self-assessment procedure in accordance with the university ethics policy prior to the commencement of the research. The authors were the researchers for data collection in phase 2.

Data collection was carried out in two phases:

a. Phase 1

A convenience sample of 130 students were asked to evaluate the immersive simulation experience using an adapted version of the satisfaction with simulation scale (Levett-Jones et al., 2011). Overall, 108 students participated in the activity. This took place immediately after the debriefing session that followed the event and was managed by the academic who was facilitating the debriefing session. Descriptive statistics were generated using SPSS 24 and the quantitative data represented in Table 3.

Additionally, students were asked to identify their own key learning points in the form of three strengths and three areas for improvement. Students were encouraged to reflect upon these and incorporate these within a SWOT analysis, which is shared with their mentor within clinical practice to inform a learning development plan. Mentors are defined as experienced clinical practice-placement staff who support a student throughout their placement (Hughes & Quinn, 2013).

The authors retained copies for their own reference, and this was used to remind the students of their perceived strengths and areas for development prior to the start of the focus group discussion in phase 2.

b. Phase 2

Focus groups were chosen to explore the ways in which students transferred learning gained from the simulation event and debriefing into clinical practice and enabled discussions about both their individual and shared experiences of immersive simulated practice. It allowed the authors to obtain several perspectives about the same topic by providing a stimulus for elaborating, analysing, and justifying views.

A non-probability purposive sample was recruited to take part in the focus group discussions. All 130 students who participated in the simulation activity were contacted via their university email to inform them of the purpose of the research. An information sheet was provided to those students expressing interest that explained the nature of the focus groups and assured them of their anonymity and lack of repercussions if they participated. Twenty-four students were subsequently recruited: two students from child field, eight were mental health nursing students and 14 were from the adult field. This is representative of the cohort sizes for each of these fields of nursing. Four male students participated which again is representative of the student nurse population. Informed consent was gained from each

student before participation and four focus groups, of 1 h length, were facilitated which was considered sufficient to identify the most prevalent themes within the data set (Guest, Namey, Taylor, Eley, & McKenna, 2017).

The focus group discussions were led by one of the three authors, and audio recorded with the informed consent of each participant. These were carried out within the university setting after students had completed 1 month of their final practice placement which enabled students' time to reflect upon the impact of the immersive simulation event.

Structured open-ended questions stimulated the focus group discussion:

(1) Can you tell me about any learning you think you gained from the simulation event?
(2) How did you find the feedback and the debriefing event after the simulation?
(3) Have you used any of the learning from the simulation or the debrief in clinical practice during the last month?

The discussions were transcribed verbatim and analysed according to the framework outlined by Nowell, Norris, White, and Moules (2017) in Table 2.

Results

a. Perception of learning from the immersive simulation experience

All but one of the 108 students who completed the satisfaction with simulation questionnaire identified that this was a valuable learning experience (Table 3). Students recognised that it had informed their professional development and preparation for practice. This included the identification of strengths and areas of practice they felt they needed to develop.

The quantitative data analysis indicated that the simulation event led students to reflect upon their clinical abilities, with 68.5% strongly agreeing and 28.7%. In relation to how far the simulation helped students to recognise their strengths and weaknesses, 64.8% strongly agreed and 30.6% agreed that it did afford them this opportunity.

The focus groups provided an opportunity for students to have conversations with peers. As students told the story of their simulation experience and interacted with one another, they made sense of its worth. *'I felt the impact and . . . how important it was' (focus group 3)*. Although some students found the immersive simulation a stressful learning event, they recognised it was one that was highly significant to their professional development.

'Afterwards I felt a lot more like, when I qualify, I'll be able to act independently' (focus group 2).

The timing of the simulation was important in relation to its impact on students' learning. Some students had been away from placement for some time, so the simulation assured them that they were prepared for their final placement. In effect, it acted as acid test for their last progression point as learners and gave them some valuable development points for when they arrived in practice.

'it gave me a bit of reassurance that actually what I am doing is OK as well as identifying areas of knowledge, such as drugs, that needed updating' (focus group 1).

Table 2. Phases of thematic analysis (Nowell et al., 2017).

Phase 1: Familiarising yourself with your data	Phases 1–4 were co constructed by all three researchers on a day away from the university where they immersed themselves in the focus group data presented as paper copies of the transcripts.	
Phase 2: Generating initial codes	Initial codes were identified, similarities discussed, and codes cut from the paper transcripts of the focus groups.	
Phase 3: Searching for themes	The initial codes were sorted into the following themes through diagramming on flipcharts.	
	Sense making, improving the simulation, learning during the simulation, managing stress	Theme 1: Students' perception of their learning from the immersive simulation experience
	Learning from the debrief, realising that learning had happened, types of feedback	Theme 2: Students' views on formative feedback and debriefing following the simulation
	How learning was fedforward	Theme 3: Students' views on their ability to transfer their learning into real life practice
Phase 4: Reviewing themes	Following a final review, and photographing of the codes within the themes, each researcher took one theme away to continue to articulate and write up the data analysis	
Phase 5: Defining and naming themes	The data analysis of each theme was shared with the other two researchers and co constructed at a distance through three iterations of review to ensure researcher triangulation. The quantitative data was triangulated with the qualitative findings at this phase.	
Phase 6: Producing the report	The first author wrote the three themes into the overall analysis before being validated by the other two researchers.	

Table 3. Quantitative results from the simulation questionnaire (n = 108) immediately after the debrief.

	Strongly agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Missing (%)
This was a valuable learning experience	63.9	35.19		0.93	
The simulation caused me to reflect on my clinical ability	68.52	28.70	1.85		0.93
The simulation helped me to recognise my strengths and weaknesses	64.81	30.56	1.85		2.78
I had the opportunity to reflect on and discuss my performance during the debriefing	73.15	22.22	2.78		1.85
I received feedback during the debriefing that helped me to learn	59.26	33.33	3.70	0.93	2.78

In particular, the simulation event was an opportunity for third-year students to practice their emerging management roles and recognise that skills such as delegation, prioritisation of their time, planning, organisation and '*communication, I thought I could do better … now in placement I'm doing better communication because of the simulation' (focus group 2)* were part of their learning goals. This also came with the realisation of the need for mentorship from a more expert practitioner.

'you need to go to somebody else maybe who might have better knowledge. So it's a way of you realising your limitations as well' (focus group 2)

The realistic nature of the simulation made students realise their limitations. These included understanding that clinical decisions were often not absolute, but involved ingenuity, creativity and being supportive of colleagues to find solutions.

'I'm going to be in charge and I'm going to make a decision and it's probably going to be as good as somebody else's decision even if it's not exactly the same' (focus group 1)

Students recognised that the simulation challenged their current practice and effective practice required 'workarounds', or less conventional solutions, for nursing interventions to be successful.

Students articulated a desire to improve their exposure to simulation and felt immersive simulation should be used more frequently and earlier within the programme. It had greater potential for authenticity by, for example, introducing the variable of working with other staff including health-care assistants; unregistered health-care staff who provided senior students with the opportunity for people management. During the simulation students had the opportunity to take multiple roles including that of being the patient or practitioner; this also enabled a valuable and alternative learning experience.

b. Formative feedback and debriefing following the simulation

95.3% of 108 students recognised that they had the opportunity to reflect upon and discuss their performance during the debriefing session (Table 3). Students also identified that they had received feedback that helped them to learn; three students suggested that this was not the case.

Qualitative data from the focus groups highlighted the disparity in the feedback, and therefore its usefulness, across the different student groups dependent on how the debrief had been managed. Some groups received generic feedback before the group facilitator commented on individual performance. A personal comment was appreciated; however, not all students had the opportunity for individual feedback and found the feedback in the group debriefing session was too generalised and did not facilitate meaningful insights.

Overall, students favoured personalised feedback, *'I don't think anyone in my group got one to one feedback. I didn't get feedback from the patient. Didn't get personal feedback from the tutor … I think one to one feedback would be better' (focus group 2)*. Students felt individualised feedback from a patient would have *'been even more reassuring' (focus group 2)* and would be beneficial in identifying specific development points and a sense of closure on the learning.

'because they are the one, they are receiving our care … they are the best person to tell you … .so I think the patient is quite good to get the feedback from' (focus group 2)

Students suggested feedback being given at intervals during the simulation *'sort of pausing for a few minutes to observe our performance … and then give us feedback as we are going along' (focus group 4)*. Other strategies, such as filming or a structured tick sheet, were highlighted for their potential to improve the reflection and the deconstruction of the experience afterwards.

c. The ability to transfer learning from the simulation into real-life practice

The learning intention was that students would be able to transfer insights and learning from the simulation event and debrief into their own clinical practice. Students were asked to consider and reflect upon their own strengths and areas for development immediately after their debriefing experience and complete a SWOT analysis. This was taken forward by some students to inform the discussion of learning needs with their mentor, when they arrived on placement. In some cases, this enabled ongoing formative feedback from the mentor.

'I've said to my mentor; I want you to give me that freedom to be more autonomous and build my confidence and prioritise. I feel like I have implemented it into my SWOT analysis . . . .' (focus group 3)

However, some students had difficulty identifying specific transferable skills that could be taken from the simulation to practice.

' . . . . I can't relate simulation to the actual placement practice. If I'm writing down my strengths, I write down what my strengths are from practice, not simulation' (focus group 4)

Similarly, other students failed to recognise the need to share learning from the simulation event with their mentor or use insights gained to inform their SWOT analysis or developmental learning plan. They did not see the value in discussing their feedback with a supervisor in practice and it was not part of their personal feedback processes to do so.

'I didn't talk with the mentor . . . but I knew the things I wanted to achieve, and it was standard, it was on the list' (focus group 1)

Some students felt their mentors did not recognise the significance or importance of the documentation they had completed, which affected their motivation to share it. Others were selective when considering what to include in their SWOT analysis. There appeared to be a reluctance to share all insights gained and overall students wanted to present themselves in a positive manner and not expose too many weaknesses to their future assessor in practice.

'Some of the weaknesses, I didn't even want to write down. I'm not going to write that down . . . I don't want my mentor to see that. So that might be a bit biased' (focus group 2)

Although students did recognise that they had been able to transfer learning from simulation into practice and this could inform their professional development, their strategies varied from concealment to open discussion with their mentor. However, making the learning goals explicit; whether through students own records or working collaboratively with their mentor, was important to identifying the learning and then being able to action it.

'And I have found that . . . I've been able to address some of those difficulties. It was useful, actually looking at that day and sort of list my areas for development. And I've had a chance to address that since' (focus group 3)

Analysis and discussion of the results

The quantitative data indicate that immersive simulated learning provided students with a valuable learning experience where scenarios resembled real-life practice. Self-reported levels of student satisfaction were high, and students positively evaluated the learning that occurred with this pedagogy. Students recognised this was an opportunity for them to experiment with more independent decision-making, the prioritisation of care and delegation. They reflected upon the fact that clinical decision-making could be complex with no one right solution to problems. This supports the recommendations by Schön (1983) that practitioners should be able to apply their learning creatively, in order to be able to make decisions that are new and unplanned. This was enabled as the consequences of students' decision-making, and any stress associated with it was within a simulated rather than authentic practice situation.

The debriefing session was considered vital to simulation pedagogy and enabled the transfer of insights and learning into the workplace. However, some students reported that the debriefing session was only partially successful in helping them to identify their own individual learning needs and construct a SWOT analysis; the tool that assisted the transfer of feedforward advice into practice. Although the feedback was immediate, for some students it lacked specificity and personalisation and, as a result, students were unable to relate the feedback discussion to their own simulation learning or to their subsequent clinical practice. Inconsistencies identified across the facilitation of the debriefing session could, therefore, have significant implications. Klein (1998) argues that feedback should be specific, immediate, and personalised to enable learners to review their experiences and derive new insights and knowledge. Students themselves suggested that feedback should punctuate the simulation at regular intervals and be delivered by all actors, especially the patient, thus creating a series of powerful learning bytes within the simulation.

Some students could recognise key learning points and use these in a more independent manner, resulting in impact beyond the simulation event. These students demonstrated skills of self-regulation, in that they could consider more independently their own knowledge and learning, and how to apply this in clinical practice to inform their ongoing development. For these students, this immersive experience, coupled with the feedback given immediately after the event during the debriefing session, and then picked up by mentors in clinical practice, had the potential to assist the re-contextualisation (Evans et al., 2010) of students' learning from theory to practice.

The feedback from the focus groups indicated that some students did not realise the learning gain that could be achieved. This was due to several challenges associated with recognising that learning had taken place, as well as the ability to transfer learning into clinical practice. These challenges acted as barriers to learning being transferred from the simulation to the placement environment and disrupted the re-contextualisation process identified by Evans et al. (2010). In particular, the qualitative data identifies, issues associated with the feedback process both in the university setting and in clinical practice (Table 4)

When using simulation as a pedagogic approach, it is essential to consider how the theory practice gap can be narrowed. The preparation of students prior to the immersive simulation experience is important, in order to manage expectations and help students identify opportunities for learning. This, in turn, facilitates engagement, reflection and effective use of the feedback available. The content re-contextualisation, highlighted in Table 4, demonstrates the importance of curriculum design that does not just start with the teaching but prepares students for their learning before the simulation begins. As with any innovative pedagogy, it is important that students understand the context of the learning and the rules of engagement in a pedagogy which is essentially different to traditional methods. The emotional involvement in immersive simulation, for example, can be mitigated against in a positive way by attention to explanation and preparation beforehand.

If pedagogic re-contextualisation had taken place, students were in a position to transfer learning and knowledge into clinical practice, in order to achieve workplace re-contextualisation (Evans et al., 2010). To facilitate this, students were required to identify their ongoing learning needs in a SWOT analysis and transfer this to a development action plan, which was subsequently used to guide their performance, learning opportunities and the ongoing feedback advice required from mentors.

Table 4. Potential barriers to feedback delivered during the simulation process.

Content re-contextualisation Nursing theory	*Pedagogic re-contextualisation* Pedagogy of simulation	*Workplace re-contextualisation* Clinical Practice	*Learner re-contextualisation* Learner
Inadequate understanding by students of the intention of this pedagogic approach and the expectations of them.	Minimal personalised, individual feedback. Difficulties identifying individual learning needs during group debriefing and relating this to clinical practice Insufficient feedforward and application to SWOT analysis	Selective dialogue with mentors and identification of learning needs. Lack of student and mentor engagement	Reluctance to seek and initiate further formative feedback Inconsistent mentor engagement with the SWOT analysis and formulation of learning plan based upon simulation.

It was anticipated that by completing the SWOT analysis immediately after the debriefing session, this tool would help to facilitate the transfer of knowledge and learning into the workplace. However, this potential was diluted by students' difficulty in deconstructing meaningful feedback from the simulation, their concealment of areas for improvement from their mentors and their lack of awareness of the importance of feedforward to their long-term development. Some students felt that by drawing attention to their weaknesses they would raise concerns for their mentor rather than opening up opportunities to facilitate their ongoing development – characterised as 'Imposter's Syndrome' (Day-Calder, 2017; Sherman, 2013). By sharing too many areas of development with their mentors, students felt that this would affect their credibility as third-year students entering their last placement before qualifying. They suspected this would have an impact upon the way in which mentors perceived them which could jeopardise their final assessments. In the eyes of the students, it seems that feedback is still associated with the traditional 'product' model of assessment of achieving the best mark. Particularly with the feedback from simulation, students need to be supported to value a 'process' model of feedback where the emphasis is on coaching their ongoing development in practice rather than measuring their performance.

Selective sharing of development needs, therefore, acts as a barrier to further opportunities for feedback and feedforward advice from mentors. Effective feedback relies upon a dialogue between students and mentors with a mutual understanding of learning needs. Dialogic feedback requires an interactive exchange, in which current knowledge and learning needs are shared, experiences negotiated, and expectations clarified. This, in turn, promotes a formative feedback cycle which leads to additional knowledge and insights that enhance professional development and learning gain. Learner re-contextualisation takes place as students bring together knowledge gained and entail understanding and the articulation of learning needs, which is crucial to the development of professional identity. The lack of dialogue and disclosure by some students, as well as mentor disengagement, reduced these opportunities and the chances for simulation learning to reach its ultimate destination. Although some students identified personal strategies to use their simulation feedback independently, there seemed to be a lack of recognition that the development of management skills, for example, needed a collaborative learning approach.

Sustainable feedback practices (Carless et al., 2011) and supporting students to develop their feedback literacy (Carless & Boud, 2018), rely upon dialogic processes which can support and inform learners about their current performance, whilst also developing their ability to self-regulate their own performance in future endeavours. It appears that for some students the debriefing session did enable them to engage with the feedback process, identify learning and transfer this to the workplace. Further engagement with mentors through productive dialogue did take place, but the onus was often upon the student to initiate conversations and self-regulate their work. Some students are more effective at self-regulating than others and therefore the potential for learning gain was greater for these students.

Irrespective of the context of students' learning, Billett (2009) believes that conceptual knowledge (concepts, facts and propositions) and procedural knowledge is only truly activated in practice when students' dispositional knowledge comes into play. The personal connections and sense of agency that students make with their future professional selves are highly influential to both their enthusiasm and resilience during their studies (Morley, 2015). It is this personally owned knowledge, what Billett (2009) terms 'personal epistemologies', that is not only crucial to the continuation of established professional knowledge but also its critical development to keep pace with the changing context (Billett and Somerville 2004). With the evolving development of structures and processes to support feedback and feedforward, the significance of students' existing attributes, and their development through self-regulation, must be recognised in their learning.

Conclusion

The research identified the importance of raising awareness of the significance of feedback after simulation and coaching students and facilitators, in both the academic and practise settings, to increase their understanding. Carless and Boud (2018, p. 8) recommend that investment needs to be made in 'meta-dialogues [to] discuss processes and strategies for assessment and feedback rather than the specifics of a particular piece of work' to support ongoing student feedback literacy.

Data analysis highlighted the importance of the two different phases of feedback strategies; one that takes place in the debriefing session and one that takes place in the clinical setting. This creates two phases of feedback and feedforward which enabled students to capitalise on their immediate learning during the simulation, as well as being able to take their learning forward into future practice. The research also identified several barriers which impact upon the potential for learning gain, which need to be considered when using this pedagogic approach. The potential of simulation to bridge university and practice learning can be curtailed by the lack of attention to the detail of the assessment and feedback processes that lie within simulation pedagogy.

The relevance of Evans et al. (2010) re-contextualisation process has resonance within the study and each stage of this process was identified as a potential barrier to students' learning as they move from an academic to practice context. Recognition of these barriers allows educators the ability to provide feedback tools and techniques to help students engage with simulation pedagogy more successfully. Most notably the research concluded

that without an effective dialogue with mentors in clinical practice a feedback strategy, which enables students to engage and identify learning beyond the simulation event, learning gain could be limited. Students' identification of their own learning needs and a facilitated plan of development with their mentor through their practice portfolios was identified as key to enabling high-quality ongoing feedback and feedforward.

With no strong and explicit connection between the two formative feedback phases that should result following simulation; one that takes place in the debriefing session and the other in clinical practice, there is a risk that learning from simulation remains in the immediacy of the simulation event. To mitigate against this, it is essential that learning from simulation is recognised by students and they are supported to transfer, and feedforward identified learning needs into a professional discussion within clinical practice. It is suggested that barriers can be overcome by a greater understanding of the re-contextualisation process and ways of supporting the transfer of knowledge from the university to practise setting (Table 4). By addressing some of the weaker aspects of the debriefing process, it is envisaged that learning gain from simulation could improve in both the short and longer term.

As part of this, the study supports the need for the development of the debriefing session in the first phase of the simulation feedback. Although a guide was used to structure discussions, opportunities to allow more individualised and specific feedback are required. A more structured approach should be explored, which includes strategies for helping students to apply their experiences to the workplace and identify ways in which to effectively transfer learning into practice. Additional preparation of the facilitators and students should also be considered to promote sustainable feedback practices through self-regulation. One way of encouraging this would be a greater integration of explicit peer feedback into the debriefing session accompanied by further research as to whether this particular approach has greater leverage for students' confidence and application in practice.

It is recognised, however, that this study was limited by time and a longitudinal study would have allowed more insight into the longer-term effects of feedback regarding learning gain. A larger longitudinal study could be conducted to explore the impact learning through simulation has on students during their educational programmes, and once registered, to examine the effect on clinical practice and patient safety. Whilst focus groups are an effective way to collect data for this type of research, individual interviews may have allowed for greater insight, away from fears of speaking out amongst peers. The logistics of the study meant students were recalled for the focus group 1 month after the beginning of the placement, when a focus group at the end of the placement may have gleaned further data on the skills and feedback strategies that students employed, and the learning gain achieved.

The success of the learning from simulation is equally important in the consideration of the second formative feedback phase where feedback is fed-forward into the context of clinical practice. This is vital in enabling students to achieve learner contextualisation and learning gain but can only be achieved if the feedback from the debrief is central to the dialogue between students and mentors in the practice context. Wider engagement of mentors with the simulation process and better understanding of the formative feedback cycle could lead to greater consistency in terms of the expectations and

importance of feedback across the academic – practice learning spectrum. It is recognised that the relevance of research related to formative assessment and feedback in academia (Nicol & Macfarlane-Dick, 2006) should be applied more rigorously to ensure the development of the same set of feedback skills across all learning contexts in higher education.

Recommendations

A number of strategies are recommended to overcome barriers identified in the research based on Evans et al. (2010) re-contextualisation process:

a. Content re-contextualisation

- To realise learning using an immersive simulation pedagogy, students could be provided with the learning outcomes, a synopsis of the patients, and shown video footage that includes previous students talking about their use of simulation learning and how this subsequently informed their practice.
- Develop students understanding of the two formative feedback phases to help them self-assess their performance and understand their strengths and areas for improvement to take forward into practice.
- Prepare facilitators and actors in a more formal setting to ensure they are capturing all salient learning points from the variety of scenarios.

b. Pedagogic re-contextualisation

The student role in the feedback process needs to be enhanced. Students have seldom been trained or supported in how to use feedback and often rely on relatively unsophisticated strategies (Burke, 2009).

- Ensure individualised feedback from the different players within the scenarios. This will enable dialogic feedback from patients, carers and others who have played the roles of health-care workers. This individualised feedback requires a change of culture to ensure feedback is open and honest, whilst also being non-threatening and supportive.
- Introduce a more structured framework for group feedback to facilitate the transfer of knowledge and re-contextualisation. Use of a tool such as the 'Feedback diamond' developed by Jaye, Thomas, and Reedy (2015), which gives a visible representation of the debrief process could enable re-contextualisation and the transfer of knowledge. The use of this tool would offer a standardised approach ensuring a more uniform student experience across the cohort (Jaye et al., 2015).

c. Workplace re-contextualisation

- In order to demonstrate how feedback links to practice students can be provided with exemplars indicating ways in which to formulate an effective SWOT analysis, using language which legitimises the identification of learning needs. The NMC's

(2010) Essential Skills Clusters could be utilised for this purpose. For example, identifying the need to develop an 'ability to communicate safely and effectively with people and provide guidance for others' (NMC 2010), as opposed to claiming the need to communicate better.
- Academic educators need to develop strategies to support students' dialogue with mentors in order to support longitudinal sustainable feedback practices.

d. Learner re-contextualisation

- Students can be encouraged to close the feedback phases that began during the simulation during their time in practice. This could involve students' initiating their own development processes or formally including their reflections as part of their assessed learning outcomes in practice. (Hughes & Warren, 2018)

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