8 Title: **Supporting students' learning experiences through a pocket size cue card designed around a**
9 **Reflective Simulation Framework (RSF)**

10

11 Authors: Indra Jones BA (Hons), PhD, RNT, RGN, DN, SHN, NTF, FHEA[1], Guillaume Alinier PhD, MPhys,
12 PGCert, CPhys, MInstP, MIPEM, NTF, SFHEA[2,3]

13 Affiliations:
14 1. Independent Reflective Practice Consultant (Formerly Assistant Director of Learning and Teaching,
15 and Principal Lecturer ,Health & Human Sciences, University of Hertfordshire, Hatfield, UK)
16 2. School of Health and Social Care, University of Hertfordshire, Hatfield, UK
17 3. Hamad Medical Corporation Ambulance Service, Doha, Qatar
18

19 Keywords: Reflection, Simulation, Aide memoire, Cue card, Reflective simulation framework,
20 Learning cycle, Independent reflection, Reflective practitioner

21

22 Corresponding author:

23 Professor Guillaume Alinier
24 School of Health and Social Care
25 University of Hertfordshire
26 Hatfield, HERTS, AL10 9AB, UK
27 Phone: +44 (0) 07960934643 or +974 33512900
28 Email: indrajones1@gmail.com
29 Email: G.Alinier@herts.ac.uk
30

31

33

34 **Highlights**

35 - **A cognitive aid card can help learners organize their thoughts during reflection.**

36 - **Structuring the reflective process should help learners who feel overwhelmed by a**
37 **simulation experience.**

38 - **The portable reflective simulation framework card can be used in real clinical practice to**
39 **encourage independent reflection.**

40 - **Reflection helps learners identify and prioritize their learning needs.**

41

42

Supporting students' learning experiences through a pocket size cue card designed around a Reflective Simulation Framework (RSF)

Abstract

Introduction:

According to the growing literature on simulation in nursing, reflective practice (RP) is *a key tenet and an integral* component of simulation-based learning outcomes in many higher education curricula, albeit mainly through the blanket terms of 'feedback' or 'debriefing' processes. Yet given its importance and the available literature on both RP and clinical simulation (including numerous models/frameworks) there is currently a lack of empirical testing or concrete evidence to inform how formal reflective practice methods are utilized to ensure that appropriate student-centered learning outcomes are achieved. This article aims to discuss the usefulness of a portable structured framework that was designed to test the integration of RP during simulation-based learning experiences with undergraduate nursing and paramedic students. As part of ongoing simulation developments and refinement of reflective learning methods with these students, a small scale pilot project was undertaken to evaluate the use of a portable reflective simulation framework **(RSF)** as a structured tool and technique to support and maximize learning aligned to curricula outcomes.

Methods:

A survey using a ten-item questionnaire explored the actual and potential use of a pocket sized RSF 'cue' card that was randomly assigned to groups of undergraduate nursing and paramedic students (N=72). Students received the RSF cue cards before the start of scenario-based simulation activities and *were* asked *to complete* the survey afterwards.

Results:

The majority of students considered the **RSF** to be a useful tool for post-simulation learning. Eighty-nine percent of students also indicated that it would further encourage them to reflect on their learning in clinical practice, particularly for practical/technical skills such as patient assessment and diagnosis. Notably use of the RSF for the identification of theoretical learning needs was scored much less (22.2%).

Conclusions:

The students surveyed generally agreed that the use of a pocket sized RSF cue card was a highly beneficial tool for enabling them to individually identify and prioritize their learning needs especially post-simulation. However, the emergent imbalance of the theory/practice usefulness of the RSF suggests that educators need to ensure that important aspects such as theoretical applications are addressed if clinical simulation and RP are to contribute to wider learning outcomes beyond practical competencies alone. Further studies to test and extrapolate more in-depth use and efficacy of the RSF with students and facilitators are also recommended.

Introduction

The importance of reflective practice (reflection during and after experiences) in nursing and other healthcare curricula remains a popular learning concept. It alleges many benefits including the merits of professional development and clinical competencies. There are numerous definitions which are amply reported in the wider literature and not pursued here (Schön, 1983; Boud et al., 1985; Moon, 2000). The general consensus however, is that RP is concerned with the active review and examination of an episode of practice through analysis and evaluation in order to inform and benefit future practice. In addition, the burgeoning nursing simulation literature continues to highlight the inextricable links with RP as the core activity (Alinier, Hunt, & Gordon, 2004; Garrett, MacPhee, & Jackson, 2011; Levett-Jones et al., 2011; Morse, 2015).

This report supports the view that RP is a key aspect of simulation learning if not *the* key aspect. Further, the need to 'structure' reflection is not new and has been evident in the wide spread publications of various popular theoretical frameworks (cyclical and linear) including those of Kolb (1984), Gibbs (1988), and Johns (1994) for example. In nursing especially, structured reflection is believed to promote a more integrated approach to learning by linking thinking, feeling, and doing (Graham, Waight, & Scammell, 1998). Similar recommendations in contemporary paramedic education were made by Jones and Cookson (2000). They argued that RP should be linked to curricula outcomes and based on a knowledge, skills, and attributes (KSA) approach to learning, thus strengthening the familiar informal verbal debriefing process traditionally used in paramedic practice. This initiative was in response to a conscious attempt by ambulance service providers to move away from rigid practice protocols, predominantly focused on clinical or technical skills during debriefing sessions, often at the expense of missed learning opportunities around non-technical skills such as communication and team work skills.

More widely, the growth of simulation learning in various healthcare and other industries is well documented (Abrahamson, Denson, & Wolf, 2004; Alinier & Platt, 2014; Gaba, 2004) although it is evident that "simulation" can mean different things to different people (Alinier, 2007). According to

105 Gaba (2004) "*simulation is a technique, not a technology, to replace or amplify real life experiences*

106 *with guided experiences, often immersive in nature, that evoke or replicate substantial aspects of the*

107 *real world in a fully interactive fashion*" (p.i2). In the absence of meaningful reflection however, such

108 techniques can limit learning to "contextual task training and repetition" (Dreifuerst, 2009, p.109).

109 This would seem to justify the suggestion that the transference of reflective learning from simulation

110 learning is a key goal (Galloway, 2009). Exactly how this process should occur is less explicit.

111 A review of the literature identified that apart from the many anecdotal claims about the relative

112 merits of reflective learning from simulation exercises there is a notable lack of concrete evidence to

113 show how its effectiveness as a tool or technique is evaluated (Neill & Wotton, 2011). Despite its

114 prominent place in the majority of 'debriefing' literature (Decker et al., 2013; Gardner, 2013; Jeffries,

115 2007; Levett-Jones & Lapkin, 2014; Morse, 2015; Neill & Wotton, 2011; Raemer et al., 2011; Reed,

116 M., & Ravert, 2013; Shinnick, Woo, Horwich, & Steadman, 2011; Zigmont, Kappus, & Sudikoff, 2011),

117 there is little evidence to inform how RP works apart from the general view that reflective learning is

118 a good and important process that should be done by all practitioners. Evidence to support and

119 inform these curricular interventions and innovations remain largely theoretical thus it is unclear

120 which approaches may have efficacy or impact (Andrews, 2005; Mann, Gordon, & McCleod, 2009).

121 These observations have been re-iterated recently (Aronson, 2011; Morse, 2015) highlighting the

122 absence of guidance and education with regards to a specific model or approach about reflection

123 regarding learners, consequently resulting in "anecdotes devoid of learning" (Aronson, 2011, p.202).

124 This absence of RP guidance highlighted a curricular deficit in appropriate theory-practice resources

125 for our undergraduate learners and was therefore instrumental in informing the Reflective

126 Simulation Framework (**RSF**) project. This article describes the use of a 'portable cue card' or

127 cognitive aid incorporating the RSF which was designed as a tool and technique to support and

128 enhance reflective practice learning in one UK higher education clinical simulation setting. As such

129 the study presented is primarily a descriptive pilot exploring the usefulness during simulation-based

130 learning experiences with undergraduate nursing and paramedic students of a modified debriefing

131 aid, based on Dreifuerst's work (2009).

132

133 **Previous work**

134 A major study of reflective practice and the learning of healthcare students (Jones, 2008) which

135 explored students' perceptions of RP in relation to their academic work and clinical practice

136 identified that undergraduate nursing and paramedic students at all levels of study valued the

137 importance of reflective practice for the enhancement of their personal and professional

138 development. The study which also explored students' perceptions of 'structured reflection' also

139 included observations of nurses and paramedic students in the University's clinical simulation center

140 to identify how and what reflective methods were used. The results showed that while reflective

141 practice concepts, including structured reflection, were considered by the majority of students to be

142 highly important and useful to their learning needs, the use of popular existing reflective frameworks

143 such as Gibbs' Reflective Cycle (Gibbs, 1988) was considered to be less important and not

144 appropriate for simulation purposes, given the often rapid pace and responses needed during such

145 sessions.

146 Following the outcomes of the main study by Jones (2008, unpublished) a preliminary survey was

147 undertaken by the authors to test the feasibility of students using a portable reflective cue card

148 incorporating an **RSF**. The cue card was designed to enhance the students' learning abilities both

149 during and after simulation exercises but in a way that would be more convenient for them and not

150 too time consuming to use. The need from an educator's perspective was to consider *when, where,*

151 *and how* reflective enquiry took place and how best to focus the students' learning needs and

152 enhance their reflective skills development from simulation exercises. The broader aim was also to

153 boost motivation for the students' summative written reflective practice assignments which were

154 often lacking. The time factor involved in documenting RP issues was a major concern for students

155 when taking into account the demands of daily clinical practice that did not always prove conducive

156 to written reflection, however well intended.

157 The **RSF** was also designed to complement the widely used open group discussions in the clinical

158 simulation environment so that salient issues could be rapidly noted for later recall. Resistance to

159 reflective writing among undergraduate healthcare students had been previously identified (Jones,

160 2004, 2008). In the past, it was observed that many of the reflective activities following clinical

161 simulation exercises lacked continuity with follow up sessions (including real life clinical practice)

162 because of lack of documentation by students. Evaluations of the teaching approaches to reflective

163 simulation learning at that time, demonstrated that sessions were predominantly teacher-led,

164 resulting in passive learning, *as opposed to a facilitated debriefing* process that should be student-

165 driven and collaborative. The lack of focus regarding the effective achievements of curricula learning

166 outcomes and general resistance by students to the formalization of reflective simulation needed to

167 be resolved at faculty level, in line with quality assurance policies. These factors were instrumental

168 and compelling in driving the development of a practical student-centered tool.

169 The idea of an RSF was posited with small focus groups of students with the possibility of trialing a

170 pocket sized reflective cue card. It was anticipated that the card could serve both students and

171 facilitators by focusing reflective learning creatively and flexibly whilst ensuring that the outcomes

172 for learning were aligned with the wider curriculum, i.e. competency, knowledge, and skills

173 development (Aronson,(2011). Moreover, it was envisaged that learning would be student owned

174 and driven, both of which were fundamental to the development and use of the RSF. However,

175 before the RSF could be designed, a review and critique of existing frameworks was undertaken to

176 ensure that the essence of both reflective practice and simulation were retained whilst contained in

177 a structured format. We planned to build on what the students already knew and to incorporate

178 their ideas to produce a more practicable and workable debriefing tool.

179

180 **Why a new Tool? A Review of Reflective Frameworks**

181 The rationale for reviewing the different theorists and their reflective frameworks was to incorporate

182 key reflective principles that were already familiar to students such as recall, review, analysis,

183 evaluation, and future action. These concepts reflected our curricula outcomes (KSA) including the

184 transfer of theory to practice in real clinical settings.

185 In general, reflective frameworks or models may be summarized as being either cyclical or linear, and

186 are designed to enable a systematic approach to guide learning by taking the reflector through a

187 series of cognitive stages. It is suggested that a structured approach encourages more productive and

188 potent reflective learning than informal discussions (Ghaye & Lillyman, 1997; Platzer, Blake, &

189 Snelling, 1997). That is not to say that informal methods of reflective learning should be devalued.

190 Since the early emergence of Kolb's learning cycle (Kolb, 1984) and the growing popularity of

191 reflective practice, a number of generic frameworks for RP, mainly cyclical or iterative have followed

192 (Boud, Keogh, & Walker,1985; Gibbs, 1998). Discipline specific frameworks have also emerged such

193 as Johns' model of structured reflection in nursing (Johns, 1993, 1996). However, we identified that

194 the simulation environment, like the clinical environment, needed an alternative framework that

195 would be more practical and flexible, and accommodate the individual's personal and professional

196 learning needs. Additionally, the new framework was designed to include the potential for

197 immediate, intermediate, and longer term reflective learning, whilst integrating theory and practice

198 seamlessly between simulation and actual clinical settings. This was the raison-d'être of the

199 proposed RSF!

200 This small pilot study was conducted under the University of Hertfordshire's Reflective Practitioner

201 Guidelines (UPR AS/A/2) which permit the evaluation of learning and teaching tools that fall outside

202 the parameters of major empirical research that require formal ethical approval. To ensure and

203 maintain student confidentiality all questionnaires were anonymously administered.

204

205 **RSF – The Tool and Technique**

206   The RSF, comprised of six components, is grounded in the theoretical reflective learning ideologies of

207   Dewey (1933) and Schön (1983, 1987) in the sense that it is action-focused both during and after

208   practice, yet allows for more focused explorations of simulation experiences whether individualized

209   or shared. It also acknowledges Moon's (2000) concerns that students are not always able to

210   independently initiate reflective processes effectively. Hence the inclusion of more detailed guidance

211   in the RSF about collaborative processes with others, as appropriate. These components outline a

212   learning strategy involving "peer and teacher feedback" (Bland, Topping, & Wood, 2011) as well as
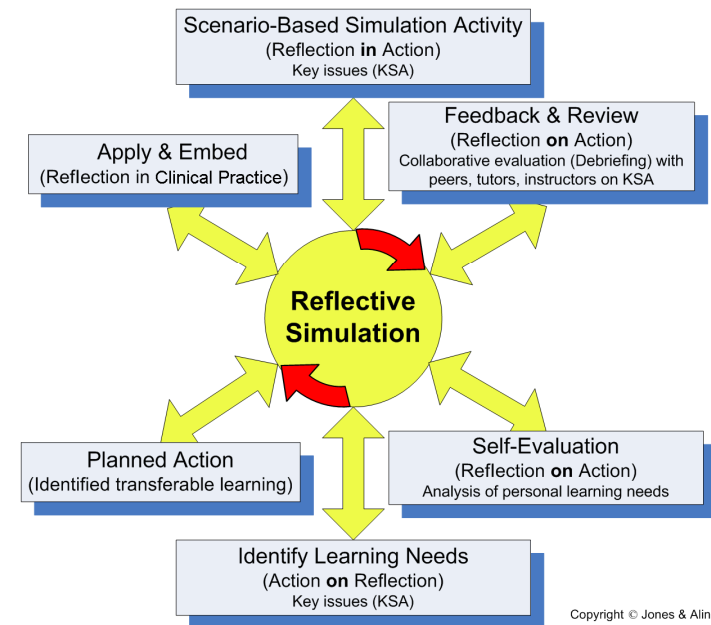
213   self-evaluation.

214   Designed as a cognitive aid, the key advantages of the RSF are its:

215   • Emphasis on active learning (before, during, and after simulation)

216   • Linkage of theory to practice (Simulation and real clinical world)

217   • Accommodation of both individual and collaborative learning

218   • Flexibility, portability, and accessibility

219   • Visual impact triggering and encouraging reflection

220   • Potential to encourage written documentation

221   • Format providing structure and focus

222   The RSF can also be used flexibly according to the students' individual needs to signpost key learning

223   issues which can then be prioritized according to short, medium, and long term needs. These can be

224   related to actual patient outcomes, clinical competency development, or theoretical learning

225   outcomes aligned to KSAs. There are concerns that skills learning proceeds at different paces for

226   individual students (Ricketts, 2011). To that effect, the RSF is designed to accommodate the

227   individual's learning needs and differing levels of reflective practice abilities. As a reflective tool, the

228   RSF can promote shared learning among different health care disciplines which is compatible with

229   the curriculum philosophy of inter-professional learning. The framework can be used as the basis for

230   verbal discussions, for example in post-scenario or critical incident debriefing including settings

231   outside the simulation environment. Additionally it could help to promote extended written

232   reflections by initially using the reverse side of the laminated cue card for jotting brief comments

233   with a non-permanent pen. Notably, the RSF is deliberately neither cyclical nor linear so that

234   individual students can determine the 'what', 'when', and 'why' of reflective learning rather than

235   following the 'recipe' methods inherent in other frameworks, thereby making it truly learner-

236   centered. The explicit labeling of the components provides clarity of focus for the learners so that

237   they can map and manage their learning. The cue card design was also intended to prompt

238   facilitators about the need to ensure that set curriculum objectives for individual simulation exercises

239   are appropriate for students' academic levels and clinical progression competencies.

The six components of the Reflective Simulation Framework (RSF)
(Incorporating Knowledge, Skills, and Attributes (KSA))

Scenario-Based Simulation Activity
(Reflection **in** Action)
Key issues (KSA)

Feedback & Review
(Reflection **on** Action)
Collaborative evaluation (Debriefing) with peers, tutors, instructors on KSA

Apply & Embed
(Reflection in Clinical Practice)

Reflective Simulation

Planned Action
(Identified transferable learning)

Self-Evaluation
(Reflection **on** Action)
Analysis of personal learning needs

Identify Learning Needs
(Action **on** Reflection)
Key issues (KSA)

240

241   Figure 1: The Reflective Simulation Framework as presented on the cue card.

242

Methods - Evaluation of the RSF

A small pilot survey was conducted to evaluate the perceived value and potential use of the pocket sized RSF cue card in the context of simulation training and beyond if judged appropriate. This evaluation study made use of a convenience sample of undergraduate healthcare students taking part in high-fidelity simulation sessions. High-fidelity simulation as defined by Alinier (2011) proposes that students are not pre-alerted to the exact scenario they are tackling, and do not receive prompting, unless they call for more senior help; in which case the support they would expect in real clinical practice might be provided. To that effect the students took part in a range of unexpected clinical scenarios appropriate to their level of experience and without direct guidance from a tutor, consequently simulating a real patient encounter (Alinier, 2011). The participants were undergraduate healthcare students studying at a single UK higher education institution, at different years in their program of study as reported in Table 1. The majority of students were in their final year, specializing in adult care or pediatric nursing but the sample also included some first and final year paramedic students. Evaluation data was collected from a total of 72 students over 7 randomly selected uni-professional simulation sessions which took place in the same simulation center and under similar experiential learning conditions. The scenario's learning objectives covered the clinical management of each patient's case as well as generic team working and communication learning objectives. We anticipated that these learning objectives could be largely achieved because the learning experiences were realistic to the students and facilitated in a safe formative learning environment. The foundations for this were created by ensuring that a commonly adopted orientation phase to the learning environment and simulation technology was revisited prior to all high-fidelity simulation activities. This included explanations concerning student expectations during the scenarios and debriefing phases. These are key factors to create an environment within which students should be able to reflect (Aronson, 2011). Emphasis was placed on relevant Crisis Resource Management elements (Rall & Gaba, 2005) such as clear communication, teamwork, anticipating and planning, and preventing fixation errors in order to enrich the students' learning experience.

Discipline	Year of study	Number (Female/Male)	Percentage participants
Adult Nursing	3	34 (33/1)	47.2%
Children Nursing	3	22 (22/0)	30.6%
Paramedic	1	8 (5/3)	11.1%
Paramedic	4	8 (4/4)	11.1%
Total		72 (64/8)	100%

Table 1: Information about the participants

Students were informed that their participation was not compulsory. Students were introduced to the use of the RSF and its components at the beginning of each of the simulation sessions. Reflection was defined and clarified so students understood 'what' and 'how' the card might enhance the scenario debriefing (Aronson, 2011). Although it is a core aspect of the debriefing phase of a simulation experience, it was emphasized as an individual responsibility and the RSF framework was provided only as an aid. As such the debriefing facilitators were asked not to interfere with the students' use of the card. As part of the study briefing conducted at the beginning of the session students were encouraged to use the RSF cue card whether they were observing or taking part in a scenario by writing rite brief notes about what was happening during any phase of the session. They were also informed that irrespective of their role in the session they would be asked to provide feedback about the card's usefulness. This approach evaluated the independent implementation of the RSF cue card in a simulated environment, in preparation for actual clinical practice where they might be expected to reflect without guidance from their mentors or peers. The RSF evaluation was conducted using a 10-item survey (Appendix 1) handed out to the students at the end of their simulation session by the same facilitator who introduced it to them at the start.

Results

289 The results of the study and student perceptions of the RSF are presented in Table 2 and 3. When

290 asked to score on a 5-point Likert scale about 'the usefulness of having a structured framework to

291 reflect on simulation experience, the students scored this question 4.11, SD ±0.96, with 75% rating it

292 as useful or very useful (Table 2). The majority of the students (79.2%) stated that they would

293 consider using the RSF outside the context of simulation training (Table 3); 88.9% of the students

294 indicated that the framework could help them to reflect on their learning in clinical practice. To that

295 effect the offer of using a pocket card size version of the framework was positively perceived by

296 72.2% of the students.

	Responses: Percentage (number)					Mean: (1-5 scale)
How useful is it to have a model to reflect on simulation experience?	Not useful at all: 1.4% (1)	Not really useful: 4.2% (3)	Not sure: 19.4% (14)	Useful: 31.9% (23)	Very useful: 43.1% (31)	4.11 SD: 0.96
The framework helps me to make links with the simulation debriefing	Strongly disagree: 1.4% (1)	Disagree: 8.3% (6)	Not sure: 27.8% (20)	Agree: 34.7% (25)	Strongly agree: 27.8% (20)	3.79 SD: 0.99

297 Table 2: Results of the RSF evaluation study – Part 1

	Responses: Percentage (number)		
Would you consider using this framework outside the context of simulation training?	Yes: 79.2% (57)	No: 19.4% (14)	Missing: 1.4% (1)
Could this framework encourage you to reflect on your learning in clinical practice?	Yes: 88.9% (64)	No: 11.1% (8)	Missing: 0% (0)
Do you feel that it could be useful to have a pocket card size framework to further assist your learning?	Yes: 72.2% (52)	No: 25.0% (18)	Missing: 2.8% (2)

298 Table 3: Results of the RSF evaluation study – Part 2

299

300

301 Table 4 presents the results of a series of questions derived from students' responses to appraise

302 specific aspects of the RSF to determine its usefulness. As expected for this type of tool, it emerged

303 that most students (62.5%) started to use it in the "feedback and review" phase, which in this

304 context was the scenario debriefing period. Interestingly 26.4% of students also reported starting to

305 use it during the simulation activity itself. The "feedback and review" component was rated by 41.7%

306 of the students as the most useful aspect of the framework. No particular RSF component was rated

307 as the least useful and interestingly 15.3% of the students abstained from answering this question.

308 Given a choice of three learning aspects from which they could select more than one option if

309 required, 56.9% of the students thought the framework was useful to increase their knowledge, 52.8

310 % selected "developing skills" and 29.2% selected "learning about yourself". Regarding the post-

311 scenario experience, 97.2% of students indicated that using the framework helped them to identify

312 at least one learning need. On average students selected 2.17, SD±1.40 of the proposed themed

313 learning needs, with "clinical skills" and "patient assessment" each being selected by 41.7% of the

314 students. The "guidelines/protocols" theme was selected by only 18.1% of the students.

315

316

317

318

319

320

321

322

323

	Responses: Percentage (number)						
At which point did you start using the reflective framework?	Simulation activity: 26.4% (19)	Feedback & review: 62.5% (45)	Self appraisal: 5.6% (4)	Identify learning needs: 5.6% (4)			
Which component of the framework do you feel is the most useful to you?	Simulation activity: 27.8% (20)	Feedback & review: 41.7% (30)	Self appraisal: 9.7% (7)	Identify learning needs: 11.1% (8)	Planned action: 5.6% (4)	Apply and Embed learning: 4.2% (3)	
Which component of the framework do you feel is the least useful to you?	Simulation activity: 15.3% (11)	Feedback & review: 1.4% (1)	Self appraisal: 20.8% (15)	Identify learning needs: 8.3% (6)	Planned action: 20.8% (15)	Apply and Embed learning: 18.1% (13)	No response: 15.3% (11)
Which of the following aspects do you find the framework most useful for?	Learning about yourself: 29.2% (21)	Developing skills: 52.8% (38)	Increasing your knowledge: 56.9% (41)				
What were your identified learning needs as a result of using the framework? (select all that apply)	Clinical skills: 41.7% (30)	Patient assessment: 41.7% (30)	Diagnosis/Treatment: 38.9% (28)	Communication skills: 31.9% (23)	Theory: 22.2% (16)	Technical skills: 20.8% (15)	Guidelines / Protocols: 18.1% (13)

324 Table 4: Results of the RSF evaluation study – Part 3

325

326 **Discussion**

327 Reflective practice as an integral part of clinical simulation is now a well established part of our

328 undergraduate curricula. The RSF as a tool and technique has emerged as a result of ongoing

329 pedagogical evaluations and research enquiry over the last seven years. The authors identified a

330 research gap and missed opportunities for maximizing reflective practice learning outcomes.

331 Valuable student feedback received through focus group discussions were both positive and

332 encouraging, and suggested that a more creative approach to reflective simulation was justified to

333 engage both educators and students more effectively. Based on focus group discussions after each

334 session and the students' suggestions, one of the RSF components was later modified and relabeled

335 to clarify the use of language description. The "Apply and Embed" component which was originally

336 labeled "Reflection in live situation" was replaced by "Reflection in clinical practice" (Figure 1) so that

337 it could not be confused with a live "simulated" situation.

338 The reason why the "feedback and review" component was the most highly rated may have been

339 due to the fact that it was the time when students were guided in their reflection through the

340 facilitated debriefing which prompted the students to think about the decisions and actions taken

341 during the scenario. The students' response to identifying the least useful component seemed to

342 evidence that they did not want to reject any particular component of the RSF.

343

344 Although the information collected does not allow us to verify the following hypothesis, it is likely

345 that the students who reported starting using the framework during the simulation activity phase

346 might have selected this option from an observer's perspective (with the RSF card in their hand)

347 rather than while being engaged in the experiential learning activity as a scenario participant. This

348 comment is made based on the fact that during most simulation sessions with nursing students, all

349 students did not get the opportunity to take part in a scenario. Consequently it is acknowledged that

350 from a validity and reliability perspective this assumption would need to be further explored. In

351 general, the framework helped students truly link the simulation-based experience with the

352 debriefing phase that followed to bring to the conscious level and obtain clarification with regards to

353 their decisions and actions that occurred during the scenario.

354

355 Meanwhile, in the absence of any similar published studies, we hope that this report will be of

356 interest and use to both new and experienced simulation facilitators who aspire to encourage more

357 meaningful reflective learning.

358 During the pilot project, we discovered that while reflective practice is generally accepted by faculty

359 to be important and useful, previously learners were often expected to 'get on with it' or manage by

360 themselves without any concrete guidance. The use of an RSF cue card at this stage looks promising

361 and could therefore be a useful personal aide memoire and visual focus for meeting educational and

362 personal learning outcomes. It also has the advantage of being useful in both simulation and actual

363 clinical practice, hence providing a practical building block to encourage continuing reflection.

364

365 Limitations

366 The limitations of the small scale pilot study underpinning this report are acknowledged. In particular

367 it cannot be claimed from this study that RP was enhanced for those who tested the card over

368 students who did not, or for the students who took part in the simulation experiences versus those

369 who only had the opportunity to use the cue card in an observer capacity. This was not the aim of

370 this pilot study. Similarly, the relative merits of a shared framework between facilitators, students,

371 and peers could have been tested but this would have involved a much larger study and additional

372 resources, which at the time was not possible. However taking these limitations into account, future

373 studies into the RSF as a tool and technique for further enhancing reflective simulation learning are

374 in progress and will be reported at a later stage.

375

376

377 Acknowledgement

385

386

387

388 References

389 Abrahamson, S., Denson, J. S., & Wolf, R. M. (2004). Effectiveness of a simulator in training
390   anesthesiology residents. *Quality & Safety in Health Care, 13*, 395-399.

391 Alinier, G. (2007). A typology of educationally focused medical simulation tools. *Medical Teacher,*
392   *29*(8), e243-250.

393 Alinier, G. (2011). Developing High-Fidelity Health Care Simulation Scenarios: A Guide for Educators
394   and Professionals. *Simulation & Gaming, 42*(1), 9-26.

395 Alinier, G., Hunt, W. B., & Gordon, R. (2004). Determining the value of simulation in nurse education:
396   study design and initial results. *Nurse Education in Practice, 4*(3), 200-207.

397 Alinier, G., & Platt, A. (2014). International overview of high-level simulation education initiatives in
398   relation to critical care. *Nurs Crit Care, 19*(1), 42-49. doi: 10.1111/nicc.12030

399 Andrews, K. (2005). *Evaluating professional development in the knowledge era.* Sydney: TAFE
400   NSWICVET International Centre for Vet Teaching and Learning.

401 Aronson, L. (2011). Twelve tips for teaching reflection at all levels of medical education. *Med Teach,*
402   *33*(3), 200-205. doi: 10.3109/0142159X.2010.507714

403 Bland, A. J., Topping, A., & Wood, B. (2011). A concept analysis of simulation as a learning strategy in
404   the education of undergraduate nursing students. *Nurse Education Today, 31*(7), 664-670.
405   doi: 10.1016/j.nedt.2010.10.013

406 Decker, S., Fey, M. K., Sideras, S., Caballero, S., Rockstraw, L., Boese, T., . . . Borum, J. C. (2013).
407   Standards of Best Practice: Simulation Standard VI: The Debriefing Process. *Clinical*
408   *Simulation in Nursing, 9*, e26-e29.

409 Dewey, J. (1933). *How We Think*. Boston: D. C. Heath and Company.

410 Dreifuerst, K. (2009). The essentials of debriefing in simulation learning: A concept analysis. *Nursing*
411   *Education Perspectives, 30*(2), 109-114.

412 Gaba, D. M. (2004). The future vision of simulation in health care. *Quality & Safety in Health Care, 13*
413   *Suppl 1*, i2-10.

414 Galloway, S. J. (2009). Simulation Techniques to Bridge the Gap Between Novice and Competent
415   Healthcare Professionals. *The Online Journal of Issues in Nursing, 14*(2), Manuscript 3.

416 Gardner, R. (2013). Introduction to Debriefing. *Seminars in Perinatology, 37*, 166-174.

417 Garrett, B. M., MacPhee, M., & Jackson, C. (2011). Implementing high-fidelity simulation in Canada:
418   Reflections on 3 years of practice. *Nurse Education Today, 31*(7), 671-676. doi:
419   10.1016/j.nedt.2010.10.028

420 Ghaye, T., & Lillyman, S. (1997). *Learning Journals & Critical Incidents: Reflective practice for health*
421   *care professionals. Key Management Skills in Nursing*. Dinton: Mark Allen Publishing Group.

422 Gibbs, G. (1988). *Learning By Doing: A guide to teaching and learning methods*. Oxford: Further
423   Education Unit, Oxford Polytechnic.

424 Graham, I. W., Waight, S., & Scammell, J. (1998). Using structured reflection to improve nursing
425   practice. *Nursing Times, 94*(25), 56-59.

426 Jeffries, P. R. (2007). *Simulation in nursing education.* (N. L. f. Nursing Ed.). New York: National
427   League for Nursing.

428 Johns, C. (1993). Professional Supervision. *Journal of Nursing Management, 1*(9-18).

429 Johns, C. (1994). 'Nuances of reflection'. *Journal of Clinical Nursing, 3*, 71-75.

430 Johns, C. (1996). Using a reflective model of nursing and guided reflection. *Nursing Standard, 11*(2),
431   34-38.

432 Jones, I. (2004). Using Reflective Practice in the Paramedic Curriculum. In S. Tate & M. Sills (Eds.), *The*
433   *Development of Critical Reflection in the Health Professions* (pp. 38-46). York: Higher
434   Education Academy Health Sciences and Practice.

435 Jones, I. (2008). *Reflective Practice and the Learning of Health Care Students. A thesis submitted in*
436   *fulfilment of the requirements for the degree of Doctor of Philosophy.* (Doctor of Philosophy),
437   University of Hertfordshire, Hatfield.

438 Jones, I., & Cookson, J. (2000). The case for structured reflection in the paramedic curriculum. *Pre-*
439   *Hospital Immediate Care, 4*(3), 150-152.
440 Kolb, D. (1984). *Experiential learning: experience as the source of learning and development.*
441   Englewood Cliffs: Prentice Hall.
442 Levett-Jones, T., & Lapkin, S. (2014). A systematic review of the effectiveness of simulation debriefing
443   in health professional education. *Nurse Education Today, 34*(6), e58-e63.
444 Levett-Jones, T., McCoy, M., Lapkin, S., Noble, D., Hoffman, K., Dempsey, J., . . . Roche, J. (2011). The
445   development and psychometric testing of the Satisfaction with Simulation Experience Scale.
446   *Nurse Education Today, 31*(7), 705-710. doi: 10.1016/j.nedt.2011.01.004
447 Mann, K., Gordon, J., & McCleod, A. (2009). Reflection and reflective practice in health professions
448   education: a systematic review. *Advances in Health Sciences Education : Theory & Practice,*
449   *14*, 595-621.
450 Moon, J. (2000). *Reflection in Learning and Professional Development: Theory and Practice*. London:
451   Kogan Page.
452 Morse, K. J. (2015). Structured Model of Debriefing on Perspective Transformation for NP Students.
453   *Clinical Simulation in Nursing, 11*(3), 172-179. doi:
454   http://dx.doi.org/10.1016/j.ecns.2015.01.001
455 Neill, M. A., & Wotton, K. (2011). High-fidelity simulation debriefing in nursing education: A literature
456   review. *Clinical Simulation in Nursing, 7*(5), e161-e168.
457 Platzer, H., Blake, D., & Snelling, J. B. (1997). Promoting reflective practitioners in nursing: a review of
458   theoretical models and research into the use of diaries and journals to facilitate reflection.
459   *Teaching in Higher Education, 2*(2), 193-204.
460 Raemer, D., Anderson, M., Cheng, A., Fanning, R., Nadkarni, V., & Savoldelli, G. (2011). Research
461   regarding debriefing as part of the learning process. *Simul Healthc, 6 Suppl*, S52-57. doi:
462   10.1097/SIH.0b013e31822724d001266021-201108001-00009 [pii]
463 Rall, M., & Gaba, D. M. (2005). Human Performance and Patient Safety. In R. Miller (Ed.), *Miller's*
464   *anesthesia. 6th ed.* (6th ed., pp. 3021-3072). Philadelphia: Elsevier Churchill Livingstone.
465 Reed, S. J., M., A. C., & Ravert, P. (2013). Debriefing Simulations: Comparison of Debriefing with
466   Video and Debriefing Alone. *Clinical Simulation in Nursing, 9*, e585-e591.
467 Ricketts, B. (2011). The role of simulation within pre-registration education : a literature review.
468   *Nurse Education Today, 31*(7), 650-654.
469 Schön, D. (1983). *The Reflective Practitioner: How Professionals Think in Action*. New York: Basic
470   Books.
471 Schön, D. (1987). *Educating the Reflective Practitioner*. San Francisco: Josey Bass.
472 Shinnick, M. A., Woo, M., Horwich, T. B., & Steadman, R. (2011). Debriefing: The Most Important
473   Component in Simulation? *, 7*(3), e105-e111.
474 Zigmont, J. J., Kappus, L. J., & Sudikoff, S. N. (2011). The 3D Model of Debriefing: Defusing,
475   Discovering, and Deepening. *Seminars in Perinatology, 32*, 52-58.

476