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The Efficacy of Simulation as a Pedagogy in Facilitating Pre-Service Teachers' Learning About Emotional Self-Regulation and its Relevance to the Teaching Profession

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Abstract: This study was undertaken in response to the imperative of teacher education courses incorporating National Professional Standards for Teachers, in particular Standard 7, which deals with the professional engagement of teachers (AITSL, 2011). It aimed to evaluate the efficacy of simulation and active recall as a learner-centred pedagogy in facilitating pre-service teachers' learning about their capacity to self-regulate emotionally and its relevance to the profession. A simulated 'critical incident' was used in a lecture to guide students (n=106) to analyse and understand their emotional responses to an altercation between the lecturer and a colleague. The evaluation involved both quantitative and qualitative data collection. The study generated six useful insights associated with the efficacy of simulation pedagogy and revealed convincingly that this pedagogy can engage students actively in learning about the importance of emotional self-regulation in relation to their professional role as a teacher.

Background and Rationale

Edith Cowan University (ECU), which is located in Perth (Western Australia), is currently developing and implementing a distinctive curriculum framework for all undergraduate courses at the university. *Curriculum 2012 and Beyond* "provides a broad coherent plan that incorporates: a vision; overarching learning outcomes; a set of distinctive features and principles; ways to achieve each principle; and an implementation plan" (De Jong, Cullity, & Ashton,2011). Curriculum 2012 contains three key features: Student focused environment; Learner-centred teaching; and Employability oriented. This study aimed to contribute to the development of the latter two features: Learner-centred teaching, which considers students' prior knowledge and actively engages students in planning their learning journey; and Employability oriented, which focuses on the preparation of graduates for the world of work and lifelong learning.

It is contended, that university curricula should concentrate more on developing the whole person (Englund, 2002; Kuh, 2000; Hersh & Schneider, 2005).This is emphasized at a first year experience (FYE) level, where curricula should enable and enhance the commencement of the student learning journey (De Jong, Cullity, & Ashton, 2011). Informed by the work of Delors (1998) and Barnett, Parry, and Coate (2001), Curriculum 2012 promotes a whole person focus (cognitive, social, emotional, physical, spiritual, cultural). It aims to develop students' knowledge and knowledge creation (Knowing); application of knowledge, abilities and skills (Doing); and attributes of self and ability to live and work with others/the whole person (Being).

Associated with developing the whole person in the domains of Knowing, Doing, and Being is the engagement of students through the affective domain (emotions). This form of active learning can be a powerful facilitator of personal and professional knowledge acquisition, creation and application. As part of meeting National Professional Standards for graduate teachers it is incumbent upon pre-service teacher education programs to ensure that pre-service teachers learn to know themselves personally and meet professional ethics and responsibilities (AITSL, 2011). Graduates need to engage in professional learning and reflective practice. This is a particular focus of a first year Bachelor of Education (B.Ed) unit in learning and development at ECU. This unit uses reflective processes to engage and extend students' thinking about children's learning and the relationship between cognitive, physical, social and emotional development (ECU Student Plan, 2011).The unit includes a module on Understanding Social-Emotional Development with a lecture and tutorial on The Centrality of Emotions in the Learning Process. Weekly reflective tasks and an assessment task that includes reporting a critical incident in an 'objective' way scaffolds student understanding of the importance of suspending judgement in social/emotional contexts. Emotional self-regulation in relation to their professional role as a teacher is emphasised as an important professional skill.

It was in the context of this unit and a particular lecture and tutorial on The Centrality of Emotions that a Curriculum 2012 research project was established to evaluate the efficacy of simulation and active recall, as a learner-centred pedagogy in facilitating pre-service teachers' (n=106) learning about their capacity to self-regulate emotionally and its relevance to the teaching profession. A 'critical incident' was designed to place a focus on the centrality of emotions in the teaching learning process. The simulated 'critical incident' is a regular part of this unit and takes place as part of the normal teaching learning process. The students were debriefed after the simulation and led through a process of active recall as they examined their responses to the event.

Emotional Self-Regulation and Preparation for the Teaching Profession

The Australian Institute for Teaching and School Leadership (AITSL) released a set of National Professional Standards for Teachers in December 2010. Four career stages are described in the standards. In this study the graduate standards are considered because they contain the skills, knowledge and behaviours that students need to demonstrate in order to graduate from teacher education programs. From 2011 all teacher education programs need to show evidence that they are incorporating these standards into their courses (AITSL, 2011). Standard 7 (AITSL, 2011) deals with the professional engagement of teachers. In Standard 7.1 it states that graduate teachers need to meet professional ethics and responsibilities to comply with codes of ethics and conduct for the teaching profession. Standard 7.3 for graduate teachers states that teachers must understand strategies for working effectively and sensitively with parents/carers (AITSL, 2011). Working with students and their families can be emotionally challenging for novice teachers. In teacher education courses, pre-service teachers need to have developed the skills to regulate their own emotions in order to deal in a professional manner with the wide range of emotional demands they face in the workplace. This study was concerned with pre-service teachers reflecting upon their own capacity to self-regulate emotionally. Knowledge of their own ability to self-regulate emotionally is essential to preparing them for the profession. It is an expectation that they have the ability to monitor and manage their own emotions appropriately, when working with children and families. As anticipated, the literature revealed very little on professional development of emotional self-regulation in pre-service teacher education.

Most literature on emotional self-regulation, also referred to as affective self-regulation and emotional regulation, relates to a number of fields, notably psychology, health, business and leadership. Reference is often made to the broader construct of "self-regulation" which implies the ability to regulate one`s own behaviour (Barkley, 2001; Fox & Riconscente, 2008; Moes, 2010; Popova, Mikheev, Shuvaev, Ivonin, & Chernyakov, 1998; Posner, Rothbart, Sheese, & Tang, 2007; Sassenberg, Scheepers, & Jonas, 2010). Self-regulation has been described as the individual`s ability to monitor and control their own behaviour, both internal thoughts and external actions (Barkley, 2001). The literature indicates that improvements in self-regulation can lead to improvements in output and performance quality in workplace settings (Amy & John, 2006; Christine & Thomas, 2006; Kurman, 2001). Bakracevic Vukman and Licardo (2010) linked levels of self-regulation with levels of academic and performance achievement in children and young adults. They found that there is a decrease in self-regulation during the years of secondary schooling up to the age of about 18 years and that self-regulation slowly improved during the years of undergraduate studies. This underpins the importance of self-awareness of emotional self-regulation in teacher education, especially as the majority of first year education students at ECU are 18 to 20 years old.

DeLorenzo, Luskin and Robins (2010).) refer to emotional self-regulation as emotional competence and assert that it is a very important skill for career preparation. In the area of professional development for the business sector, they found that leaders with higher levels of self-regulation and emotional awareness demonstrated superior leadership qualities and received higher performance bonuses. This highlights the importance of including the development of emotional self-regulation in the Employability oriented feature of curriculum 2012 across *all* disciplines at ECU.

Emotional intelligence, which includes emotional self-regulation, is referred to as an essential life-skill for students and adults in the 21st Century (Derry, 2011). According to Duffy (2010) the ability to mediate is an important skill for the workplace. Mediation can be described as the ability to support people to negotiate in times of emotional conflict. This is a particularly vital skill for teachers as working with children often involves conflict resolution and negotiation. Duffy (2010) argues that to be a good mediator the individual must be emotionally intelligent and must have the qualities of self-awareness and emotional self-regulation.

An effective method to develop emotional self-regulation is through written or verbal self-reflection on how a critical emotional event impacts on the behaviour of an individual (Amy & John, 2006; Cameron & Nicholls, 1998; Delfino, Dettori, & Persico, 2010). Greenberg, Wortman, and Stone (1996) state that the critical event can be real or imaginary, and that disclosure about a critical event can lead to personal growth. Moes (2010) connects the development of emotional self-regulation and 'soulfulness' an aspect of spirituality, which is needed for an integrated personality.

Simulation as a Pedagogy

Simulation is described in the literature as an imitation of key characteristics of real events, situations or procedures(Girod & Girod, 2008). Simulation is widely used in training, for example, airline pilots and medical doctors are trained using simulations, when the real events are too dangerous, expensive or potentially harmful (Sawchuk, 2011).The key factor that marks a simulation is that it closely resembles the real event. Simulations are also used in business and management training, which allow trainees to model situations and practice skills in a risk free environment. Shawchuck (2011) states, that simulation can provide safe opportunities for novices to practice and thereby improve their skills.

There is a growing body of literature on the use of virtual simulations and technological simulations, which go beyond the scope of this paper (Devlin-Scherer & Sardone, 2010). In this paper one example of one type of simulation namely an active simulation in real time, is described (Timothy, 2010).

This pedagogical strategy is widely used in the field of medicine and health care. The research indicates that when simulations are used effectively, they lead to increases in self-confidence and significant improvements in the skills of students. There is evidence of the use of simulation in teacher education course in the 1960`s and early 1970`s (Flores, 1971; Kersh & Oregon State System of Higher Education, 1963). Cruikshank (1969) stated that he used simulations so that students could gain intellectual control of their teaching behaviour. In this study simulation was used in a lecture to guide students to analyse and understand their emotional responses to a situation, which they could encounter in their future classroom practice. In critiquing the use of simulation in teacher education, Cruickshank (1969) states that simulation provides an opportunity to demonstrate to pre-service teachers the links between theory and practice. In this study linkages were made between emotional self-regulation and professional behaviour.

Study Aims and Research Questions

The overarching aim of this study was to evaluate the efficacy of simulation and active recall as a learner-centred pedagogy in facilitating pre-service teachers' learning about their capacity to self-regulate emotionally and its relevance to the profession.
With respect to this aim, two questions guided the research process:

1. To what extent did the simulated 'critical incident' and active recall facilitate students' understanding about their professional role as a teacher in regulating their emotions in the possible event of 'critical incidents' occurring in a school context?
2. What was the overall efficacy of using simulation and active recall to enhance student engagement and learning?

Research Methodology

The critical incident occurred at the beginning of a large group lecture attended by first year pre-service teachers enrolled in a B.Ed unit on learning and development. The students were witness to an altercation between the lecturer and a colleague who interrupted the lecture three times to have certain documents urgently signed. The lecturer became highly agitated and annoyed, and displaying abusive and rude behaviour, left the lecture with the colleague to resolve the matter. In his absence the unit coordinator, who was present at the lecture, intervened and asked the students to describe in writing what they had observed. She then asked the students to describe in writing their feelings about the incident they had observed. The lecturer and his colleague returned and after declaring that the critical incident was a simulated event, debriefed the students and invited them to participate in the project and respond to a survey. Students were further debriefed in their tutorials, which followed the lecture.

The evaluation involved both quantitative and qualitative data collection. Using personal audience response devices commonly known as 'clickers' (handheld keypads) survey-based quantitative data were gathered from the students (n=106) in the lecture. This technology is familiar to the authors as a way of enhancing student learning and a survey tool (DeJong,Lane, Sharp, & Kershaw, 2009). The survey consisted of ten items in total. Three items were questions with multiple choice options. They focused on determining levels of

objectivity in students' descriptions of the incident; the most common feelings experienced; and the intensity of their feelings in relation to the incident. Seven items were statements, which required a response to a 5-point Likert Scale. The statements were designed: (1) to determine the degree to which students considered the use of simulation and recall to have helped them understand their ability to self-regulate their emotions and its relevance to their role as a teacher; (2) to ascertain how well the use of simulation and recall engaged them and facilitated their learning; and (3) to find out the extent to which students felt that simulation and recall should be used in lectures.

It was necessary through the participant 'student voice' to elicit commentary about the survey data in order to generate explanations and insights associated with their learning and the pedagogy of simulation and active recall. The inclusion of 'student voice' is consistent with the constructivist learning and teaching approach (Biggs & Tang, 2007). Accordingly, qualitative data were collected through five tutorials ($n = \pm 20$ students per tutorial) that followed the lecture on the same day and day after. Using the TurningPoint 2008® software program the survey data collected in the lecture were analysed and reports generated. This was done immediately after the lecture and a summary of the results was presented to all the students who participated in the survey. Students were organised into groups of four to six and asked to review the results and respond to this question: "Please explain your understanding of the results of each of the survey questions completed in the lecture". Students were encouraged to elaborate on their explanations and through a scribe, summarise their responses against each question, ensuring that similarities and differences between members of the group were captured. The summaries were collected after 20 minutes of group discussion. Students were also invited to submit their descriptions of what they observed in the lecture and their feelings about the incident. They were requested not to include their names on any of the summaries they submitted. Standard ethics procedures were applied with all participants giving their signed consent to participate in the research project. The qualitative data were analysed by utilising Miles and Huberman's (1994) qualitative analysis process of data reduction, data display, and conclusion drawing. Themes were identified in relation to the following two broad areas of enquiry and used where possible to explain the survey results:

1. Use of simulation and active recall to facilitate students' understanding about their professional role as a teacher in regulating their emotions.
2. Overall efficacy of simulation and active recall pedagogy in engaging students to enhance their learning.

The Findings

Efficacy of Simulation and Active Recall Concerning Students' Understanding of Professional Role and Emotional Self-Regulation

The survey included two statements designed to engage students in reflecting on the use of simulation and recall in facilitating understanding of their professional role as a teacher and their capacity to emotionally self-regulate.

In response to: "The use of the simulation and recall has helped me understand my ability to regulate/control my emotions in the possible event of 'critical incidents' occurring in a school context" the survey revealed that the majority of students strongly agreed (10%) or agreed (49%) with this statement. Approximately one-third remained neutral on this (30%) while a small minority disagreed (4%) strongly disagreed (7%). In response to: "The use of the simulation and recall has helped me understand that as a teacher I should be able to regulate/control my own emotions in order to respond appropriately to the needs of my students and 'critical incidents' when they occur" the survey revealed that the majority of

students strongly agreed (47%) or agreed (41%) with this statement while 6% remained neutral and a small minority disagreed (2%) and strongly disagreed (4%).

It is evident from the survey results that the majority of students (59%) felt that simulation and recall helped in understanding their personal ability to control emotions. The student commentary offered only one clear theme, which was associated with the second items too: empathy for children who are witness to a critical incident. Several comments alluded to this:

We had more of a self evaluation as a teacher but have now been put in the position of a child in that situation.

[We were] put in a child's shoes.

Being put in the children's role, as in the audience, we were able to feel how they would, if the teacher didn't control their emotions.

It helped feel empathy for the student (how our behaviour as a teacher would affect them).

An overwhelming majority of students (88%) agreed that the simulation and active recall facilitated their understanding of the importance of emotional self-regulation in relation to their professional role as a teacher. This result was convincingly endorsed by the student commentary. Two predominant themes were identified:

Firstly, the simulation and active recall effectively emphasised the importance of emotional self-regulation as a teacher. In the words of some students:

As a teacher it is important to understand that boiling point and to have control over how you react.

…as future teachers we need to understand how emotion can affect ourselves as well as affect students in their learning.

The simulation and recall made us all think about how we would react in a similar situation and the consequences as a result of our decisions.

Secondly, the simulation and recall underscored the need for teachers to be good role models for their students. One of them noted the: "importance of being professional and being a role model for the children"; and "We agree that it is important for teachers to be able to monitor their emotions and model appropriate emotional regulation in an event of critical incidents".

Overall Efficacy of Simulation and Active Recall

The purpose of exposing the students to the simulated critical incident was to engage them emotionally and challenge them simultaneously to self-regulate their emotions in order to describe objectively what they saw occur. The assumption was that for many students the unprecedented and highly charged confrontation between the lecturer and colleague would elicit fairly strong emotions that would test their capacity to self-regulate and respond objectively. Several survey items were designed to determine the efficacy of the simulation and the extent to which it facilitated learning associated with capacity to self regulate.

In response to "I believed in the 'angry lecturer' simulation" the survey revealed that 24% of the students strongly agreed with this statement, 28% agreed, 20% remained neutral, 15% disagreed and 13% strongly disagreed. There were significantly more students who believed in the critical incident (52%) than those who did not (28%). This compares similarly to the distribution from the previous year's (2010) cohort where 48% believed in the critical incident and 28% did not. Students were not asked to comment on these survey findings as time constraints only allowed for a limited number of survey results to be presented.

Clearly the simulation impacted negatively on students' ability at the time to describe objectively in writing what they saw. They were asked to review their written account during the debriefing and respond to this question: "To what extent do you believe your written account of the incident to be objective (impartial/non-judgemental)?". Nearly one quarter of

the participants (24%) reported that their description demonstrated no (0%) objectivity at all, while 18% indicated some (approx 25%) objectivity, and 23% approximately 50% objectivity. Considerable objectivity (approx 75%) was reported by 30% of the participants with 5% claiming that their descriptions were highly objective (100%). In summary, 65% of the students assessed their written descriptions of the simulation to reflect less than 50% objectivity in use of impartial/non-judgemental language, while 35% considered their descriptions to demonstrate more than 50% objectivity.

The survey and focus group reflections also revealed a wide mixed range of emotional responses to the simulation ranging from embarrassment to irritation, anger, nervousness, anxiety, shock, frustration, annoyance, and sympathy for both the lecturer and colleague. The survey ascertained the intensity of feelings with this question: "You were asked to *describe in writing your feelings about the incident*. How *intense* do you judge your feelings to be in relation to this incident?" The majority of students (61%) reported that the feelings they experienced were generally *mild* with 31% indicating *quite strong*, 4% *exceptionally strong*, and 4% declaring that they didn't experience *any feelings* in relation to the incident.
The focus group reflections on the survey results concerning levels of objectivity revealed two broad themes:

Firstly, understanding that 'learning is a multi-modal process', which integrates the physical, cognitive, social, emotional dimensions. Students commented on how strong emotions can detract from learning:
Because we had so much "emotion:" running through our minds, it detracted from the lecture, we couldn't learn.
It was more about how instantly all of a sudden emotion affected the lesson.
How you feel emotionally directly impacts the way you learn. If you're feeling upset or angry, you are less likely to learn.

Secondly, a significant recognition that 'sometimes emotions can impair judgement' and personal capacity to respond objectively to an emotive situation can be diminished:
It is important not to let your emotions impair your ability to make good judgements.
It is wrong to become involved or become judgmental.
It is important not to let your emotions control situations and to look at it [the incident] objectively.

There was overwhelming evidence to suggest that the application of simulation and active recall pedagogy in this lecture context engaged students in learning. In response to the survey item: "The use of the simulation and recall increased my engagement (listening, concentration, active participation) in this lecture" the majority of students agreed (46%) or strongly agreed (24%) with this statement while 19% remained neutral, 8% disagreed and 3% strongly disagreed. This was further confirmed by the response to "I recommend that the use of simulation and recall pedagogy be used more often in lectures" which indicated that the majority of students agreed (45%) or strongly agreed (25%) with this statement while 21% remained neutral, 1% disagreed and 8% strongly disagreed.

The focus group commentary on these survey results strongly validated the efficacy of this pedagogy in engaging the students in learning. Comments made by students suggested two broad themes:

Firstly, the 'multi-modal nature of the pedagogy', [i.e. seeing, hearing, feeling; learning by experiencing; the role of visual stimulation in promoting learning; active participation (one group of students commented: "we were not just sitting and reading")] which advanced deeper understanding and connected theory with practice (another group stated: "we got to see theory in practice").
Secondly, the 'power of the pedagogy to elicit feelings' which was evident in comments such as:
I was surprised by my reaction.
Lots of emotions were felt within me.

I felt embarrassed, shameful, mad and disappointed
Seeing things outside the comfort zone.

Some caution was expressed about the efficacy of this pedagogy being diminished if it were over used. Those who were not engaged by this pedagogy appeared to find it distracting and expressed some frustration with the simulation wasting time. For example, one group indicated that "Group members found it distracting" while another reported that they wanted the lecture "to get to the point and move on".

Conclusions

This study was undertaken in response to the imperative of teacher education courses incorporating National Professional Standards for Teachers, in particular Standard 7, which deals with the professional engagement of teachers (AITSL, 2011). It also aimed to contribute to the development of Curriculum 2012, especially the features of Learner-centred teaching and Employability oriented. Specifically, the overarching aim of this study was to evaluate the efficacy of simulation and active recall as a learner-centred pedagogy in facilitating pre-service teachers' learning about their capacity to self-regulate emotionally and its relevance to the profession.

This study was limited to commencing pre-service teachers enrolled in a four year B.Ed program. The long-term efficacy of simulation as a pedagogy in facilitating their learning remains unknown at this stage. However, in the context of their first year experience it is evident that for the majority of students who participated in this study simulation and active recall facilitated their understanding of the importance of emotional self-regulation in relation to their professional role as a teacher. Further, there was overwhelming evidence that the application of simulation and active recall pedagogy in the lecture context engaged students in learning.

In conclusion, this study generated six useful insights associated with the efficacy of simulation pedagogy in facilitating pre-service teachers' learning about emotional self-regulation and its relevance to the teaching profession. Simulation pedagogy has the potential to:

1. Emphasise the importance of teachers being able to self-regulate their emotions as a professional responsibility and be good role models for their students.
2. Underscore the importance of being professionally aware that emotions can impair judgement and diminish personal capacity to respond objectively to an emotive situation.
3. Elicit amongst students empathy for children who are witness to a critical incident and thus provide a basis for appropriate professional management of such incidents.
4. Demonstrate that learning is a multi-modal process, which integrates the physical, cognitive, social, emotional dimensions.
5. Actively engage students through the affective domain to be a powerful facilitator of personal and professional knowledge acquisition, creation, and application.
6. Be diminished in its efficacy if it were used inappropriately and indiscriminately.

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