Role–Playing as a Tool to Facilitate Learning, Self Reflection and Social Awareness in Teacher Education

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ABSTRACT

Meaningful learning in the tertiary sector benefits from the inclusion of a variety of teaching and learning techniques including active learning. Role-plays are one type of active and participatory learning activity that creates interaction between students and a simulated scenario. This reality can serve to open the minds of participants to issues they need to be able to deal with in their chosen careers. This paper reports role-plays in four different learning applications: the first was in a multicultural education class and simulated a microcosm of society where students took on the roles of minority groups. The second reports on a history class that provided simulations of key battles of World Wars One and Two. The third was in mathematics for primary teachers' class where the students simulated experiences as children in mathematics classrooms, parents and teachers speaking to each other and teachers teaching children. The fourth was in a leadership class for final year Early Childhood and Primary pre-service teachers, and involved role-play of an interview during the management of an unsatisfactory work performance by a staff member. The findings show that in each case the objectives of having students experience a simulation of reality were met.

Keywords: role-play, simulation, active learning, constructivism.

INTRODUCTION

Good quality learning and teaching in the tertiary sector relies on a combination of several components that have been documented over the last three decades. Together, these components create an environment of motivation and inquiry, having the students active in their learning activity, facilitating interaction between learners, and building on a knowledge base at levels appropriate to the learners (Biggs, 1991; Ramsden, 2003). Along with these factors are associated qualities such as commitment, encouragement, respect, independence, cooperation and improvisation.

This paper outlines the impact and learning that occurred in four specific examples of on-campus role-plays. While a great deal of tertiary learning and teaching revolves around the traditional models of listening, reading, talking and writing, there is much to be gained by expanding the learning environment to include such activities as debates, open-ended assessments, panel discussions, and many other types of learning experiences that cater for higher order thinking and collaboration or contrived conflict between learners. This is where role-plays can fit. This is the model that Filene (2005)

adopts when he suggests that a trial could be simulated of someone like Osama Bin Laden or Joan of Arc where "…groups are assigned to serve as prosecutor, defense, witnesses, judge and jury… As students prepare, reenact, and then debrief, they use the trial as a window on the social, political, religious and economic forces in the society" (p. 77).

BACKGROUND

In an educational environment that is standards or outcomes driven where teachers and students tick off the outcomes as they are achieved and education authorities assess programs by finding evidence that a specified standard has been met, it is all the more important that teachers honour their profession by finding ways to facilitate 'deep learning'. Deep learning is where the objective of the learning sequence is student learning as opposed to surface learning where the objective is student retention and recall of facts. There has been a movement to slow down the learning process in schools and target more meaningful and deeper learning (Barker, 2012; Holt, 2002).

'Active learning' is one way for students to achieve deep learning not only in the retention of facts but by remembering and conceptualizing experiences. "Students must participate mentally, as opposed to passively listening to a lecture or unthinkingly following directions" (Bixler, 2011, p. 75). Active learning is not just classroom activities for the purpose of making class interesting. It includes techniques designed to have students experience and remember facts, concepts and feelings. "Although active learning is sometimes used synonymously with hands-on learning, it is more than activities for their own sake" (Moscovici & Nelson, 1998, p. 16). Michael (2006) defines active learning in the following way: "The process of having students engage in some activity that forces them to reflect upon ideas and how they are using those ideas" (p. 160).

A teacher would not consider using anything but active learning for new entrants at school level. Whether it be learning to count from one to ten or learning to tie shoe laces, it is difficult to imagine a kindergarten teacher achieving either of those objectives by lecturing the five year olds or writing notes on the board describing how to do these tasks. Teachers would commonly use techniques such as: ". . . use an analogy, sing a song, trace letters, or other active strategies" (Cynthia, McNear & Metz, 2013, p. 351).   At what point is it that teachers believe students start to learn better by passive learning rather than by being involved in active learning? "By the time students reach professional-level classrooms, there is almost an exclusive reliance on traditional didactic lectures" (Cynthia et al, 2013, p. 351).

The use of role-play as a learning strategy in higher education has been used in problem-based learning (Chan, 2013) and online contexts (Russell & Shepherd, 2010). It is also considered to be a useful strategy in teacher education. Neuendorf and O'Connell (2011) describe the value of role-plays in teacher education: "Pedagogically sound scenario-based role-plays are activities with a specific learning outcome designed to create a realistic learning experience for participants" (p. 2182). The use of role-plays also has the potential to facilitate a more comprehensive learning experience for teacher education students compared to the more traditional cognitive focused approach.

THE ROLE – PLAYS

Role-playing in multicultural education class

A pretext for students learning teaching skills for multicultural and Indigenous subjects is that they have developed some sort of reality as to what being part of a minority group is like. For this reason 100

teacher education students of multicultural studies were asked to participate in a role-play that placed all of them in different roles in a scenario that represented a microcosm of society.

This activity lasted only fifty minutes and no demeaning activities were planned or anticipated. The objective was to create a microcosm of society in a controlled space where students would experience differentials of power, injustices of society and something of the depths of anxiety their fellow humans may feel because of the social situations they find themselves in. In so doing, it was hoped that teacher trainees would be more open to understanding their students and learning appropriate teaching methods to help minority groups.

Students entered the hall and were presented with an envelope that randomly assigned them a role. Roles included 'workers' with varying amounts of money to buy materials to make a collage, 'shopkeepers to sell the materials to workers, policemen, social workers, politicians, and reporters.

The follow up to the activity was a lecture for debriefing and a survey that was administered to all the participants in the role-play. The survey asked such questions as their gender, their feelings during the role-play, how much they learned from the activity, whether they would recommend it be repeated for the next cohort of students and any general comments they may have.

War-gaming in history class

Teaching the World Wars is complicated by two characteristic kinds of students: those who think they know everything about the wars and have nothing more to learn and those who have virtually no knowledge and, often, interest in those events. Tabletop war gaming has proved to be a way to engage and challenge both categories of students.

The teaching method in this class begins with two lectures per week on the wars, including coverage of the various campaigns and in some cases, particular battles. Also addressed are political, economic and social aspects of the wars. A two-hour wargame is run each week, with every student commanding a course on one side or the other, based on a battle or campaign already covered in lectures. The simulations use a commercially-available tabletop wargame, whose rules have been slightly adapted to suit pedagogical ends. The tabletop game uses miniatures of soldiers and military equipment played on a mat with model buildings and terrain features such as roads, rivers, forests and mountains. It uses the common tabletop gaming system of you-go-I-go moves measured by tape and shooting outcomes determined by dice rolls with the numbers required determined by historically-based data on the efficacy of the course or weapons involved.

The games do not try to literally recreate a specific battle, but rather represent it through the ratio of forces and the nature of the terrain. Students rotate through the roles of overall commander, and of assistants. Up to 20 students at a time can play with about four at a time 'commanding' and the others helping with the game play, such as moving courses, rolling dice or checking rules and outcomes, and taking notes. Students select one game per semester to act as 'commander'. 'Commanders' submit a post-game journal, in which they reflect on the historical campaign, the game simulation and what lessons they learned from the interaction of game and history.

At strategic points during the game, the lecturer intervenes to question tactical decisions, or to ask why a particular outcome occurred. Frequently games are not played literally to conclusion, but only until the learning objective is met. The game may be restarted to allow the 'commanders' to apply the lessons learnt, or alternatively, the next battle in the campaign is then played. With the speed of the learning experience varying from week to week, between one and three games may be played in two hours.

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Role-playing in a primary mathematics method class

Typically pre-service teachers approach the study of mathematics education with some trepidation that is often traced back to their own negative experiences of the way they were taught mathematics (Johnson, Smith, & Carinci, 2010; Kargar, Tarmizia, & Bayat, 2010). Past research has shown that teachers are typically not well prepared to teach mathematics effectively (Turner et al., 2012). Subsequently, the approach taken in a first year mathematics education course of study is one that promotes the use of authentic, hands-on and enjoyable mathematics activities. The course enables students to uncover the interconnectedness and relevance of mathematical themes and topics, facilitating a better understanding of how to teach mathematics in a motivating and effective manner.

During these classes, the pre-service teachers experienced a number of role-play situations in on-campus lectures and tutorials, and in online activities. Because teachers' attitudes about mathematics strongly influence their teaching practices (Prescott & Cavanagh, 2006; White, et al., 2005/2006), the purpose of the role-play activities was to provide opportunities for students to revise their past attitudes about teaching and learning mathematics to incorporate a more positive and informed view of how mathematics can be taught.

To understand the perspective of a student in a primary school mathematics classroom, the pre-service teachers engaged in role-play activities in which they completed hands-on activities using mathematics manipulatives (such as number frames, counters and place-value blocks) as children would experience these activities. They had opportunities to play board games, physical activity games, online games and team games. Also, mathematics problem solving tasks that could be solved with multiple solutions were presented to them and assisted their understanding about mathematics as a discipline in which all "answers" were not necessarily right or wrong.

Conversely, they also took part in role-plays in which they experienced feelings of uneasiness, even dread, to help them understand the point of view of a learner who may experience difficulties in or fear of mathematics. For example, the pre-service teachers participated in an activity in which they were directed to respond to a set of verbally provided mathematics questions by recording their answers on a printed answer sheet. The lecturer also took part in this role-play by presenting as an autocratic content-focused teacher who over emphasised the importance of "correct answers" and "good marks" which, she explained, would later be publicised to all students in the class. Of course she did not follow through with this "threat" in this simulated context.

To experience the perspective of a parent, the students participated in role-plays in which they engaged in conversations with teachers, also role-played, and about the value of mathematical games when teaching primary school aged children. This enabled the pre-service teachers to justify their pedagogical choices in a way that could be communicated to parents about using hands-on materials in their mathematics lessons.

Role-play as an assessment in leadership development

It is widely accepted that the work of an educational leader has a critical influence on achieving desirable educational outcomes in schools (Augustine, Gonzalez, Ikemoto, Russell, Zellman, Constant, & Dembosky, 2009). However, Spillane and Lee (2013, p. 432) investigated 'problems of practice' for beginning principals and found that dealing with unsatisfactory performance from resistant staff members was a serious difficulty for these novice leaders. Managing poor performance was time consuming, stressful and demanded considerable emotional energy (Cheung & Walker, 2006). From

commencement in the leadership role, educational leaders are expected to 'hit the ground running' (Werner, 2007).

Given that developing leadership skills are so important for leaders, especially beginning leaders, the development of these skills is an important part of the content of the course which aims to prepare final year pre-service teachers for possible, future leadership responsibilities. In fact, Callahan, Whitener and Sandlin (2007) stated that "leadership development is arguably one of the most important activities undertaken by HRD [Human Resource Development] professionals" (p. 146).

One module of the course addresses the issue of managing unsatisfactory performance. Following this module of lectures and discussions, learning and implementation are brought together in an assessment which is a role-play simulation of the management of unsatisfactory performance by an employee within an educational setting. The student is required to select a typical example of unsatisfactory performance, write a script to simulate an example of a second interview where the staff member has only partially complied with the required improvements in his/her performance, agreed on previously. The task is to organise a meeting with the non-compliant staff member, discuss the matter, reiterate the expectations, provide evidence of non-compliance, negotiate a solution and timeline, including support and professional development if needed, and complete the necessary documentation. Legal, industrial and policy requirements must be met as well as ensuring natural justice. Other students are co-opted to play the roles of staff member and witness/ support person.   The rest of the group are required to observe and assess the role-play according to a rubric which lists demonstrated knowledge of relevant legal and industrial expectations together with demonstrated skills of communication, negotiation and professionalism. The student is then provided with detailed feedback.

THE RESULTS

Role-playing in multicultural education class

The students were very keen to share their comments and give feedback about the role-play activity. This is true for their verbal comments in the lecture debrief of the role-play as well as in written form on the survey. During the lecture students commented on how real the experience had become for them. Comments were made about how, in some cases, they felt ashamed of what they had become in order to survive the experience and achieve the desired outcomes.

Of the 100 students who participated in the role-play, 78 completed the survey. Of the 78 responses, 50 were from females and 28 from males. There was a correlation of r=0.984 between the answers of the males and females.

On the survey students were asked to circle words from a list that best described how they felt during the activity. Table 1 gives a snapshot of how they felt.

Table 1: *Descriptors of students' feelings during the role-play*

Descriptor	Number of responses	Males	Females
Collaborative	28	11 (40%)	17 (35%)
Amused	28	13 (45%)	15 (30%)
Excited	23	7 (25%)	16 (32%)
Frustrated	24	9 (30%)	15 (30%)
Competitive	24	9 (30%)	15 (30%)

Anxious	18	6 (20%)	12 (24%)
Bored	15	6 (20%)	9 (18%)
Confused	15	6 (20%)	9 (18%)
Enlightened	10	4 (15%)	6 (12%)
Bemused	5	3 (10%)	2 (4%)
Stressed	2	0	2 (4%)
Angry	2	1 (3.5%)	1 (2%)
Intimidated	1	0	1 (2%)
Guilty	1	0	1 (2%)
Nervous	1	0	1 (2%)
Indignant	1	0	1 (2%)

When students were asked whether they would recommend that the role-play be repeated with the next class, 61 agreed that the exercises should be run again, 10 said that the exercise should not be run again and six said that it should be run again but with a few modifications.

The most significant parts of the data were the open-ended comments and suggestions students were invited to offer. These were categorised according to learning outcomes for the activity. Some responses can be found in Table 2.

Table 2: *Qualitative comments categorised and aligned to learning outcomes*

Desired Learning Outcome	Student comment
That students experience what society is like being part of a minority group	• "I never felt left out in the process apart from being in jail for stealing. I discovered I'm quite the criminal. Looking back maybe this occurred because I found it hard to survive in that type of commcoursey." (worker with little money) • "People's selfishness did come out." (worker with little money) • "It felt frustrating because we were told to make something but had no money to start anything."(worker with no money) • "It was interesting to see how quickly people changed and adapted to survive."(worker with no money) • "I felt discriminated against but still managed to survive. I resented the workers with money getting all the goods" (worker with no money) • "I caught somebody stealing and I felt frustrated, annoyed and stressed because it was unfair." (shopkeeper) • "I learnt that it's pretty annoying to not have the same equality as everyone else." (worker with a disability) • "It was interesting to watch and see what the other groups were doing and how they conducted themselves. The police became corrupt very quickly." (reporter)
Model the benefits of innovative learning and	• "I enjoy these activities very much because I learn by doing. I adapted to the process very quickly and understood what had to

having students participate in their learning	be done. Not long into the activity I knew what it was illustrating and felt it was a fantastic way to show society today." (worker with little money)
	• "This was a great representation of society." (worker with no money)
	• "It made learning real. We all got very enthused by our roles. It was a great activity and very practical." (shopkeeper)
	• "What a brilliant version of a small society. All the anger, frustration, collaboration were fantastic examples of real world experiences." (social worker)

War-gaming in history class

This study used a qualitative approach to determine what types of learning occurred during the war-gaming sessions. Student reflective diaries captured some data, while end-of-semester written interviews and the lecturer's observations gave additional data. The study showed three main outcomes: an improved understanding of history, an increased engagement with history and personal development as a result of gaming.

Student responses on how the games affected their understanding of history showed diversity and depth. Some recorded their enhanced understanding using visual language ('helped me visualise', 'gave a new perspective, 'opened my eyes'). Others expressed that the games transformed their understanding of written histories, which had seemed flat and distant before, helping them grasp concepts such as logistics from a practical rather than merely theoretical point-of-view. 'No books that I have read could have given me the full understanding of how hard some of the decisions & successes would have been,' one said while another wrote: 'The emphasis on details, such as numbers, weapons, logistics make history more real, rather than just the general "what was the result" aspect of history that I have learnt before.' In effect, their understanding had shifted from a theoretical and distant perspective to one which is intimate, experiential, better grounded in detail and yet conceptually more complex, balanced and complete. There is a much stronger sense of genuine insight that transcends the merely intellectual, encompassing a more holistic view of the wars.

The capacity for the games to engage students was a major outcome. One student new to history commented: 'This was the best possible introduction for me into history study…. This course has reassured me that history is living, immiscible and relevant.'   The words 'enjoy,' 'fun,' 'eager' and 'enthusiastic' were commonly used to describe their engagement, capturing even unwilling students who had voiced reservations about a class on the wars.

Students reported gaining a better appreciation of the roles of the people involved and the dilemmas of commanding: 'I was impressed with the emotions and decisions of history. I felt the generals' frustrations, pressures, the lack of information, the scrambling to make sense of results (or lack of). I therefore was impacted by how much more history is about humanity-decisions made, understand why they were made (rather than judging) and the consequences of those decisions.' One student reflected on a lost game with, 'One can only imagine how the French Generals felt.'

The learning impact of the games went beyond the boundaries of this particular course. Most students reported a higher passion for history due to their experience in gaming, and stated that they saw the profession of a history teacher in a new, more dynamic light. They commented on how the experience

of gaming engaged the whole learner, visually, kinesthetically, socially and emotionally, and they felt it would shape the way they taught history.

War gaming also affected personal development. One noted, 'personally I've experienced a shift in my stereotypes and interests and perspectives.' Others commented on enhanced motivation for learning in general, and better critical thinking and contextualisation, and even improved time management skills. A few students mentioned increased spiritual sensitivity, having been better awakened to the violence and evil of war, through the gaming and associated assessment tasks.

Role-playing in a primary mathematics class

Throughout the semester, students were provided with three opportunities to write a narrative about how they experienced mathematics and mathematics teaching in the past, how they were experiencing mathematics and mathematics teaching in their current university studies and how they expected to experience mathematics and mathematics teaching in the future. These narratives were written in tutorial teaching sessions during which the pre-service teachers engaged in a number of role-play activities. The role-play activities formed much of the backdrop of the course of study and influenced the students' narrative reports. Negative and positive role-plays were facilitated throughout the semester, enabling the students to experience the perspectives of:

- primary school aged children engaging in enjoyable mathematics activities using hands-on materials (that is, manipulatives);

- primary school aged children engaging in a pressured test-like situation;

- parents making inquiries about their children's education, especially in relation to the use of mathematics games;

- teachers planning mathematics activities for young children; and

- teachers justifying their selection of mathematical teaching strategies to parents.

A total of 59 students were enrolled in the mathematics education course. Of these enrolled students, 46 students volunteered to contribute a narrative report of their experiences early in the semester, 25 students in the middle of the semester and 33 students at the end of the semester. The variation in the number of students who contributed their narrative accounts was dependent on attendance at on-campus and online classes at each of the three data collection points. Although students who volunteered their narratives were not asked to indicate their gender, 38 of the 59 students enrolled in the course were female and 21 were male.

Students' narratives were analysed to track their attitudes about mathematics and mathematics teaching, and the changes, if any, that occurred throughout the semester as the students engaged in the course's activities which incorporated regular role-plays. Emerging from this analysis were three thematic categories that outlined students' reflections on how activity-based mathematics can be enjoyable, how their attitudes changed and how they planned to act as a future mathematics teacher (a role-play projected into the future). Table 3 outlines examples of the students' comments that formed each of these themes.

Table 3: *Three themes linked to students' comments*

Theme	Students' comments
Reflections about	"Manipulatives (hands on material) are a great way to engage kids in

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how the students perceived activity-based mathematics to be enjoyable	maths without them thinking they are learning maths." "Maths can be fun. It does not have to cause anxiety or fear." I find myself laughing and enjoying myself. In a lot of classes I hate having to sit down writing notes (I know it's necessary though) and I love classes that at some stage we get up and do something in small groups or as the whole class. It's what I look forward to every time."
Reflections about how the students experienced attitudinal change	"Whenever I thought about having to teach maths I would get nervous but now I am really excited." "It [maths course, with role-plays] served to show me that simple maths can be something everyone can be involved in and enjoy." "… took the fear away. I had bought a red folder (scary red!) for my maths notes but as I progressed I bought a blue (I can do this, calm colour) lecture notebook. My perception of maths changed in just a few short weeks."
Reflections about how the students envisioned themselves as mathematics teachers in the future	"In the future I would teach maths using lots of hands-on resources and manipulatives. It would be very beneficial for the students I teach as it will make maths fun and enjoyable for them." "Every time I'm reading or researching tools to teach math I can see how important is to enjoy mathematics. I'm enjoying it, I'm learning concepts and my view is changing. I'm not scared of it anymore. I want to be a good mathematic teacher for my students, make the learning more fun."

Verbal comments offered by students at the close of each role-play activity were not always incorporated into their narrative accounts. However, the lecturer recorded these comments as observations after each role-play activity and included them in the data set analysed in this study. These additional verbal comments indicated that students could be easily debriefed after positive role-play experiences but they required additional debriefing after negative experiences. Interestingly, even though the students knew beforehand that they would be placed into an uncomfortable position during a role-play in which they were directed to record written answers in a pressured test-like role-play activity, they still reported feelings of extreme unease and physical discomfort (such as sweaty palms). Some even reported feeling emotionally shut down. Similarly, debriefing discussions about their concerns regarding how to justify their pedagogical choices to parents typically extended longer than expected. They appeared to be unnerved by the atmosphere of the more negatively focused simulations but less emotionally influenced as a result of participating in the positive role-plays.

Role – plays in school leadership classes

Initially, students perceived this assessment task as an 'easy option'; one which did not require academic writing or detailed referencing. However, it was designed to address one of the most difficult tasks educational leaders have to undertake and be able to manage successfully. The stressful issue of dealing with non-compliant staff in as close to a real situation as possible may be perceived as 'only a simulation' however, the necessary steps in the process are understood, taken and documented. Further, issues of industrial relations, appropriate and direct communication, conflict management,

negotiation and documentation are practised. As Hess (2007, p. 197) comments, the challenge is to provide the student with "an opportunity to practise skills that is of complexity and duration sufficient to elicit a substantial portion of the skill set". In this instance the preparation, writing, delivery and subsequent detailed feedback provided a very useful experience in a dynamic and stimulating manner.

On the anonymous student feedback sheets, students commented on the relevance of this learning and assessment task: "I liked the hands on approach of the assessments and that there was a strong link between my assessments and the learning outcomes; It was relevant; Assessments related to real life circumstances; Very practical & real & useful! Valuable information."

DISCUSSION

Finding innovative ways of engaging tertiary students in learning that will genuinely impact their future practice in their chosen career is a challenging task for the teacher. Once discovered however, these methods can bring great satisfaction to both students and teachers. The era lecturers are dealing with today includes issues such as: greater student voice in the perceived quality of lectures; more students opting for the online learning environment; and students 'getting through' lectures to move on to their part-time work situations. Learning must be seen to be meaningful for students to engage.

According to Ramsden (2003):

> . . . learning in educational institutions should be about changing the ways in which learners understand, or experience, or conceptualise the world around them. The 'world around them' includes the concepts and methods that are characteristic of the field of learning in which they are studying. (p. 6)

It would appear that the multicultural role-play exercise allowed for students to be immersed in a social scenario that has caused many of them to experience feelings and realities that they may not otherwise be exposed to. The learning outcome of students experiencing and understanding how minority groups feel in society is vital for them to be able to go on and diligently seek out methods of aiding the learning of these minority groups.

The debriefing that occurred in the lecture theatre after the role-play shed light on some of the results in the survey. The most compelling discussion revolved around the comments from students that in many cases they did not like what they had become during the role-play in order to survive. Indeed they were surprised at some of their own actions that they had undertaken in order to achieve the required objectives. The large number of students who listed frustration levels as a feeling they experienced was also discussed.

The conclusion was reached that what they experienced closely simulated the types of frustrations that may be experienced by these roles in real life. The feeling of frustration therefore added to the success in making the role-play a realistic simulation.

The findings of the wargaming study indicate that student learning outcomes in tertiary level history education course were enhanced by a teaching approach which facilitated active learning strategies in conjunction with students being involved in simulated historical events, with associated hands-on materials. The students' sustained involvement in reflection, discussion and game participation enabled an experiential approach to understanding complex historical events and characters. Across a series of tabletop gaming sessions, students were scaffolded in the process of making mistakes which led to enlightened understanding, enhanced by interactions with each other, with the lecturer and with the conventional tools of history education: lectures, readings and written reports. The results show that

exciting new methods are not a substitute for sound teaching, but that properly harnessed, will take conventional methods to new standards.

The three-dimensional learning activity of wargaming has been demonstrated to produce three-dimensional learning outcomes, heightening, broadening and deepening student awareness. Their contextual understanding has broadened, their level of knowledge and engagement has grown, and the deep learning they have experienced has ensured that they will retain the learned outcomes for a long time.

The role-plays that the mathematics education students participated in enabled them to revise and in, some cases, dramatically change their attitudes about mathematics and mathematics teaching. For many students, their attitudes had previously been very negative, caused by a legacy of less than ideal mathematics experiences (Johnson, Smith, & Carinci, 2010; Kargar, Tarmizia, & Bayat, 2010). The significance of focusing on teachers' attitudes to mathematics has been previously established because it impacts directly on the quality of teaching practices (Prescott & Cavanagh, 2006; White, et al., 2005/2006). By engaging students in discussion-based, activity-based and material-based role-plays, they were able to experience mathematics and mathematics teaching from the varied perspectives of teachers, students and parents. These experiences enabled the pre-service teachers to engage in active learning and then to reflect on their mathematical views (Michael, 2006).

While some role-plays were focused on the positive side of mathematics (enjoyment, engaging activities, informed pedagogical choices), some of them were based on conflict (fear and anxiety about mathematics, doubt induced by having to justify pedagogical choices to parents), as outlined by Filene (2005). The outcomes of the positive role-plays appeared to directly impact both students' attitudes and understanding of mathematics. However, the negative role-plays affected students' personal emotions in a deeper way. In some cases, although being fully aware they were engaged in a role-play situation, the students experienced genuine forms of fear and anxiety. Although the use of role-play in mathematics education has already been explored to some extent (Ahmad, Shafie, & Latif, 2010; Chaviaris & Kafoussi, 2010), the use of role-play in the education of mathematics teachers is a less researched area. This small study has revealed that the use of role-play in mathematics education can develop pre-service teachers attitudes about mathematics and mathematics teaching. Role-play can also provide a platform through which pre-service teachers can come to a greater understanding of mathematics in the curriculum and how to teach mathematics by experiencing multiple perspectives of those involved in mathematics education of primary school children.

With the leadership simulation, in reality the students found that considerable work was required to write the script for themselves and the non-compliant staff member; to source the relevant industrial agreements and awards; to comply with a step by step format; to include all the relevant details, statements and actions that matched the marking rubric and to remember all of the necessary details while performing this role-play before peers and lecturer. The relevant factor was that they found this role-play assessment to be an effective, practical and appropriate learning experience.

CONCLUSION

Like most things worthwhile, the preparation and application of good quality role-play activities takes significant time and thought and will be developed and refined with each new cohort of students. It is possible that the outgoing students will benefit from these activities more than the introverted student who prefers to learn in the traditional way and not be noticed.

Role-plays are one type of active learning. The role-plays discussed in this paper served to familiarise the students with each other and to open their minds to the issues faced by minority groups, professionals, children and parents. The results indicate that these activities achieved the stated objectives. By engaging in role-play activities, higher education students are provided with opportunities to view situations from multiple perspectives, in the spirit of constructivist learning theories. The research reported in this paper has demonstrated that role-play learning activities have the capacity to address emotional as well as cognitive dimensions of adult learning. Good quality learning and teaching in the tertiary sector needs to include activities other than lectures and Power point presentations in order to create a learning environment that ignites inquiry and motivation.

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