

# myShoes - The future of experiential dementia training?

Adefila, A, Graham, S, Clouder, DL, Bluteau, P & Ball, S

**Author post-print (accepted) deposited by Coventry University's Repository**

**Original citation & hyperlink:**

Adefila, A, Graham, S, Clouder, DL, Bluteau, P & Ball, S 2016, 'myShoes - The future of experiential dementia training?' *The Journal of Mental Health Training, Education and Practice*, vol 11, no. 2, pp. 91-101. DOI: 10.1108/JMHTEP-10-2015-0048 <https://dx.doi.org/10.1108/JMHTEP-10-2015-0048>

DOI 10.1108/JMHTEP-10-2015-0048

ISSN 1755-6228

Publisher: Emerald

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## **Abstract**

### **Purpose**

This paper discusses the use of virtual reality for experiential learning in dementia training. People have different perceptions and understanding of what it is like to live with dementia, particularly those that are new to dementia care, whether in a professional capacity, or as a friend or family member. Arguably the most powerful way in which to enhance understanding is to give people a glimpse of what living with dementia might be like.

### **Design**

The myShoes project aimed to create a resource that would augment a virtual environment and expose the user to an experience that gives them a sense of what living with dementia might be like. The resource was created using the latest virtual reality and game development software. A sample group of students from a mixed range of health professions tested the resource providing in depth feedback on its immediate impact and ideas for further development.

### **Findings**

Notwithstanding the limited sample on which the simulation has been tested, carefully designing the activities and constructing a learning space that allows for reflection on being placed temporarily in another person's shoes, appears to have enabled students to think beyond 'treatment, to considering how the person might feel and altering their approach accordingly.

### **Social implications**

The adoption of a virtual reality approach to training formal and informal carers has potential to enhance empathy and improve holistic care of people with dementia.

### **Originality**

The myShoes project adopts a novel approach to simulating the effects of dementia for training purposes.

**Keywords:** Affective learning; dementia training; empathy; simulation; virtual reality.

## **Introduction**

There are currently approximately 800,000 people diagnosed with dementia in the UK, and no imminent cure. The number of people diagnosed with dementia is expected to rise past 1 million according to the Alzheimer's Society (2012). Recent research estimates that for every child born in 2015, 27% of males, 37% of females and overall, 32% of all people will develop dementia in their lifetime (Lewis, 2015). Dementia is not classified as a disease, but an umbrella term for a group of symptoms that have occurred following changes to the brain. Within this overarching term several different conditions share many of the symptoms associated with the term dementia, with Alzheimer's disease being the most commonly occurring.

For many people dementia needs little explanation; many of us will already know carers struggling to cope with loved ones who have dementia probably at both personal and professional levels. Much of what is learned about dementia in a professional context appears to be through formal teaching and learning or on the job experience. Therefore it is possibly not surprising that research suggests that health and social care professionals feel least prepared to cope with patients with dementia (Young et al., 2011). Burrow (2010) also highlights the inadequacies frequently experienced by those confronted with having to care for people with dementia but stresses that rather than pointing the finger solely at nurses there is a breadth of health and social care staff, domiciliary and care home workforce and paid and unpaid voluntary sector workforce that require up-skilling if care for people with dementia is to be enhanced.

Feelings of inadequacy highlight shortfalls in current training programmes and yet the situation persists even though the connection between care and quality of life has been established; 'positive input from health and social care services and from the third sector and carers of people with dementia can make all the difference between living well with dementia and having a poor quality of life' (DH, 2009: 7). As a progressive condition that affects the person's memory and cognitive function, dementia results in personality changes, impaired reasoning and forgetfulness, which can cause frustration for the person as well as the caregiver.

People with dementia are often not able to appreciate their emotions or communicate their needs, desires or intentions. They experience confusion and misunderstand processes or the sequence of everyday activities. Such unpredictable and potentially distressing behaviours which result can leave formal and informal carers frustrated and at a loss to know how to cope with the situation so as not to cause further distress. An essential component of the care approach needed is the development of empathy with the person with dementia.

Empathy is itself a 'complex form of psychological inference in which observation, memory, knowledge and reasoning are combined to yield insights into the thoughts and feelings of others' (Jackson, Melzoff and Decety, 2005: 771). Empathy is defined in many different ways (Davis, 1996; Decety and Jackson, 2004; Ickes, 2003), however, one significant and common conceptual characterization relates to sharing another person's emotional state or experiences; what is termed an 'affective response' to another (Jackson, Melzoff and Decety, 2005). Whilst the development of knowledge of a condition is feasible through traditional teaching routes it is not easy to see how affective aspects of learning such as the development of empathy can be promoted by these means. Only through exposure does it seem likely that depth of understanding and some degree of empathy might be nurtured, although such exposure is challenging. Given that people find it easier to relate to others when they have shared experiences (Dieckmann, Gaba and Rall, 2007) the need for a safe space in which to develop appreciation of dementia could alter perceptions dramatically simply by allowing a carer to stand temporarily in another's shoes.

### **Past approaches to simulating dementia and old age**

Past approaches to dementia simulation, such as The Virtual Dementia tour (Beville, 2002), physically impairs the user with sensory tools, whilst the user tries to accomplish simple day-to-day tasks, such as tidying plates from the dining table. Although the sensory tools do achieve an augmented sense of reality, such as stiffening movements, simulating glaucoma through special goggles, or dampening hearing with headphones and static noise, these approaches tend to simulate age related impairments. Many patients experience age related impairments alongside dementia, but these are not a direct result of the dementia itself. The challenge is to simulate dementia when we have limited insight into how it might feel.

Previous attempts to simulate what it would be like to have dementia focus on improving simulation fidelity (the reality of the experience), simulation validity (the authenticity of various aspects of the simulation) and simulation presence (visceral feeling of actually being in a simulated environment (Feinstein and Cannon, 2002; Lombard and Ditton, 1997)). However, opinion is varied on the effectiveness of high fidelity simulations. It has been argued that high levels of fidelity, validity and presence on their own may not influence learning *per se* (Rettedal, 2000; Salas and Burke, 2002); nevertheless, when these factors are critically implemented in a training simulation alongside robust learning pedagogies it is claimed that meaningful learning can take place (Dieckmann, Gaba and Rall, 2007). Simulating cognitive impairment is not something easily achieved through conventional approaches therefore the myShoes project attempted to build on past knowledge of simulating dementia by developing and evaluating a virtual reality experience. The aim was to investigate the extent to which dementia could be simulated and the response to the experience, including specifically the empathetic responses of participants.

Virtual reality is mainly used in health care education to support training via simulation (Mantovani et al, 2003). Trainee doctors benefit from practicing surgical tasks in virtual environments as their real life surgery times are reduced by up to 50% as opposed to those trainees not exposed to virtual reality training (Larsen et al, 2012). Training in virtual environments is also reported to improve communication, skills and confidence (Merchant et al, 2014)). However, Peterson and Robinson (2013) note that the virtual reality systems are not very reliable because they stall and lag, thereby distorting the simulation experience. They are also expensive and use a lot of computing power as such there is a need to ensure competency is perfected in real life situations. Recent improvements in the technology are dealing with this challenge.

### **Methodology**

This exploratory study employed a mixed empirical approach to investigate the use of virtual reality in dementia training. The aim was to focus on three major aspects of dementia training:

1. Increasing awareness of the symptoms and lived experiences of dementia patients
2. Supporting an increase in empathy

3. Encouraging participants to reflect on their practice with respect to care and competence when dealing with people with dementia.

The study objectives were to:

- Collaborate with dementia experts to identify the common features of dementia and age related sensory impairments which could be simulated
- Build a prototype simulation of the common features of dementia
- User test and pilot the prototype with a multi-professional group of health and social care students
- Collect pre and post-intervention data on immediate impact on perceived confidence, competence and compassion
- Analyse data to identify process outcomes (what students have learned from the immersive experience).

#### *Building the prototype*

Virtual Reality (VR) immerses the user in a computer-generated world through the use of a stereoscopic head mounted device. By creating a virtual environment, the state of this world can be manipulated to misdirect and confuse the users as they try to achieve simple tasks. For example, if the user chooses to clear the dining table, the plates can be returned to the table when the user is not looking, leading them to question whether they completed the task in the first place, or not.

By immersing the user in the virtual world through VR technology, the user feels a greater sense of presence, the sense of “being there” (Yee, 2004). VR allows the user to move their head around as if it were their own, with the screen updating the picture as the head turns or projects forwards, backwards, and side to side. Through the use of an avatar they are afforded situational, as opposed to dispositional reflection. Situational reflection leads the subject to become aware of their own action and attribute meaning to it (Nelissen and Tomic, 1993). Yee’s discussion on perspective taking suggests that a brief immersion into the avatar of an elderly person has a significant effect on the attitudes towards the elderly in general (Yee, 2004). That is to say, quite simply immersing the user in a new [virtual] body allows them to make new connections with a persona that is not their own. The immersive phenomenon of simulating the mindset and persona of a protagonist, referred to as ‘experience-taking’, allows users to lose themselves and assume the identity of the character, adopting the characters thoughts, goals, traits, and actions and experiencing the narrative as though they were that character (Kauffman, 2012). The narrative is a fundamental part of developing perceptions of another character.

Dementia is known to cause disturbance of multiple higher cortical functions, including memory, thinking, orientation, comprehension, calculation, learning capacity, language, and judgement. The impairments of cognitive function are commonly accompanied, and occasionally preceded, by deterioration in emotional control, social behaviour, or motivation (Sink, Holden and Yaffe, 2005). To replicate these effects, a number of functions were added to challenge the user as they tried to accomplish tasks through an open-ended scenario. The choice was made to avoid a linear based scenario so that students could behave as they would in real life, with freedom of choice, but also to promote perspective taking in tandem with the ‘think aloud’ technique (Cotton and Gresty, 2007); the student can reflect as they interact. For example, one student said “*I am trying to make the tea, but I can’t find the milk; it was there, right there, or was it, I think it was there*” (Female, Occupational Therapy student 2<sup>nd</sup> year).

Simulation is often skill based and designed to support students to practice a skill or competency that will be impossible or difficult to try on a real patient. This study however, investigated the social or interpersonal aspect of simulation (Dieckmann, Gaba and Rall, 2007). This involved not only careful selection of suitable equipment and software for the specific training goals but incorporated the development of the context for the training (Kneebone, et al. 2006), the debriefing exercise (Rall, Manser and Howard, 2000) and generally the culture of the exercise to motivate and inform participants and instructors.

#### *User Testing*

Ethical approval for the project was secured through the Coventry University ethical clearance process. A prototype resource was developed based on the case studies recommended as suitable by dementia experts. A

general invitation was sent out to students in the Faculty of Health and Life Sciences to user test the resource. Fourteen students participated, critiquing the concept design and suggesting improvements. In response to feedback the resource was upgraded. Changes were made to the visual and audio overlay system which allowed effects such as glaucoma, macular degeneration and tinnitus to be incorporated within the user experience. Though such conditions are associated with other age related ailments, they often combine with dementia to exaggerate feelings of isolation and frustration. The Macular Society describes how sight loss has multiple implications beyond the physical and technical inability to visualize objects; ‘one of the first feelings many people have is that of isolation’ (Macular Society, 2013:.2). Overlaying sight loss helps to further draw the participant into the virtual embodied experience, generating feelings of uncertainty and vulnerability.

The enhancement of the resource also included using the head tracking functionality so that the user could lean into the simulation to examine virtual items more closely and additional audio activities such as messages being left on the answer machine that were engineered to be mildly incomprehensible. Though not all of the student feedback was incorporated prior to the second pilot, an attempt was made to use the three month period in between both cycles to ensure the resource reflected the experiences with which a person with dementia may have to deal.

### *Evaluating Impact*

The second pilot study attracted Fifty five self-selecting students studying health and social care degrees, including adult and mental health nurses, clinical psychologists, occupational therapists, paramedics, physiotherapists and social workers. All participants completed pre and post simulation questionnaires designed to collate opinions about dementia patients’ attitudes and behavior, and self-perceived confidence, competence and compassion scores in relation to treating patients with dementia before and after the simulation. The pre-test questionnaires requested information about students’ previous understanding of dementia. The post-test questionnaire included questions about the impact of the resource on the participants’ understanding of dementia and how the resource could be improved. In addition, three standardized self-reporting questionnaires were also completed by the participants prior to taking part in the simulation. These were:

1. The Davis’ Interpersonal Reactivity Index (IRI) (Davis, 1980) to assess the ability to take the perspective of and have empathic concern for others;
2. The Inventory of Interpersonal Problems (IIP-32) (Barkham, Hardy, and Startup, 1996) to identify any issues that participants might have with interpersonal relationships that may affect the myShoes experience;
3. The Generalized Anxiety Disorder 7 (GAD7) (Spitzer et al, 2006) as significant anxiety issues can affect the participant’s ability to engage in emotionally challenging tasks, learn and assimilate new information and also empathise.

During the virtual experience each participant was recorded articulating their thoughts and views as they entered the simulation and engaged with the activities. This ‘think aloud’ technique (Cotton and Gresty, 2007) was used to gain immediate access to the thought processes occurring during immersion. Researchers also independently observed participants’ movements and involuntary physiological responses to capture non verbal information. It was noted that most participants were able to maintain a natural style of movement and pace similar to real world interaction. Where exaggerated or excessive head and mouse movements were made it was evident that the participant was experiencing navigation issues. This in some cases was characterized by perspiration or facial flushing occurring, signaling a heightened level of anxiety or even feelings of simulation sickness.

### **Simulating dementia – the myShoes experience**

Data from the self assessment tools were analysed showing that all the participants were within normal range of anxiety levels and there were no statistically significant personality trait disorders. Therefore all the students who took the 3 self assessment tests were able to participate in the simulation experience without any anxiety concerns.

Participants begin their experience in a purpose built lobby area, where they spend some time familiarising themselves with controlling VR through the use of a head mounted display, mouse and keyboard. They then start the dementia simulation in the virtual self contained flat, similar to one found in a residential home, although not specifically one that caters directly for people living with dementia. A generic setting was chosen so that the user experienced a situation in which they are not dependent on carer intervention.

When entering the flat, participants are instructed to explore the environment, carry out any “day to day” tasks they find, and behave as they would in their normal life. The tasks involved include, making tea, tidying the table, emptying the bin, listening to messages, watching TV, having a shower, amongst others. The tasks, or other environmental objects incorporate misdirection as an approach to instill a sense of confusion. One scenario is that the participant clears away the milk, bowl and breakfast cereal from the dining table. They then may decide to make a cup of tea. They may look in the fridge to find the milk is not there, look around further, and finally return to the fridge to find it is there. The participants reported that the realistic scenarios and debriefing after the experience helped them consolidate their understanding of what it might be like to be confused:

*I feel I now understand how it feels for the individual. It left me feeling confused and vulnerable (Female, Mental Health Nursing Student, 1<sup>st</sup>Year).*

*I was surprised at my emotional response, i.e. feelings of helplessness, frustration, despite having an understanding of dementia before the simulation (Female, Occupational Therapy Student, 3<sup>rd</sup> Year).*

*This is very helpful... we get thrown into placement with lots of theory – many of us have never worked with older adults. This gives context ... We have a lot of patients presenting with depression, I mean we hear patients and what they say, but with this [myShoes] I understand. I will also stop making tea if it was so hard to do (Male Clinical Psychology Student, 2<sup>nd</sup> Year).*

Age related filters were present for glaucoma and cataracts. Although not directly linked to dementia, these were noted as being particularly effective, as they simulate disease and feelings of confinement that can develop alongside dementia, making completing tasks, moving and finding objects particularly difficult. Auditory sense was also impaired through simulation of tinnitus, and frequencies hearing loss.

*It was a really insightful experience, especially the visual impairments. I got to feel how much these could impact on daily living and how difficult it could be to perform normal activities (Female Occupational Therapy Student, 3<sup>rd</sup> Year).*

### **A realistic approach to training**

As a complex condition, dementia presents certain teaching challenges; for instance how to gauge responses to an experiential learning intervention. Philosophically, it is problematic to effectively measure empathy or even decide how it can be assessed (Shapiro, 2002). It was decided that students would be asked to self assess their empathy, confidence and competence (in relation to dementia patients) in pre and posts tests. The activities were also deliberately and strategically developed to support the three main goals of a proposed training model. Great care was paid to fidelity, validity and presence (Dieckmann, Gaba and Rall, 2007) for the simulation. Essentially, it was anticipated that the participants would be able to gain a “personalised” experience due to how real and authentic they found the simulation to be. A number of students reported that the simulation achieved a high degree of presence and validity, making them think of the simulation as real:

*Very realistic, felt like I was really there, felt like I lost track of time. (Female, Physiotherapy Student, 3<sup>rd</sup> Year).*

*Think that it's a great way to experience someone else's life as it really involves you in their world (Male, Occupational Therapy Student, 2nd Year).*

Students were also able to make symbolic links with patients they had known in the past and affective aspects of learning were evident:

*Makes you realise the danger you may be in. Feeling anxious within your own home. The confusion aspect worked well* (Female, Occupational Therapy Student, 3<sup>rd</sup> Year).

*It clarified my beliefs from current experience* (Post Graduate Paramedic Students)

The experience as a whole is meant to provide good opportunities for students to learn by what they observe in the virtual environment and thereby directly influence their affective response to patients with dementia. In relation to the focus of the resource as a training resource we wanted to investigate if students had:

1. Improved awareness of the symptoms and lived experiences of dementia patients - explored through direct feedback in the debriefing exercises
2. Increased empathy for people with dementia - assessed by comparing pre and post test scores for compassion
3. Enhanced reflexivity about the care they provide and their practice when engaging with people with dementia. Students were asked to reflect on their practice three months after the simulation (many had placement opportunities and some students had contact with dementia patients or family members with dementia during this period).

*Improved awareness of the symptoms and lived experiences of dementia patients*

Prior to the simulation, 87% of the students had contact with people with dementia; some 36% had family members who had the condition. These students demonstrated that the resource effectively showed them the perspective of the dementia patients. They said theory often decontextualised the patient, listing symptoms and behaviours without necessarily providing a framework of how the situation affected people socially and physically:

*This really makes you think, you think what if? It is seeing from their (dementia patients) perspective* (Female, Adult Nursing student, 2<sup>nd</sup> year).

*I have not had this kind of simulation before; this is really what they are experiencing. It is a really good tool. I can use it when working with families* (Female, Clinical Psychology student, 2<sup>nd</sup> year).

*One of the service users will say 'are you speaking English?'. That was how the telephone message felt – I thought was this English?* (Female, Occupational Therapy student, 1<sup>st</sup> year).

*It was very scary. Wow, very scary to live like that every day. I will be so aggressive if that was happening to me* (Female, Occupational Therapy student, 1<sup>st</sup> year).

*I worked in a care home and you can actually understand it from their perspective with this (the simulation)* (Female, Mental health Nursing student, 1<sup>st</sup> year).

*The glaucoma was real, that is how my grandfather says it feels with the bright lights and things moving, that felt really authentic. You understand him now.* (Female, Paramedic Student, 1<sup>st</sup> year).

*It makes things so much harder. My gran has macular degeneration, she says she is blind, now I understand. I used to think no you are not, but it must be so hard!* (Female, Occupational Therapy student, 2<sup>nd</sup> year).

The authenticity of the simulation helped the students discover behavioural motivators which they linked to dementia patients. The simulation was deemed to be valuable for gaining knowledge even though it is not designed to provide new facts. However, as the students interpret and reflect on the simulation, they highlight significant learning experiences which they say deepens their understanding and also increases their levels of empathy. *Increased empathy after the simulation*

The resource is delivered as an abstract first-hand experience with the aim of attempting to develop the affective empathy of the learner. Students' responses suggest that this was achieved. For instance, some say they "feel sorry" for the person or they understand "how hard it must be" for dementia patients after their simulation experience. Other responses illustrate affective impact:

*I was only in their 15 minutes, imagine feeling like that 24 hours a day every day?* (Female, Occupational Therapy Student, 2<sup>nd</sup> year).

*It must be awful, really, really frightening. It was difficult to do anything because of all that is going on* (Female, Mental Health Nursing Student, 2<sup>nd</sup> year).

Affective empathy is literally different from compassion; however, both terminologies are often used interchangeably to express feeling for another (Warner, 2008). The pre and post surveys used the word 'compassion' figuratively to capture the essential sentiment students associated with responding to others in a clinical setting. Students were asked to post a self assessed compassion score before and after the simulation. To increase the validity of the scores, we asked the students to mark their scores on a 10cm line. The data was then collated by measuring the scores with a ruler. Using a marker on a line instead of a numeral reduces the chances of students unconsciously choosing a number they perceive to be "right", instead they are encouraged to deliberate and select a position on the line they feel reflects their current disposition, in this case level of compassion for people with dementia.

The pre and post questionnaires specifically measured self assessed confidence, competence and compassion. The results are shown in Table 1.

	Mean	SD	<i>d</i>
Pre-test Confidence	4.35	2.50	
Post-test Confidence	5.75	2.61	0.90
Pre-test Competence	4.36	2.59	
Post-test Competence	5.84	2.50	0.93
Pre-test Compassion	8.48	1.73	
Post-test Compassion	9.10	1.65	0.51

Repeated measures *t*-tests:

Pre vs. post confidence:  $t_{(54)} = 6.69, p < .001$  (two-tailed).

Pre vs. post competence:  $t_{(54)} = 6.89, p < .001$  (two-tailed).

Pre vs. post compassion:  $t_{(54)} = 3.76, p < .001$  (two-tailed).

Effect size *d* was calculated using the formula by Morris and DeShon (2002) for repeated measures analyses.

Table 1: Statistical report from pre and post tests: mean, standard deviation, effect size

Overall, the students' empathy scores as reported in the pre and post questionnaires increased by 7.31%, immediately after the simulation as shown Figure 1. This was statistically significant as a two-tailed ANNOVA test demonstrated –

*Pre vs. post compassion:  $t_{(54)} = 3.76, p < .001$ .*

Furthermore, we noted that there was a significant increase in compassion among students who had medium pre test scores (i.e. those who reported scores between 3.6 and 7.0). Students who had the least empathy before the test, showed the most significant increases in compassion for people with dementia in post test analysis. Students who already had high levels of empathy (i.e. between 7.0 and 10) still showed that their levels of compassion after the test increased. Of the fifty-five people who took part in the test, six reported a decrease in their compassion, though the decline was relatively small and not statistically significant (See



Table 2). We discussed the decrease with students during the interviews. One student said she had better understanding of the condition and so did not “feel sorry” for people with dementia in the same way. That actually accounted for the majority of overall decrease in scores. It may be that procedural knowledge blocks compassion or the conceptualization of compassion could be different for individuals. It would be useful in the future to distinguish ‘compassion’ as understanding how another person feels as opposed to a sense of ‘pity’. The other participants said they improved their understanding; but felt the same levels of compassion and a careful examination of the data confirmed that a number of students had similar scores for pre and post tests. However, because the data was collated on a line, what may have been intended to be a mark in a similar position on both tests, actually measured as a few millimeters less. The decreases were individually negligible.

COMPASSION	Pre test mean	Post test mean	Percent increase	Pre test mean	Post test mean	Percent decrease
Low score (0 – 3.5)	None	None		None	None	
Medium Score (3.6 – 7.0)	6.5	8.75	34.62%	6.5	5.5	1.0%
High Score (7.1 – 10)	9.04	9.6	6.19%	9.3	8.2	1.1%

Table 2: Compassion pre and post tests statistics segmented by low, medium and high scores

We anticipated that any increased understanding, awareness and empathy, should have some impact on practice. Accordingly, we interviewed some of the students again after their clinical placements. Those who worked on dementia wards reported that they thought about the simulation during their experience; they noted it made them more conscious of how they responded to patients because they had a better understanding of how they might be feeling. Most of the students had no contact with patients with dementia during their placement.

#### *Reflecting on care and clinical practice*

The simulation provided an opportunity for students to reflect about their own practice and assess the skills and competencies they need to work with people with dementia. The students had clearly gone through an experiential learning process, where they were making meaning from direct experience, namely learning through reflection on doing (Hudlicka, 2011). By allowing the students to spend time trying to complete tasks, and challenging them through their progress, the student is able to reflect whilst doing, and actively experiment during their time in the simulation. During interviews three months after the simulation experience students were asked to discuss how they interacted with dementia patients in the post simulation placements:

*Since my participation I have had contact with two patients with cognitive impairment. Following my virtual experience I have been able to use it to zone into each of my service users' worlds that they believe they are living in to a better extent than I believe I have achieved in the past....In the past I may have potentially given up and transported them to hospital and left them to deal with the 'uncooperative patient'. It felt satisfying (Male, Paramedic Student 1<sup>st</sup> year).*

*I wanted to say, on reflection, the activity was extremely useful in providing a realistic environment on what a person with dementia may be experiencing and I felt that this was useful in terms of gaining a real understanding, especially the feelings that someone may have (i.e. confusion, fear, frustration, disorientation and physical affects on a person; such as the noises and awareness of space/time and difficulties with sight/sound and the impact this may have on a persons' daily life). Additionally, I felt it was extremely beneficial to get an insight into what a sufferer may be experiencing with a diagnosis of tinnitus and macular degeneration (Female, Occupational Therapy Student 2<sup>nd</sup> year).*

These insights suggest that the simulation experience can have a positive impact on the health or social care practitioner's practice, potentially addressing feelings of lack of preparedness (Young et al., 2011). Though only 10% (n=5) of the students reported contact with dementia patients during their placement, these

students reported reflecting on the simulation and actively thinking about their clinical decisions. It seemed significant that an essential feature of their change in practice was to think about how people “are feeling”. This illustrates just how potentially effective the simulation is in eliciting affective empathy by taking the perspective of the person with dementia.

## Conclusion

The myShoes project has demonstrated that VR simulation can be a powerful tool for training future health and social care practitioners as well as other formal and informal carers supporting people with dementia. Notwithstanding the limited sample on which the simulation has been tested, carefully designing the activities and constructing a learning space that allows for reflection from another person’s perspective, or being placed temporarily ‘in their shoes’, appears to have enabled students to think beyond just treating another patient, to making clinical decisions based on how a patients “feels”. Students appear to have thought beyond just acquiring skills or competency but also how their response or treatment impacts on a patient's feelings, dignity and overall wellbeing. Feedback from students following placement (though limited) shows how the simulation experience has informed their practice.

The technology, although still in its infancy, is showing great potential for removing the barrier between oneself, and one’s avatar. By coupling the perspective-taking situational reflection possible through VR, with the affinity afforded by an experience-taking narrative, the sense of connection is strengthened, and the degree of empathy heightened for the student. There is scope for improving the resource and designing activities and processes that will continue to support training in preparation for dealing with people with dementia. Future iterations will include the introduction of other characters into the simulation to provide additional learning experiences. The space to think about responding with compassion and developing the caring competencies needed for dealing with people with dementia will involve simulating more complex scenarios with multiple layers of complexity - for example conducting a clinical procedure on a person with dementia, communicating with them and their relatives at the same time. However, it is important to stress that the simulation is a tool; its use will be optimized not simply as a stand-alone resource but within a structured learning context that will enable students to reflect and thereby think of how the learning involves their actual practice and response in real world situations place (Dieckmann, Gaba and Rall, 2007). Its applicability for embedding in the curriculum across a wide range of health and social care programmes and for current and future caregivers is being considered.

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