

Use of role-play and community engagement to teach parasitic diseases

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Background. Role-play can enhance students' learning, improve communication and serve as an effective tool for team building. When combined with community engagement projects (CEPs), it can enhance empathy in challenges relating to the community. The benefits of role-play in medical education have been reported, but the impact of the strategy is unknown in the allied health sciences at universities of technology, where there is a need to improve pass rates.

Objective. To ascertain the benefits of role-play and CEPs in the context of understanding parasitic diseases by students enrolled for programmes in the allied health professions.

Method. Role-play and CEPs were used to facilitate students' learning of parasitic diseases. Students' perceptions of the influence of these strategies on their learning were determined through the use of a semi-structured questionnaire. Test scores of the students before and after the assignment were compared.

Results. The majority of students reported becoming more enthusiastic about their studies. They indicated that role-play with regard to the clinical features of the parasitic diseases added to their improved understanding of the disorders. Role-play also made the learning entertaining and informative, and enhanced class camaraderie. An improvement in the students' test marks and pass rates relating to this section was also observed. Students valued the opportunity to teach people in the community, which linked their learning to a community engagement initiative.

Conclusion. Learning through role-play and using a CEP to teach about parasites enhanced the quality of student learning in the allied health sciences.

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Role-play, as a teaching technique, can greatly enhance students' learning by asking them to enact a specific role that relates to their learning outcomes.^[1] It draws on students' creativity, improves their communication, serves as an effective tool for team building and increases analytical skills.^[2] Benefits of role-play in medical education have been reported,^[3] but the impact of the strategy is yet unreported in the allied health sciences at universities of technology, where there is a need to improve pass rates. Role-play, when combined with community engagement, can greatly enhance empathy in issues and challenges relating to the community.^[4]

The objective of this study was for 2nd-year students enrolled for programmes in the allied health professions at the Durban University of Technology (DUT), South Africa (SA), to ascertain the benefits of role-play and community engagement projects (CEPs) in the context of understanding the parasitic diseases. This study also explored the benefits of interventions on students' learning.

Methods

Ethical clearance was obtained from the DUT Research Ethics Committee (ref. no. IREC 030/14). Chiropractic and Homoeopathy students who registered in 2014 for the parasitology module in their 2nd year of study ($n=58$) were given an assignment on arthropod and mammalian parasites. The assignment was presented as a role-play in class and subsequently in a school or children's home as part of a CEP.

The assignment required students to work in self-selected groups of 6 - 8 members. Each group performed a play on a different arthropod/mammalian parasite, which included common community pests such as

flies, ticks, bedbugs, mosquitoes, lice, fleas, mites, rats and mice. The groups conducted research in relation to the parasite, including the parasitic life cycle, diseases caused, and prevention and control measures. Topics were allocated by a ballot method. Student groups prepared a research report that was made available to their peers on the online forum.

After delivery and assessment of the assignment, all students were invited to participate in the study; however, participation was voluntary and those who agreed to participate ($n=56$) signed informed consent prior to answering the research questionnaire, which was adapted from a study by Higgins-Opitz and Tufts.^[3] Responses required yes/no or degrees of agreement on a Likert scale. Additional comments were offered in an open-ended section. Questionnaires were administered by an independent research assistant. Test scores of the students before and after the assignment were compared. Data were analysed on SPSS version 21 (IBM Corp., USA).

Results

Respondents were mainly English (60%) and isiZulu (22%) first-language speakers. The majority (85%) found the topics interesting and relevant. They reported that the topics helped them to understand the parasites' life cycles (82%) and diseases (84%).

The majority of respondents experienced the role-play as beneficial to their learning. They thought that it encouraged and supported further self-study. They became more enthusiastic because of the creativity required during the project (73%) and it helped them to understand the relevance of their studies (77%). The majority of respondents (78%) indicated that they learnt more when preparing for the role-play. In addition, participation in

the play caused students to engage in additional reading and research of the parasites and parasitic diseases (74% and 78%, respectively; Table 1). The respondents agreed that role-play made the presentations more entertaining (82%) and that it helped them to gain an easier and better understanding of the disorder being studied (77%).

Those who were hesitant to speak in front of a large group indicated that the activity had helped them to overcome their fear of public speaking (58%). The role-play of other groups was equally informative (85%) and easy to follow (63%). Students valued the feedback from their peers, which helped them to identify deficiencies in their presentations (64%). Some students (34%) were, however, still reluctant to ask questions during the discussion time (Table 1).

The role-play enhanced class camaraderie (82%). The presentations allowed the majority to integrate new material with previously taught content (76%). Despite a small group (44%) indicating that the presentations were more informative than lectures, 78% thought that role-play should be continued in the future. While 71% found the exercise useful, only 56% wanted role-play extended to other parts of the curriculum (Table 1).

Most respondents were pleased to present as part of a CEP (80%). The CEP component increased their awareness of how education can help others (85%). The majority planned to become more involved in CEP in the future (84%).

The students obtained a significantly higher mean on their test scores (77.7 (standard deviation 10.9)%; range 53 - 95%) after the role-play intervention, when their marks were compared with the pre-intervention test (55.2 (17.0)%; range 11 - 91%; $p=0.005$). The pre-intervention and post-intervention pass rates were 72.4% and 100%, respectively.

Discussion

The intervention promoted active involvement of students in the learning process. It allowed them to be creative and to develop new skills. It had a positive impact on the students' learning, with the majority becoming more enthusiastic and active in the learning process.

Students found the topics stimulating and relevant to the course; it also helped in understanding both parasitic lifestyles and diseases. Students were very creative in their approach to and presentation of the task. The role-play took the form of short plays, which ranged from patient consultation with health practitioners, school scenarios, such as was seen in a lice presentation, to SA real-life situations, mimicking housing conditions of low-income workers through to taxi drivers. The plays generated a great deal of interest and humour among students and staff. The students indicated that the presentations were informative, enhancing class camaraderie. Role-play of clinical features of the parasitic diseases was perceived to improve students' understanding of the disorders. Other studies have similarly found that role-play increased learning and retention.^[3]

Role-play can serve as an extra strategy to assist weaker students, who generally struggle with abstract concepts.^[5] We also noted an improvement in mean test marks and pass rates after the role-play exercise, indicating that weak students, particularly, benefited from the intervention. As higher education institutions are striving to increase higher pass rates, the introduction of this type of intervention will be beneficial to both the students and the institutions. Interestingly, only 44% of respondents found role-play more informative than lectures. It is possible that this finding stems from our students' past, where they relied heavily on teacher-directed instruction, and that these students still need to become confident in their ability to research their own topics.

Table 1. Benefits of role-play and responses to a community engagement project

Benefits of role-play in the classroom, %	
Role-play by the other groups were informative	85
Role-play made the presentations more entertaining	82
Role-play contributed to a more friendly camaraderie atmosphere in the class	82
Role-play encouraged further reading on parasitic diseases	78
Learn more when having to prepare for the role-play	78
This method of teaching should continue in future	78
Role-play helped in understanding the relevance of the study	77
Gained an easier and better understanding of the disorder	77
Role-play helped to integrate material covered in other parts of the curriculum	76
Role-play encouraged further reading on parasites	74
Role-play caused more than usual enthusiasm about studying	73
Found the exercise useful	71
Audience feedback was helpful in identifying deficiencies	64
It was easy to follow the subject matter presented by other groups	63
Role-play helped in overcoming the fear of addressing a large group of people	58
Would like role-play extended to other courses offered in the 2nd-year programme	56
Generally reluctant to speak in front of a large group	56
Role-play is more informative than lectures	44
Hesitant to ask questions during discussion time	34
Responses related to community engagement, %	
Project created awareness of the need to be engaged in communities that need help with education	85
Plan to become more involved in community engagement projects in the future	84
Happy to present the work as part of a CEP	80

The students could easily follow and understand the peer presentations, indicating that they were able to learn from researching, role-playing and their role as a peer observer and assessor. Furthermore, our study indicates that students who were previously hesitant to speak in front of large groups of people now overcame their fear of public speaking. This is supported by a previous study, where role-play was used in the teaching of foreign language education.^[1] It has been suggested that role-play boosts self-confidence and raises self-education capabilities.^[2]

Our study was novel in that the students were required to present the role-play at an educational facility, such as a school or a children's home, as part of a CEP. Feedback indicated that this part of the project was favourably experienced and enjoyed. The majority intended to maintain their involvement in the community setting. Soon after the class activity, two groups of students returned to the respective children's homes to spend additional time with the children. The activity thus not only created sympathy for those afflicted by parasitic diseases, but created empathy for those less fortunate than themselves. Consequently, our students have taken steps to alleviate the plight of disadvantaged individuals.

The majority of students wanted the exercise to continue during the course. However, only 58% felt that such an exercise should be extended

to other sections of the curriculum. Similarly, a study conducted among SA medical students indicated that students did not want the exercise to continue in other parts of the curriculum, possibly owing to the large volume of work comprising the 2nd-year curriculum and the substantial amount of time required in the preparation of a good role-play.^[3] Nevertheless, the positive feedback received indicates that the exercise should be continued in future years for this part of the course, as the benefits would outweigh the extra time spent in preparing for the presentation.

Conclusion

This study indicated that the innovative method of teaching through role-play and a CEP was beneficial to students in the allied health sciences. The students felt good about directing their own learning. It allowed them to

read around related topics, in addition to the topic of their own presentation. Presentation of their work as part of a CEP was enjoyable and has made them more aware of issues surrounding those less fortunate than themselves. It was perceived as a positive learning experience and also improved pass rates.

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