RESEARCH

The Use of Blocks for Teaching Communication and Social Skills to First-year Pharmacy Students: A Qualitative Study

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Objective. Social and cognitive skills are an important component of undergraduate education. This study describes the use of an innovative educational workshop activity through collaborative play using LEGO to promote student-centric environment that encourages creative thinking skills and self-reflection.

Methods. Students were randomly allocated by Moodle into small groups of four and assigned to the following roles of either an architect or team builder to build a LEGO robot. All students were not allowed to speak during the activity. The architect was tasked to provide instructions to team builders to build the robot using non-verbal communication. After completion of the task, each group was asked to reflect on the exercise and share their learning within the wider group, which was video recorded and thematically analyzed.

Results. Students built metaphorical models which served as a basis for discussion, problem solving and decision making. The activity offered a non-confrontational way to support communication and learning process. Through this non-verbal interaction, students described how this activity enabled them to visually link abstract concepts to actual practice, such as decision making, and problem solving. Three themes were identified from the qualitative study: 1) Thinking with hands, listening with eyes, 2) linking theory to practice and, 3) Learning through reflection.

Conclusion. The use of an interactive game could be a useful teaching strategy to create an active learning environment, helping students improve their social and cognitive skills such as decision making, problem solving and communication.

Keywords: communication, constructivist theory, problem-based learning, reflective practice, social skills

INTRODUCTION

Person-centered care, which is based upon the premise that individuals have their own view and preference on their priority in their life, is integral to the delivery of safe and effective health care. Studies have shown that this approach results in improvement in patient adherence, disease outcomes and quality of life. A person-centered approach to care is built on three goals; eliciting the patient’s perspective on the illness, understanding the patient’s psychosocial context and reaching shared treatment goals based on the patient’s preferences, needs and values. As such, social skills or the ability to navigate interpersonal and social situations effectively using communication, leadership and teamwork are key competence for a successful health care encounter. These social skills, together with cognitive skills, which encompass the ability to understand complex ideas, adapt effectively to the environment, learn from experience, and reason such as critical thinking and problem-solving are essential for empowering patients to help them make more informed choices.

As a member of the health care team, pharmacists should develop these social and cognitive skills to ensure that they become a successful practitioner and contribute towards the optimization of health outcomes. Traditionally, the pharmacy curriculum has focused on the acquisition of knowledge, skills and attitudes. Students are expected to apply the gained knowledge and skills within and beyond the educational program. Over the past years, educators have advocated that this be transformed from a knowledge, skills and attitude acquisition to an integration of knowing, acting and being. Nevertheless, there remains challenges in designing an effective course that provides students with the necessary skills and knowledge that facilitate person-centered care.

The use of a collaborative game play has been widely used as a concept to facilitate students’ learning, foster teamwork and collaboration, and the support learning process through an informal setting. Research has shown that it can support higher-level discussion to enhance students’ social and cognitive skills. A large number of studies have investigated the use of different gaming approaches to support pharmacy education, including simulation role-play, card games, board games and crossword puzzles. These studies have shown that games can increase students’ interactive participation and spur excitement, as noted in the positive feedback from students. Another key strength of using collaborative games in teaching is the ability to promote student to student interaction and peer
learning, helping students to be more engaged in discussions. Indeed, play can increase social bonding as it brings together a sense of partnership, cohesion and cultural expression, which helps develop leadership, teamwork and cooperation.

The positive attitudes of students toward learning through games suggest the possibility of using games as a learning modality to teach social and cognitive skills such as communication and leadership. This build upon the constructivism theory that individual learners construct mental models to understand the world around them. Through building and constructing of a product or artefact, the student is able to construct theories and knowledge in their minds. The learners can then apply their knowledge through modelling and use of metaphors, thus formalizing the relationship that can otherwise be difficult to comprehend. Through play, learners are now able to achieve a greater degree of authenticity to connect with their emotions and intuitions.

The use of building LEGO models as a game play technique for teaching and learning in higher education has gained much attention and research over the past few years. Using LEGO, these studies had attempted to create a safe space without any bounds or social norm for learners to speak up and allow for their authentic voices to be heard. Studies have shown that this method was able to create a collaborative communicative learning environment for participants to share, develop and express their ideas. The use of LEGO also allowed learners to build metaphorical models which were used to represent their experience and ideas. From ensuing discussion, participants’ feedback that it provided them with multitude of opportunities to work in groups and develop social and cognitive skills.

The Bachelor of Pharmacy program at Monash University aims to nurture students that will be able to demonstrate the concept of a “7-star pharmacist”: care giver, communicator, decision maker, community leader, manager, life-long learner, and teacher. To achieve this, educational faculty members have chosen to expose students to the roles of a pharmacist very early in the course curriculum using a variety of strategies. Since 2017, the school regularly invites practicing pharmacists to share their experiences with first-year pharmacy students in a 1-hour interactive lecture followed by a 2-hours workshop. During the workshop, students take part in a “world café” event, where they share and reflect on what they heard from the pharmacists during the lectures and how they relate to the 7-star pharmacist concept. Nevertheless, one challenge we identified was that students often lacked engagement and were unwilling to share ideas for discussion. In this study, the authors aim to describe the design and assessment of an innovative education game workshop using LEGO bricks to increase and foster students’ social and cognitive skills.

METHODS

In 2019, the authors developed a LEGO building workshop as an alternative learning activity to help stimulate discussion among year 1 students. The workshop was designed for students to engage in two activities, the first in which students built their ideal robotic model, followed by a reflection of the activity. The goal of the workshop was to enhance students understanding of effective communication, collaboration and decision making. This was enabled via the social and emotional activities of closely working in teams for the purposes of co-construction, which requires active listening, dialogue and receptiveness to the perspectives of others.

At the beginning of the workshop, students were randomly assigned into groups of four based upon their enrolment through Moodle. Each group was given a pre-mixed bag of 30-50 pieces of LEGO of various shapes, sizes and color. Students drew cards which determined if they took on the role of either the architect or team-builder. Throughout the activity, students were not allowed to speak with one another. The architect was also not allowed to touch the blocks, but could provide instructions using non-verbal communication. The builders in the team were required to assemble a pre-specified model based upon the non-verbal instructions from the architect. Through this activity, we hoped that students will be able to realize the importance of non-verbal communication in their future practice as pharmacist.

While the play aspect was an important component of the workshop, research has shown that this needs to be balanced with an appropriate level of challenge to ensure that interest and engagement was maintained. To achieve this, the architect in each group was given a limit at the beginning of the activity and asked not to share this limit within the group. After every 5 minutes, an additional set of instruction or limit was given to each group or an individual student within the group until the task was completed. No additional instructions were given to students. Some examples of the limits include creating a model using only a single block color, building a model that was at least 8 blocks high or building a foundation layer consisting of 20 bricks. With these limits, students were forced to work collaboratively within and between groups, since it may require them to communicate or even exchange bricks with the other groups.

After the activity, each group was asked to create a poster, reflecting and focusing on which element of their activity struck a chord and how it was related to the concept of a 7-star pharmacist. Each group was required to present their reflection of the activity to the wider cohort of students comprising of up to 8 groups and was video recorded. Faculty members who acted as workshop facilitators were available to provide constructive feedback and
reinforce the importance of reflective practice to students. Students were also provided the opportunity to ask questions and give any suggestion or comments, providing them with an opportunity for reflective sharing.

To evaluate the success of the workshop, we determined that an inductive qualitative research rooted in grounded theory was the most appropriate approach. The following research questions were identified: “How does the use of LEGO contribute towards development of social skills?” and “How does the student feel using the workshop to develop skills?” Following the workshop, all students were sent a post-workshop survey of 6 open ended questions which aims to capture the students’ perspective regarding the design and implementation of the workshop, any emotions experienced, comfort levels with the workshop and perceived value of the workshop. The survey was distributed online via Qualtrics (Qualtrics, Proto, UT). To triangulate the self-reported data, video recordings of students’ reflection during the workshop were also viewed to explore potential connections between students’ reflection and self-reported questionnaire.

Both textual data and video recordings from the students were coded independently by the authors for thematic analysis, and both authors met to discuss the coding results and a consensus was made when differences existed. Finally, these codes were group into themes and subthemes and reviewed before data analysis and reporting. The authors received the Monash Human Research Ethics Committee board approval for the conduct of this study (Project: 18646).

RESULTS
All Year 1 students enrolled in the course during the 2019 academic year completed the workshop and assessment (N=114). The mean age of students was 20 years and majority were females (n=90; 78.9%). Post workshop perception survey indicated that students (84%) thought that the workshop helped improve their communication skills. We observed that students were highly engaged during the session. Most groups made a Lego model which were similar to illustrations observed of a human robot. However, several groups also created very different models that explained the concept in an unusual yet memorable manner. For example, one group built a crocodile for the task, and describe the importance of non-verbal communication and eye contact for communication. They related how play was important for learning not only just as a child, but throughout life. Other aspects described include the importance of being a decision maker and taking up the position as a leader to ensure that the task got completed. Another group built a snake and related how that reminded them of Caduceus. They describe what the symbol meant, especially as a health care professional and the importance of empathy and caregiving. Analyses of qualitative comments and video recordings also found three emerging themes from this exploratory study. The themes identified can be categorized as follow: “Thinking with hands, listening with eyes”; “Linking theory to practice” and “Learning through reflection”. Results are presented below, aligned to the research questions with supporting exemplar quotes in Table 1.

The LEGO activity acted as a non-confrontational and friendly way to support communication between students. A majority of the students realized how the activity helped them to improve their communication skills and its importance as a pharmacist-in-training. Participants mentioned the importance of non-verbal communication, listening and presentation skills to accomplish the given task. From the video recordings, we observed an interplay of social and cognitive skills during the activity, including decision making, teamwork, leadership and time management. Students highlighted the conflict resolution aspects of the workshop, and saw the value of the activity in emphasizing the range of views they had obtained: “Even though we could not communicate, we managed to complete the task given. I learnt that having skills such as being a decision maker and communicator are important because without communicating effectively and making a decision efficiently, the task would not have been completed.”

The next theme identified were related to the learnings gained by students. Students reportedly found that the activity aided them in drawing out insights regarding practice situations. In particular, several students specifically foregrounded the value of the activity to be able to link between theory and practice. This coupled with the poster creation activity provided students with a concept map, as these concepts were broken down into small bite size understandable segments which student felt they could subsequently built up. Students found the activity to be very fun, engaging, and served as a conduit where they could engage with each other. For example, one student shared “The workshop activity taught me that learning can be creative and fun but impactful at the same time”. Some of them also felt that the greater engagement helped to result in deeper thinking and long-term retention of learned concepts. These skills gained were something that they felt was not possible to learn from textbooks.

The final theme summarizes the insights gained by students. Students reported that the activity provides an opportunity for them to self-reflect about their own thinking and their progress. For example, students mentioned that they felt they were able to manage the task better if they had been more organized, and delegated the task among team members at the beginning of the activity. They wished that they were more decisive, proactive in offering opinion and stepped up to volunteer for the presentation. Several students also acknowledged the usefulness of the activity in teaching them about team building: “I learned that team-work makes the dream work and that communication is the key to the outcome of every project.”
DISCUSSION

Our study found that using LEGO as a form of play can be useful to support learning and preparing health care students with the practical skills needed to enhance social and cognitive skills. Results indicate that the activity created an opportunity for peer-learning, as it allowed students to engage within and between group members, as well as conceptualize their journey and development as future pharmacists. More importantly, the LEGO activity allowed students to use this as a tool for communication, as it provided them an opportunity to articulate their views and vision. It also taught them the importance of listening. Based upon the qualitative responses of students, we noted several examples of growth from the depth and quality of reflection. In addition, we observed that some models created by students allowed them to express more creatively and visualize their learning, thus enhancing the student’s learning experience. While the introduction of this activity to teach social and cognitive skills was experimental, our evidence suggests that it works. Overall, the activity made students feel more relaxed and enabled them to communicate through a more stimulating and enjoyable manner. The building of the LEGO model allowed students to build something that represented their knowledge and understanding of what it meant to be a pharmacist. In the discussion that ensued during the poster creation session, we observed elements of peer-led team learning, where students began to engage with each other to enhance their learning.28

Active learning has part of the teaching ethos in our faculty. As such, teaching activities were designed to ensure that any problem-solving and decision-making exercise had an active participation among the groups. The LEGO workshop embraced this principle, where through active play, students were able to demonstrate their understanding of how these skills were important for their future development as pharmacist. The activity allowed students to explore and construct objects to demonstrate a deeper understanding of concepts of decision making and problem solving.29 While the use of LEGO has been examined in other disciplines such as engineering and business courses, only limited studies have attempted to use LEGO in the teaching of health care students at institutions of higher learning.17, 30-32 In a separate study by Kirby and Pawlikowska, the authors examined the use of LEGO to teach the basics of pharmacology. In their study, the authors used elements of play, teamwork and peer-teaching to revise the core concepts in pharmacology. Students reported that the activity was an enjoyable learning experience to learn difficult concepts that would sometimes be termed as boring.33 They also found an improvement in students’ knowledge, as shown in the higher MCQ scores following the Lego interaction. Harding and D’Eon used LEGO in their workshop to introduce 1st-year medical students to patient-centered interviewing. They noted that the activity supported the development of effective communication and students expressed more confidence on questioning techniques.34 Similar to this study, the authors found that students were able to be more aware of what they had learned from the activity.

Studies have reported that learning is often incomplete without a debriefing, since it allows students to understand the purpose of the activity. Debriefing allows for students to be fully engaged in the process to elaborate and describe their roles, and socialize with new members for their future working environment. As such, our activity deliberately included a debriefing activity, which afforded students an opportunity for reflection, a valuable component in the experiential learning process of students. During this activity, students described how they were able to reflect further on the experiences and were able to better integrate their prior learnings and how these would apply in their future roles as pharmacists. Students spoke enthusiastically of the workshop and indicated that the LEGO activity was the highlight of the session. Some additional reflection from students also described the importance of using a multimodal communication strategy to give instructions. Students seemed to have little trouble in identifying with the activity and how this analogy was related to the social and cognitive skills they would need to develop to succeed as future pharmacist.28

In this study, we attempted to triangulate our data using students’ self-reflection and debriefing sessions which allowed us to explore similarities and shared themes as well as preserving the granularity of experiences. We had purposefully video-recorded the sessions to ensure that we would be able to review, and gave equal weight to each participant’s account in our analysis and write-up, which further boosted the credibility of these findings. While this is useful, the small sample size of our cohort may limit the transferability of findings. Our workshop was a very simple yet cost-effective teaching method that can be implemented by most educators from various discipline. While technology-enhanced learning are now becoming more widely adopted, they do incur significant setup cost which can be prohibitive.35

This study has some limitations. As this was an exploratory study, the activity was conducted once over a short time span. As such, the activity may not suit all learning styles since students may learn at different paces, with some requiring more time to fully develop their skills. Our cohort was limited by the diversity, given that most of the students were females, and middle-class, typical of students enrolled in a health care pharmacy course. Finally, we did not assess the changes in knowledge or skill domains of students’ pre and post workshop. We only assessed the students’ perception of the activity as it was not feasible for us to track the changes over a longer time span. Nevertheless, we believe that the use of LEGO is a good interactive activity which can help students think about the important qualities they should develop as future pharmacists.
CONCLUSION

In summary, we describe an innovative activity for teaching social and cognitive skills to health care students. The activity provided an environment where students could engage freely and articulate their views and opinion through a fun and engaging way. Through the building of LEGO models and group work that ensued, students reported an improved understanding on how skills such as decision making, problem solving and communication are important to prepare for their roles as future pharmacists.

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REFERENCES

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<tr>
<th>Research question</th>
<th>Theme</th>
<th>Student quotes</th>
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<tbody>
<tr>
<td>How does the use of LEGO contribute towards development of social skills?</td>
<td>Thinking with hands, listening with eyes</td>
<td>I learnt to be a leader and to speak up on issues that matter to the group. I learnt to make decisions in a quicker amount of time. Due to the fact that we were given limited amount of time, I had to quickly decide on the bricks used. Furthermore, I learnt the importance of communication skills even though we only communicated through sign languages and gestures. The importance of working in a team. Communication is important for the exchange of information.</td>
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<td></td>
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<td>I learned to communicate with my teammates through non-verbal communications as well as developed confidence in making decisions I also learnt to think outside of the box such as improvising my communication skills with my team members to accomplish the given task .. we practiced communicating non-verbally, using things like gestures and eye contact during the activity I’ve also learnt that not everyone can be the leader. Sometimes we need to give way to others so that there will not be conflict in the team How to listen to others’ opinions and ideas. I have developed the skills of having a good communication with team members We learned about the qualities that a 7-Star pharmacist should exhibit. Furthermore, we learned that not every quality of a 7-Star pharmacist can be moulded in the short period of the pharmacy course instead it is a life long journey.</td>
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<td></td>
<td>Linking theory to practice</td>
<td>It allowed me to see how the seven star pharmacist skills, can be shown in basic tasks and activities I’ve learnt more details about the 7-star pharmacist in a practical way. By learning through this method, it’s much easier than reading long passages online about it. It’s not always pharmacist who should have the seven qualities but everyone. It teaches [me] on how we [should] view on different aspect of life During the debriefing, I can learn from others’ experiences because different group went through different processes when conducting the activity. This enables me to participate and engage more as I am a very introvert person. it’s important to adapt to a lifelong learner attitude even before being registered as a pharmacist so as to be open to develop the skills and experience that is beneficial to you not only in a pharmacy setting but also your life in general. It made me realize I still have a very long way to go in order to develop the seven points of being a 7 star pharmacist. I learnt skills that will not be able to obtain from textbooks.</td>
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<tr>
<td>“How does student feel using the workshop to develop skills?</td>
<td>Learning through reflection</td>
<td></td>
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How to listen to others’ opinions and ideas. I have developed the skills of having a good communication with team members. It helps me to discover more about myself.