

ORIGINAL ARTICLE

Qualitative Analysis of Student Perceptions Assessing Active Learning Methods in A Therapeutics Course

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ABSTRACT

Objectives: To evaluate the implementation of active learning methods in a therapeutic course from students' perspective. **Methods:** The project consisted of two phases of work: Phase I was a fieldwork, where students were exposed to the different active learning methods. Phase II was a feedback from students by interview through conducting focus groups, to assess their preference for each learning method. **Results:** The students regarded the newly implemented active learning methods as generally helpful in developing most of the skills required for the practice of pharmacy, but there were a number of suggestions for improvement. **Conclusion:** Students indicated that incorporation of these active learning methods resulted in better academic outcomes including in their examinations.

Keywords: Saudi Arabia, pharmacy education, active learning.

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INTRODUCTION

There has been a change in pharmacy education globally; this change is a result of calls for reform and the establishment of new pharmacy programmes as well as curricular innovation.¹ It has been suggested that professional education competences can be achieved through the implementation of learner-centred teaching methods such as problem-based learning (PBL).^{2,3}

Published literature suggests that students actively participating in class through active learning techniques including group work, case studies, self-critique and discussions is associated with enhanced student performance, motivation and attitudes. In addition, it promotes higher-order thinking, critical analysis and problem-solving skills. Formative feedback is also found to be beneficial for both the students and teacher.^{4,6}

Achieving the desired outcome in pharmacy education is highly dependent on engaging students in the classroom and supporting their learning

process by providing the opportunity for active participation, self-evaluation and practice.⁷

Utilisation of role-play in pharmacy education was found to be effective in developing skills such as active listening, problem-solving, showing empathy, teamwork, knowledge acquisition and effective communication.^{8,9} An evaluation of a simulated programme implemented in an undergraduate pharmacy course resulted in an increase in students' self-confidence and decrease in their perception that the course is 'difficult'.^{10,11}

In a flipped classroom paradigm, instructional resources are available for students to access outside of class. Therefore, the class time is devoted for more interactive learning activities facilitated by the lecturer.¹²⁻¹⁹ Using a flipped classroom design in pharmacy curriculum was found to be associated with high rates of student satisfaction and better performance.^{20,21} Koo and colleagues found that flipping an undergraduate pharmacotherapy course resulted in improved student exam performance and views of the learning experience during the first year of implementation.²²

Educational games are gaining worldwide popularity. Educational games are not only designed to entertain the learner, but also help in knowledge acquisition and skills development, and promote socio-emotional development.^{23,24} Incorporation of educational games in teaching provides both an interactive and a competitive learning environment which facilitates student learning.^{25,26} An educational game is defined as an instructional method that requires the learner to participate in a competitive activity with preset rules.²⁶

In the literature review conducted by Aburahma and Mohamed on application of educational games in pharmacy education, they suggested that the main advantage of using educational games was the interactive and exciting learning environment that such games encourage. The enthusiasm, stimulation and less stressful environment this method generated were also found to be beneficial to students. Student-to-student interaction and peer learning were also promoted.²⁷

Within formal educational structures, students are used to answer questions rather than posing them. Pittenger and Lounsbery suggested that the adoption of student-generated questions was a useful approach in engaging students at a deeper level, fostering personal interest in the content. It also helped students to better understand the materials, but students found that creating questions was harder than they anticipated.²⁸

Problem-based learning is defined as an educational method focused on self-directed learning, small group discussion with facilitators and working through problems to acquire knowledge.²⁹ In healthcare education, implementation of problem-based learning was found to be helpful in developing problem-solving skills, self-directed learning, teamwork skills and self-motivation.^{30,31} This active learning approach resulted in students doing better in their examinations, and also helped them to develop research skills as well as preparing them for similar real-life scenarios.^{32,33}

The traditional lecture-based method has been predominant in the classrooms at the College of Pharmacy at King Khalid University (KKU). Pharmacy graduates have not been exposed to active learning methods. However, these active learning techniques have been found to be critical in developing the essential skills required for pharmacy graduates. These skills include: problem-solving, critical thinking, patient counselling, self-directed learning, leadership and teamwork.

The significance of the current study is to equip pharmacy students with the following skills: critical thinking, face-to-face patient counselling, self-directed learning, self-evaluation, problem solving, communication skills, leadership skills and the ability to work effectively as a member of a team. To develop these skills, students were exposed to these active learning methods: role-playing, educational games/student-generated questions, problem-based learning, group discussions and flipped classrooms. The effectiveness of those active learning methods will be assessed through conducting focus groups with the students recruited to the study.

MATERIALS AND METHODS

This is a prospective qualitative study, conducted in Therapeutics-4 Course, Clinical Pharmacy Department, College of Pharmacy, KKU. Level 10 students who are enrolled on the Therapeutics 4 Course were purposively selected to participate in the study. There were 53 students enrolled in the course during the first semester of the academic year 2016-2017 (one dropout). Topics covered in this course are Hypertension, Heart Failure, Ischemic Heart Disease, Dyslipidaemia, Acute Coronary Syndrome, Atrial Fibrillation, Deep Vein Thrombosis, Stroke, Asthma, Chronic Obstructive Pulmonary Disease, Overweight and Obesity, and Anaemia.

The intervention phase (Phase I) was implementation of active learning methods comprising the flipped classroom, problem-based learning, patient counselling through role-playing, group discussions and educational games/student-generated questions. Students' opinions about the new teaching methods were collected through focus groups (six students in each focus group) (Phase II). The interview guide and the consent letter are available in appendices 1 and 2. The focus groups were tape recorded and transcribed verbatim and translated into English. A back-translation from Arabic into English was performed by a bilingual assistant professor at the Clinical Pharmacy Department to ensure the clarity of the language. A thematic analysis approach was used to analyse the data. The participants were anonymised, using P1 to P12.

Phase I (Intervention Phase)

Active learning methods:

1. Flipped classroom

Topic: overweight and obesity

The lecture was recorded and uploaded into Blackboard one week before the usual class time. Students were asked to listen to and/or to read the lecture notes and the extra reading materials, which were available online on Blackboard. They also completed an online multiple-choice questions-based quiz on the topic. They were provided with feedback on each question after completing the quiz.

The class time was devoted for providing a brief summary about the topic, case discussions on obesity and overweight, and performing simple exercises

using resistance bands, measuring weight using a scale and calculating students' body mass index (BMI).

Students were actively engaged in the case discussion, taking turns in trying some resistance band exercises and measuring their body weight, while others calculated their BMI. Overweight or obese students who volunteered to participate in the activities were given the appropriate advice from their fellow classmates, which were based on the current provided guidelines and under the lecturer's supervision.

2. Problem-based learning

Topic: Acute coronary syndrome (ACS)

The class was divided into four groups (eight students in each), where each group had a facilitator to guide them. Each group was assigned a leader and a scribe. The leader was responsible for delegating responsibilities and making sure that each member of the group contributed to the work. The scribe was responsible for the documentation. Each group's facilitator initiated group discussion by asking them some questions (using prompts). Students could use their smartphones, tablets or laptops and had access to the Internet, which they used to look up the most up-to-date guidelines in order to answer the case questions. The facilitators supported their groups using a professional tone and non-judgmental language. Students were given four days to submit a detailed report on the case scenario to the course coordinator. Students received email feedback on their submitted reports before the next session. The following session was devoted for discussing their answers and highlighting the most common mistakes and correcting them.

3. Role playing /face-to-face patient counselling

Topic: Asthma

The class was divided into four groups (eight students each). They were given a lecture on asthma patient counselling. Two facilitators played the roles of the pharmacist and the patient. The patient was counselled about the nature of the disease, nature of the medicines, allergens, medication adherence and inhaler use.

Two students from each group were given a case scenario about a certain counselling point, to present to the whole class in the form of role-playing. The case scenarios included allergic asthma and trigger

avoidance and addressing patient concerns about the risks of inhaled corticosteroids.

4. Educational games/student-generated questions

Topic: Revision of all the topics included in the midterm exam, i.e. hypertension, heart failure, dyslipidaemia, ischemic heart disease and ACS.

The class was divided into two large groups, A and B. The lecturer selected a number of points from each topic. Each point was written on a strip of paper and the papers were mixed in a small box. Each group selected a strip of paper from the box in turn, without looking at the text on it. Then group A wrote down a question about the point they picked, for group B to answer. Group B then answered the question and asked group A a question in return. For each question answered correctly, the student who answered it was given a lollipop and scored a mark for their team. The marks were written on the board and the winner group was announced at the end of the session.

5. Group discussions

Topic: All the practical sessions on the topics covered, such as hypertension, heart failure and ACS.

Students were divided into four groups (eight students each). Each group had a leader and scribe. These two roles rotated every week, so each member of the group was given the chance to play each role. The same case scenarios were given to all the groups, for discussing within the group, and presented their answers to the large group.

Phase II (feedback, focus groups)

Two focus groups were conducted with the students who were exposed to the active learning methods. Students' preference for different active learning methods- flipped classroom, problem-based learning, and patient counselling through role-playing, group discussions, and educational games/student-generated questions was assessed. Suggestions on improving each learning method were collected.

RESULTS

1. Lack of active learning methods

Students at graduating level have not been exposed to active learning methods. Participants in the focus

groups indicated that the instructor-dedicated teaching method is dominant in pharmacy education in KKU. Giving an oral presentation is one of the few active learning methods used throughout their pharmacy curriculum. In a few cases, case-based learning had been implemented, but students indicated that they were not given a chance to become actively involved in the discussion; it was more of a one-way delivery. Students did, however, show an interest in active learning methods.

P2: We haven't been exposed to any active learning methods apart from an oral presentation in a pharmacognosy course and another in a pharmacology course.

P3: We worked in groups before, but not the same as yours active learning methods

P8: Discussion using PowerPoint slides, but we weren't given time to work on our own.

P10: It is always a PowerPoint show.

P8: And sometimes the lecturers present the case and answer the questions without us getting involved in the discussion.

P1: We wish we'd had more active learning sessions since the beginning of the term.

P1: We didn't have any discussion before. Just some oral presentations.

All participants agreed that they would love to have more of these sessions.

2. Self-directed learning is a new concept to the students

Spoon-feeding teaching is predominant in the pharmacy curriculum, and students are given all the required learning materials. This has resulted in students assuming that their learning is the lecturer's responsibility, and their contribution to the process is minimal. Participants suggested that they use the lecture notes as their main reference without going back to the assigned textbooks or carrying out any further reading. Participants in the focus group suggested that implementing active learning methods in the pharmacy curriculum has encouraged them to change their previous conceptions of self-directed learning.

P3: Dr. A.S. tells us exactly what we need to know on the slides, which makes life much easier for us as we don't need to put much effort in to finding the information.

P2: No, we don't ever go back to the textbook. On a very few occasions when we do not have the information on the lectures notes we might go back and check the reference.

P6: I only use the PowerPoint slides as a reference; I've never used a textbook.

P4: During discussions, each one of us has different information, so we share and learn from one another. It also helps us improve our search skills: we look up the information in different sources.

P1: The best thing about the active learning methods we had throughout the term was the fact that we started to believe in self-directed learning, we searched for the information by ourselves and we found it; depending on ourselves was the best thing ever.

P6: It, flipped classroom teaching method, encourages us to read more about the topics we are studying. We learn how to search for information in a limited time frame.

P1: To be a more independent learner.

3. Flipped classroom teaching method

Students showed different capabilities and preferences towards the flipped classroom teaching method. Almost half of the focus group participants were in favour of this new instructional strategy. They thought that this method was an effective way of changing their learning style from dependent learners to more self-directed learners. Others were more likely to be dependent learners, and preferred informational lectures with a traditional face-to-face, in-class mode of delivery.

Devoting the class time to more interactive activities and learning experiences, measuring students' body weight and calculating their BMI as well as actively participating in a case study discussion successfully engaged students. However, participants found this method burdensome as they had difficulty in listening to the recorded lecture because of the limited time available. Some of them suggested that this teaching method might be more suitable for courses other than therapeutics, and those who were in favour of this teaching method and found it suitable for "easier" topics such as overweight and obesity.

P3: I liked the idea of being active in the class, especially when we measured our body weight and calculated the BMI.

P4: I didn't like this method

P1: I personally liked it.

P3: We learn more through in-class discussion after listening to the lecture at home.

P2: Recalling the information is much better.

P5: The student will have some background about the topic, so it is much easier to understand.

P2: We don't get bored in class.

P5: It is much easier to understand what the lecturer is trying to explain. We also have time, during the class, to ask about the thing we didn't fully understand.

P5: It is like high school: we read the lecture before we come to the class. It is really good.

P1: To be a more independent learner, to be a more self-directed learner.

P5: To be more confident: we don't get nervous when we talk to the whole class or when we give a presentation.

P2: It is good when you assume responsibility for your own learning, so you gain more self-confidence.

P2: We get to query any information that we aren't sure of, and so we don't need to go to the lecturer's office to ask about those points.

P6: It encourages us to read more about the topics we are studying. We learn how to search for information in a limited time frame.

P1: We got used to dealing with cases: we started to read the information carefully, and we didn't use to focus that much before.

P4: During discussions, each one of us has different information, so we share and learn from one another. It also helps us to improve our search skills: we look up the information in different sources.

P8: I don't like online lectures.

P11: I don't like them either; I find it hard to be committed to listen to them.

P8: I like in-class, face-to-face lectures where I get an idea about the topic and then I revise it and explain things to myself.

P7: I don't like online learning: sometimes the volume is too low and when I don't have the lecture notes, I can't follow the video.

P10: I feel the same as P7. It might work in other courses, not in therapeutics.

P12: We are very busy at university, and then when we go home we have more lectures to view.

P10: We don't have time to listen to the lecture.

P10: Having lectures at university and at home is just too much work load.

P8: I don't think this method works for therapeutics.

P8: It is good to take notes and ask questions during the session.

P10: We don't have time once we start exams, we never finish

P11: Sometimes we have an exam on the same day, so we don't have time to listen to the lecture.

P7: I personally don't prefer it, especially in therapeutics

P8: I think it was fine because the topic (obesity) was an easy topic. I don't think it would work for other topics.

4. Problem-based learning

Participants were generally positive about this teaching method. Receiving the information actively through in-class discussions and problem-solving activities successfully engaged students. Students reported that using a problem-based learning strategy helped them in developing problem-solving skills and self-directed learning, increased their intrinsic motivation and taught them how to work effectively as a member of a team as well as a leader. They also suggested that this method improved their search skills, i.e. where to find the most up-to-date information and how to access it. Students also reported that, following this session, they felt more able to manage when faced with similar case scenarios in the workplace.

P3: I loved it because, as you know, we don't go the hospital now; this method mimics real-life scenarios. It also helped us to learn how to write a report on a certain case.

P6: It helped a little; it gave me an idea about how to deal with cases.

P4: If we had more time, we would search for more information in multiple sources.

P4: It is much better than having the lecturer reading the case and answering the questions, using PowerPoint slides; the information retention is way better and it is more fun.

P1: I personally strongly recommend it.

P all: We would love to have more of these sessions.

P1: We learned how to deal with the patient.

P3: We learned how to communicate with the patient.

P4: ...how to search for the information.

P6: I learned how to delegate responsibilities, or how to distribute the work between us... to work as a member of a team. We also got to know people in our section that we have not spoken to them before.

P5: We learned to get involved in the discussion and to more active in the class.

P2: The theory session used to be exactly the same as the practical session, so it was really good to work in groups and to discuss cases.

P1: ...to learn to be more confident, and to be able to speak in public.

P3: Honestly, this is the first term that I feel I love the practical part.

P4: This is the first time that I feel that I understand therapeutics. This is the first time that I feel that I'm applying the knowledge, not just memorising things for the exam and forgetting everything after.

P2: I just think that the number of students in the group affects the quality of the work, because some of the students don't contribute to the work, so if we have a smaller number of students, that would be great.

P7: It was nice.

P10: It was really interesting, because we were searching for the information ourselves.

P12: I loved it because we didn't use the lecture notes only. We had to search for the information.

P8: The best thing about it was that we tried to find the most updated information, the things that have changed.

P 10: It doesn't put a limit on our thinking; it gives us freedom to think.

P12: You search for the information in multiple sources; we don't stick to one.

P7: You don't forget the information.

P12: The only problem is that some of the group members who you don't know might just choose to not contribute to the work. On the other hand, when you work with your friends they will collaboratively work with you and won't let you do the work by yourself. Personally, I don't have any friends in the class, so I was sitting in the group and thinking on my own.

5. Role-playing

In general, students preferred this active learning method. Focus group participants found that role-play is an effective method in developing their communication skills, patient counselling, self-critique and active listening. Students also felt that their confidence increased significantly and their perceptions about inhalers are being difficult to use, has changed. Students felt more prepared after this session when faced with a similar case in a real pharmacy consultation setting. They also found that this experiential learning technique helped them to recall more information compared to dedicated lectures.

P3: I can't express how much I loved it.

P1: It was a really nice feeling to act as a pharmacist. I felt that studying pharmacy for five years has not gone to waste. It makes you feel more confident and responsible for every word that comes out of your mouth. And when [you] do things you love, you do [them to your] best [ability].

P6: It is a much better way to learn compared to the traditional method.

P4: I truly loved it. I had an exam at the hospital last Sunday, after the session, in which I was asked to play the role of the patient, so I felt comfortable doing the role because I had done it before. I wasn't nervous. If we hadn't had the session, I wouldn't have had the courage to do it or even to know what to say, but I felt confident and well prepared.

P3: I learned how to use the inhaler – I didn't know how to use it at all before. It, the role-playing is different from the traditional way, because you know exactly what you don't understand when the pharmacist asks you to show how to use it.

P1: It also teaches us how to communicate with patients, whereas [with] the traditional methods you just say the information.

P10: When you see things, it is different; the information retention is higher.

P8: Also, you get to ask about the things you don't understand right then and there, especially when the acting pharmacist asks you to show how to use it.

P7: We are now capable of dealing with patients, communicating with patients effectively. We can explain things in details to the patients, simple things that we assumed the patients knew but they actually didn't.

P11: We would like to have more [such] sessions.

P8: Yes, if [we had] such sessions regularly, we would be more confident and we would get used to it.

P11: I don't think I would make a good leader.

P 7: I think if the person likes to be a leader, it's a good opportunity to develop this skill.

P11: ...but I think we have a great chance to act as a leader through this term.

P11: We love these methods.

P8: There is a huge difference between the first therapeutics and this therapeutics.

P8: We feel that [we] are much better now and our grades are much better.

P8: I totally agree.

P9: It was like, you need to search and teach yourself.

P11: They didn't used to explain anything.

P8: The translation was annoying: they spent the whole time translating things rather than explaining the subject.

6. Game playing/student-generated questions

Students reported positive feedback on using an educational game in the pharmacy curriculum. They felt that working in an interactive, competitive environment was entertaining, enjoyable and stimulating. They also suggested that this method promoted interaction with their fellow classmates and enhanced peer learning. Student-generated questions was a new, challenging concept to the students, as they are used to answering questions rather than posing them. They found this game playing/student-generated questions session very useful in their preparation for the examinations. The revision session helped students to identify topics that needed more attention before the examinations. Based on their positive experience with this teaching method, the students requested another session before their final examinations and other suggested having such sessions on a regular basis.

P6: When we ask the question, answer the other group's questions, there is no way we can forget it.

P2: Making questions wasn't easy; we need to think hard about it

P6: Honestly, it was difficult, we aren't used to it

P1: ...because this was the first time we had a revision session where we write a question and answer the other groups question

P5: We loved the senses of competition; it was like we have to answer the question.

P1, 3 and 6: We would love to have another session before the final

P5: You told us to revise before the session, and we did, so we knew what to focus on... which was very nice.

P4: We read very carefully to be able to ask a proper question.

P5: ...and ask a harder question

P4: It would be great to have such sessions at a regular basis like after two to three topics...

P1, 2, 3, 5 and 6 agreed.

P8: I remember what everyone said, it helped me connect things

P12: It was nice; because I remember the things we discussed when I revise for the exams.

P10: It is joyful; we enjoyed it more than the traditional class.

P7: It helped in preparation for the exam

P12: I didn't use to know how to say things properly or use the write words, but now after asking a few questions I think now I get used to it.

P9: It was easier to answer a question than to create one.

P8: Sometimes when I read a paragraph and I don't notice it's important, but when ask to make a question on, this makes see how important it was.

P11: We would love to have another session before the final

P7: We wouldn't change anything about it

7. Group discussion, case-based learning

Students are not used to actively participating in case discussion; rather, they are used to dedicated lectures. Students reported an increase in their self-confidence and improvement in their research skills, and a decrease in their perception about the level of difficulty involved in the course. They also reported that this method helped in preparation for their examinations and that they obtained higher grades as a result.

P4: We never had this teaching method before. The practical is the same as the theory.

P1: The theory is exactly the same as the practical.

P1: I'm more confident now....

P5: ...memorising and answering the questions for the exams.

P1: It was like copying and pasting the information.

P5: We [had] heard that this course is hard, so we were terrified.

P6: That's what we heard from last year's students.

P6: We had higher grades than the other section because you are our tutor, and because of the teaching methods you use. The exam wasn't easy at all.

P6: This was the best therapeutics course in my experience.

P4: This is the first time I was happy with the exam and with my results.

P8: All the teaching methods you used were really good.

All participants stated that the methods helped them in preparing for their exams.

P7: ...not only revising for exams, but also it developed our searching skills: when we get asked, we know where to search and get back to them quickly.

P10: It was really good.

P11: Smaller groups.

P12: It would be better to be with my friends in a group.

P10: Not everyone is happy to participate or to contribute to the work.

P7: ...it depends on the person

P10: You won't fit in if you joined a group of friends.

DISCUSSION

This paper reports on student perceptions of the usefulness of active learning methods comprising flipped classroom, role-play, educational games/student-generated questions, problem-based learning and group discussions to meet the objectives (skills development) of the sessions; it also reports on the results of the focus group analysis. The students regarded the newly implemented active learning methods as generally helpful in developing most of the skills required for the practice of pharmacy, but there were several suggestions for improvement. Satisfaction with these methods was a result of the recognition that they were useful in developing the required skills in pharmacy practice. Students suggested that the number of sessions was not sufficient, and they indicated that these teaching methods should be implemented in the introductory therapeutic courses in order to allow students to build on the required competencies gradually. They also suggested that the number of students in each group should be smaller or alternatively each group should have an extra facilitator or instructor. Some of the students found the preparation for the flipped classroom teaching method, i.e. listening to/reading the online lecture and answering the online quiz, time-consuming and overwhelming. Consequently, some of them admitted that they did not complete the quiz by themselves but copied the answers from their classmates. As a result, the course instructor was unable to use the quiz as a formative assessment of students' understanding. In conclusion, students found the in-class activities enjoyable and engaging. In general, the flipped classroom technique was found to be an efficient method to motivate students to be more independent learners and increase their autonomy, as well as develop their search skills. Davies and colleagues and Kurup and Hersey^{14,17} reported similar findings, i.e. freeing class time for more interactive activities stimulates higher-order thinking skills. Published literature indicates that implementing the flipped classroom is time-consuming and requires much preparation before the start of the course. Preparation time, however, decreases in subsequent implementation trials as the resources can simply be

updated and reused. Pharmacy educators indicate that PBL has been incorporated into pharmacy curricula in order to prepare pharmacist students to fulfil the challenging demands of the pharmacy profession, especially the provision of patient-centred pharmaceutical care.³⁴ Participants in the current study found that problem-based learning and group discussion gave them the opportunity to apply their knowledge, capabilities and skills to the cases. Additionally, these teaching approaches helped students to develop problem-solving skills, self-directed learning, teamwork skills, leadership skills and search skills, and increased their self-motivation. Other than the developed skills, students reported positive academic outcomes including their exam results as well as their perceptions of the level of difficulty in the course. The educational games/student-generated questions session were found to be to be informative, interactive and entertaining. Students reported that the competitive atmosphere of the classroom increased their motivation, and they found this learning experience helpful in examination preparation. Aburahman and Mohamed indicted that educational games are preferred by the younger generation as this teaching method provides a less stressful learning environment, but it might not be suitable for learners who do not like playing games.²⁷ Other disadvantages include: only a small proportion of students participate in game playing, which results in a limited engagement of the students. In some cases, the instructor loses control, especially in large classes. This teaching method is not widely implemented in pharmacy education, because faculty members experience challenges in designing the games and students might face difficulties in understanding game instructions. Role-play used in patient counselling

received favourable feedback. Students found this method to be effective in developing communication skills, patient counselling, self-evaluation and active listening. They stated that they were more confident after this session, and that they felt more prepared when faced with a similar case in a real pharmacy consultation setting.

This study has several limitations. Study findings were based on students' opinions, which they expressed in focus groups. Objective assessment methods such as objective structured clinical examination (OSCEs) and written examination were not used to evaluate the developed skills. Limited resources including number of facilitators prevented the conduction of more sessions of each teaching method such as role-playing and PBL.

CONCLUSION

The active learning approaches flipped classrooms, PBL, role-play, education games/student-generated questions and case-based learning described in this paper were perceived by level 10 pharmacy students to be useful techniques for developing essential patient-care competencies and skills, including communication, search skills, teamwork, leadership, problem-solving, patient counselling and self-directed learning skills, as well as self-confidence and self-motivation. Students also indicated that incorporation of these active learning methods resulted in better academic outcomes including in their examinations.

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