

## Does a novel teaching approach work? A Students' perspective

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### ABSTRACT

**Background:** There is always a call for educational reform and further research to improve educational programs. The continuous development of new educational approaches is a work in progress. Educational strategies like team-based learning, flipped classroom, and lottery-based token economy, were used to develop a novel teaching approach.

**Aim:** This study had two major goals. The first goal was to introduce a novel teaching approach in professional healthcare academies. The second goal was to get an in-depth understanding, from the students' perspective, about the benefits and limitations of this new teaching approach.

**Method:** The study was conducted using a qualitative, phenomenological research design. Third and fourth-year nursing students completed reflective journals to describe their personal experience with the new teaching approach at the end of the semester. The students' responses were analyzed and coded using Kember's four-category coding schema for reflective writing, to extract themes using thematic analysis.

**Findings:** Seventy-five students completed and returned their reflective journals. The analysis showed various challenges and facilitators/benefits of the students' experiences. The themes that emerged from the analysis were: lack of exposure vs. a sense of achievement; lack of teamwork skills vs. role fulfillment; working with new people vs. conflict resolution; variation vs. collaboration/creativity; time management vs. constructive competition; wasting resources vs. flexibility, and proactivity/active engagement. These themes summarized why the new teaching approach worked and what barriers students faced with the new assembly.

**Conclusion:** Results from the current study demonstrated the great potential of the new teaching approach. Recommendations for future research were also discussed.

### 1. Background

There was a lengthy discussion between the proponents and opponents of the traditional teaching approaches in various sciences. Proponents of the traditional approach stress the role of learning based on memorization and recall (Tularam and Machisella, 2018). They argue that this is a prerequisite for higher-order skills such as problem-solving (Tularam and Machisella, 2018). Even then, the educational practices must follow traditional teaching strategy with the hope to solidify the knowledge gained by students (Lutz and Huitt, 2003). Those opposing traditional methods argue that traditional teaching methods alone, will not enable the application of learned knowledge

through mere memorization of the material (Tularam and Machisella, 2018).

Another limitation of traditional teaching methods is the passive role assumed by students in processing information and in comprehension and application of the learned knowledge (Betihavas et al., 2016). Traditional teaching strategy is examination-oriented - passing the exam is the sole focus, leading to the accumulation of irretrievable and inapplicable knowledge (Gaddam et al., 2016). Thus, alternative teaching approaches have been proposed and implemented, to overcome the shortcomings of traditional teaching methods. Examples of such alternative methods include, but are not limited to, flipped classroom, problem-based learning and role-playing. The literature

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shows that these alternative teaching methods better prepare nursing students and help fill the theory-practice gap (Betihavas et al., 2016; Applin et al., 2011), which has always been a challenge for students in the clinical settings and classroom (Steenfeldt et al., 2019).

Accordingly, there is a demand to reform education to overcome the current challenges facing undergraduate students and engage them in an active learning process (McLaughlin et al., 2014). New educational approaches have emerged in an effort to improve students' performance and outcomes (Koles et al., 2010). In health professions schools, such educational reforms are of paramount importance to meet challenges, such as the suboptimal team process, that students face during their college study (Factor et al., 2017; Rosen et al., 2018). Working to develop an effective learning environment can be considered a work in progress for researchers, which can form the basis for transformational changes in the area of professional education (Barton, 2018). This effort is necessitated because of the theory-practice gap which is a huge concern in nursing education (Factor et al., 2017). Thus, there is a departure from the traditional teaching approach towards the development and application of new teaching approaches and strategies, in recent years.

The A-B-C model of operant conditioning proposed by Skinner (Skinner, 1974) was used to create the overall structure of the course and its assignments. The A-B-C model consists of three terms of contingency under which all human behaviors and skills are shaped, modified, or refined (Skinner, 1974). These terms of contingency are Antecedents, Behavior, and Consequences (i.e., A-B-C) (Skinner, 1974). In academia, 'Antecedents' can be considered as a set of conditions under which we expect to generate a certain kind of academic behavior, such as course rules, course material, and lectures skills. Behavior refers to the pertinent academic behavior that helps students achieve course objectives. Consequences refers to the actions that follow the behavior that help sustain it in the future (grades, in an academic setting). According to the A-B-C model and the above discussion, one of the main problems with traditional methods lies in behaviors being targeted. Thus, new teaching methods need to be developed to generate a wider range of pertinent academic behaviors to achieve course objectives.

According to the A-B-C model, grades are major reinforcers for academic behaviors in a classroom (Williams & Anandam, 1973). As mentioned earlier, traditional teaching strategy emphasize memorization and recall but come up short in areas such as comprehension, application, and problem-solving (Betihavas et al., 2016; Gaddam et al., 2016; Tularam and Machisella, 2018). Thus, traditional teaching strategy reinforces memorization as the only pertinent academic behavior. Under the new teaching approach, we targeted students' behaviors relating to teamwork, communication skills, proactivity and voluntary participation. These behaviors were expected to overcome the limitations of the traditional teaching approach in the areas of comprehension, application, and problem-solving.

This study had two major goals. The first goal was to introduce a novel teaching approach in health profession schools. The second goal was to get an in-depth understanding, from the students' perspective, about the benefits and limitations of the new teaching approach. This first goal was accomplished through combining Team-Based Learning (TBL), flipped classroom, and lottery-based token economy. Individual learning approaches have been shown to work when applied separately in various educational settings. However, to the best of our knowledge, they have never previously been used in combination. The second goal was achieved through a thematic analysis of the students' reflections on their personal experience in the course.

Students' reflections have been obtained using reflective journals as a means to get an in-depth understanding of students' experiences. Reflective journals have been frequently used as an approach to reflect on personal experiences in phenomenological studies in various settings, with various populations (Maltby et al., 2016; Dharamsi et al., 2010). Phenomenology has been successful in answering questions of meaning - it is considered a useful approach to get a new and fresh

perspective (Cohen et al., 2000). Prompts have been used to encourage students to reflect on different educational methods used in the course (see method section).

### 1.1. Team-based learning

TBL is considered a student-centered learning approach (Fatmi et al., 2013). It has been implemented in medical education since 2001 and led to improved student performance in exams, and mastery over course content (Koles et al., 2010). Teamwork is a major factor in delivering reliable healthcare (Baker et al., 2006). In the field of healthcare, the delivery of safe and high-quality care requires effective teamwork among the workforce on organizational, disciplinary, and cultural levels (Rosen et al., 2018). Thus, we thought of TBL as an essential component of professional healthcare education, to promote collaboration among students that they will carry over to the workplace on graduation.

### 1.2. Flipped classroom

The flipped classroom model is a newly developed, student-centered approach where the role of the teacher is to provide the material for use outside of class-time, while class-time is reserved for engaging students in an active learning process (McLaughlin et al., 2014; Tune et al., 2013). This course format has been shown to positively correlate with class attendance and students' learning outcomes in health professions schools (McLaughlin et al., 2014). The teacher's role is to facilitate in-class learning experiences and engage students with the materials studied outside the classroom (McLaughlin et al., 2014). The Methods section provides more details about the integration of this model into the current course design.

### 1.3. Lottery-based token economy

In-class participation is associated with better academic performance, better class preparation, and improved mastery over course material (Iwata et al., 1976; Luiselli et al., 2009; Thorne and Kamps, 2008; Jalongo et al., 1999). One traditional approach to improve in-class engagement is by grading student participation. However, grading students' participation has its drawbacks (Iwata et al., 1976; Armstrong and Boud, 1983). Some of the issues associated with grading class participation include establishing objective participation evaluation criteria, the time and effort required to evaluate participation, and the potential for perceived coercion to participate by the student (Iwata et al., 1976; Armstrong and Boud, 1983). To solve these issues, we implemented lottery-based token economy.

Lottery-based incentive systems have proved effective in promoting positive behavioral changes (Luiselli et al., 2009). Lottery systems have been used to promote students' participation and engagement in elementary school classrooms (Thorne and Kamps, 2008). To facilitate the application of the lottery system we incorporated it with token economy. Token economy can be defined as a behavioral intervention that arranges for token delivery, contingent on students' engagement in the target behavior (Aziz and Yasin, 2018) (i.e., participation). The use of token economy with college students has been reported in two separate studies (Nelson, 2010; Boniecki and Moore, 2003). In both studies, it was found that students' in-class participation improved when a token economy system was implemented (Boniecki and Moore, 2003; Nelson, 2010).

Combining lottery-based incentives and token economy into a lottery-based token economy can minimize some of the issues associated with grading participation. First, there was a mandatory quiz at the beginning of each class. Students had the chance to either a) take the quiz, or b) be exempted from the assigned quiz by participating in the class. By giving students the chance to choose between the two options, there is little potential for coercion compared to directly grading

participation. Secondly, the application of the lottery-based token economy needs minimal in-class effort and time for grading participation (see method section). Lastly, the evaluation is directly based on students' participation in class with known guidelines that reduce subjectivity in grading participation.

## 2. Method

### 2.1. The novel teaching approach

The assembly of the course, combined approaches and techniques borrowed from three main areas; education, business, and applied behavior analysis. Some of these approaches and techniques, when applied separately, have been shown to result in positive learning outcomes (McLaughlin et al., 2014). However, to the best of our knowledge, the combination of the three areas is novel in nature. Below, we will explain how the new teaching approach was designed using various educational, business, and behavioral principles.

#### 2.1.1. Group projects

The group projects were based on a flipped classroom model commonly used in the field of education. In this study, each group was assigned a course topic. Extra lectures and class materials relevant to the assigned subject were provided to the students to ensure thorough handling of the topic by members of each group (see Table 1). The evaluation rubrics in this course were selected and designed to maximize students' benefits from, and engagement in, the learning process. Rubrics for evaluation of the final product were derived from business administration principles (Locker and Kaczmarek, 2009). These principles focused on communication, teamwork, education, and leadership skills. As students of healthcare, nursing students will be part of healthcare teams in their future careers. Thus, preparing them for effective teamwork is expected to help them develop the skills to adapt quickly to their future roles.

#### 2.1.2. Quizzes

In the traditional format, quizzes are typically used to ensure that students keep up with the course material (Glodowski and Thompson, 2018). In our course, during class time, a card (i.e., token) was handed to the student for each correctly answered question or new insight on

the class topic. At the end of the class, the tokens were collected and about two-thirds of the tokens were randomly drawn (i.e., lottery system). Then, the tokens were "cashed in" for the opportunity (~66% chance) to skip the quiz scheduled for the beginning of the next class. The goal of this contingency system was to promote students' engagement in class participation and discussion, maintain student contact with course materials, and ensure an interactive learning experience between presenting and non-presenting groups in the classroom. This system used the methodology of token economy, borrowed from the field of Behavior Analysis, to reinforce each instance of participation, and to maintain students' participation until the end of the class, without losing motivation (See Table 1).

#### 2.1.3. Bonus

This method was implemented to promote students' voluntary participation for extra grades as individuals or in groups in course's extracurricular activities such as inter-professional communication, and body language. Students were encouraged to use different teaching methods such as performing sketches, group discussions, gaming, and role-playing. The extracurricular activities were selected by the students after getting the instructor's approval. At the beginning of the semester, we awarded two grades for each student enrolled in the course. The bonus grades were awarded in the form of Communication Bucks (CBs). The two grades awarded to each student were equivalent to 2000 CBs. This value was arbitrarily selected. The total number of grades was fixed for each class. For example, a section of 50 students would have a fixed total number of bonus grades of 100 (i.e., 50 students  $\times$  2 grades) equivalent to a total of 100,000 CBs (i.e., 50 students  $\times$  2000 CBs). On the other hand, the total number of CBs continually increased throughout the semester with each additional extracurricular activity done by students. For any class, the net increase in CBs' amount is determined by the number of students who share in the same extracurricular activity and the number of activities done throughout the semester. To encourage teamwork, students were given the option to work in groups of up to four members, to increase the amount of CBs they already had - by 150%, 175%, 185% and 195% for individual, group of two, group of three, and group of four, respectively. This system gave back better net grade returns for those who did the bonus activity in groups, compared to those who acted individually. At the end of the semester, the end value of the CB was determined by

**Table 1**  
Course requirements summary.<sup>a,b</sup>

Course requirements	Weight (mark)	Brief description
Group presentation	15	<ul style="list-style-type: none"> <li>Each group assigned a topic</li> <li>Each group was provided with the material for their topic</li> <li>Each group had the option for taking as many as extra lecture before their presentation day to make sure they were get a good grasp of their topic.</li> <li>Each class had only one group presentation.</li> <li>The students had to arrange for meetings and prepare for in-class presentation</li> <li>It was made clear to all students that they need to use various instructional methods (e.g. roleplaying, video presentation, games, etc.)</li> </ul>
Group communication 1	10	<ul style="list-style-type: none"> <li>All out of class communication are occurring over the university e-mail system.</li> <li>All group communication are supervised and followed by course instructor.</li> </ul>
Video project	15	<ul style="list-style-type: none"> <li>Same as group presentation with only replacing the presentation with a 10 min video.</li> </ul>
Group communication 2	10	<ul style="list-style-type: none"> <li>See group communication 2.</li> </ul>
Quizzes and exemptions	10	<ul style="list-style-type: none"> <li>Every lecture there was a quiz with previous lecture material.</li> <li>Students can get exempted from the quiz for participation actively in the same material in the previous culture. (See lottery based token economy section)</li> </ul>
Course bonus	2 (at the beginning of the semester)	<ul style="list-style-type: none"> <li>Students are awarded 2 marks at the beginning of the class in a form of Communication Buck (CB) (an invented token name)</li> <li>Communication Bucks decreases in their values.</li> <li>Students who do no bonus activities will lose grades as the CBs lose their value</li> <li>Students who do bonus activities will increase their asset of CBs =, Thus they can increase the total bonus marks they earn at the end of the semester.</li> </ul>
Final exam	40	<ul style="list-style-type: none"> <li>Final exam was written as per current university policy.</li> </ul>

<sup>a</sup> Group members are randomly assigned.

<sup>b</sup> All course requirements are graded based on a very detailed rubrics.

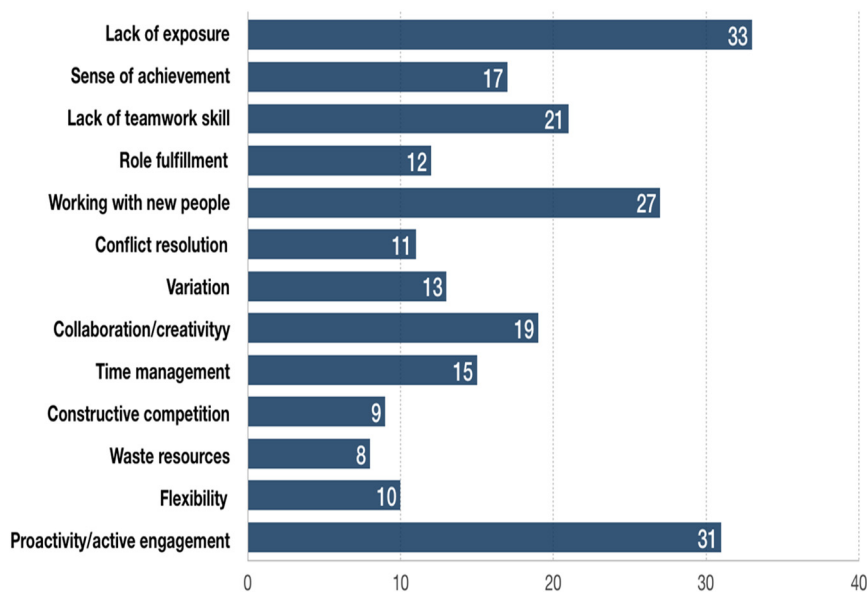


Fig. 1. Theme appearance frequencies.

dividing the grades awarded for the whole class (i.e., 100 grades in our previous example) by the total number of CBs for the whole class. Then, an individual student's bonus was calculated by multiplying that student's CBs by the CB end value.

## 2.2. Study design

The current study was conducted using a qualitative, phenomenological approach. Phenomenology focuses on the lived experience as understood by those living it (Cohen et al., 2000). It is a useful approach to study topics presented from a new perspective: the innovative combination of learning approaches in this case. Students were asked to complete reflective journals at the end of each semester to document their learning experience with the new course assembly.

## 2.3. Setting

The data were collected at the end of the first and second semesters of the 2017–2018 academic year. IRB approval was obtained before the beginning of the study. Third and fourth-year nursing students, enrolled in the communication and health education course, were asked to voluntarily complete the reflective journals for this study. All students who registered for the course were eligible participants.

## 2.4. Data collection and analysis

Students were invited to individually and anonymously fill out paper-based reflective journals to critically reflect on their learning experience in the classroom. A research assistant explained to them, the purpose of the reflective journals and how to complete them. The journals included a set of prompts that reflected the main course requirements as outlined in Table 1. The following prompt was included at the top of each part of the reflective journal, asking about group presentations, video projects, course bonuses, quizzes and exemptions and group communications:

"Dear student, we would like to learn about your experience with this course. Think about \_\_\_\_\_. Express any thoughts, feelings, ideas you may have - and try to elaborate on those thoughts, feelings and ideas."

All students enrolled in the course were invited to participate in the study. We aimed at attracting a high number of participants as we were

unable to check the level of data saturation throughout the study, while using reflective journals, compared to the use of interviews. Using purposive sampling, 96 enrolled students from four sections, over the period of two consecutive semesters, were invited to fill out the reflective journals. Of the 96 enrolled students, 75 students returned their reflective journals, 36 at the end of the first semester (48% of the responses) and 39 at the end of the second (52% of the response). Anonymity was guaranteed by having the class select a student delegate to collect the completed reflective journals, ensure that no identifiers were present, place all reflective journals in a brown envelope and deliver them to the Research Assistant.

The data were entered into NVIVO software version 12 to facilitate data management and analysis, using thematic analysis. Two of the authors of this study coded the data separately. Kember's four-category coding schema for reflective writing was used to evaluate students' reflections. The schema involves four categories: non-reflection, understanding, reflection, and critical reflection (Kember et al., 2008). The coders (M.M.A. and J.R.) separately scored the narratives of the reflective journals using the schema and then met to compare the results of the scoring and discuss any variations until they were 100% in agreement.

## 3. Findings

The mean age of the participants was 21.16 years old ( $SD = 1.1$ ). Among them, 55 (73%) were fourth-year students and the rest were third-year students. The majority of the participants were females (45 participants, 60%).

Initially, Kember's schema was used to categorize student responses into descriptive statements (i.e., non-reflection and understanding) and reflective statements (i.e., reflection and critical reflection). The reflective statements were used in the thematic analysis of this study. The initial agreement on the second category (i.e., reflective statements) was 85%. The non-agreement statements were discussed by the coders until an agreement was reached or the statement was dropped from the thematic analysis. Then, the thematic analysis was carried out. The data were coded into seven themes; arranged into challenges vs. facilitators/benefits, except for the last theme: proactivity/active engagement that was associated with the bonus and lottery-based token economy in students' reflections. The themes are discussed below, supported by examples from the reflective journals. The number of participants who contributed (i.e., frequency of thematic occurrence) to each of these

themes is depicted in Fig. 1.

### 3.1. Lack of exposure vs. a sense of achievement

All the students reported that the course was a new and distinct experience and that it was the first time they were exposed to such a course structure. Most of the students reported that their lack of experience with the new teaching approach had them worried about how well they would do in the course. An example:

“I was afraid of the new course structure - it was a new idea, but I thought it might be nice to try it.”

On the other hand, some students were satisfied with their new experience as it promoted their sense of achievement. While discussing their general impression regarding the new course experience, one student wrote:

“I was very happy with the effort I put in. I had no prior experience with any similar courses. It was a great outcome and achievement as we tackled all the difficulties we faced.”

### 3.2. Lack of teamwork skills vs. role fulfillment

A major issue that emerged was the lack of teamwork skills. Some students had a negative experience because of their inability to fulfill their assigned roles or because of the lack of group leadership. One student wrote:

“The lack of active members and the lack of group leadership led to difficulties in communicating my thoughts and ideas.”

For other students, the same challenge was considered an opportunity to assert their leadership skills to achieve success in the course:

“In my opinion, the most important thing was to learn your assigned role. In addition, I learned to be serious and assertive in dealing with my group since I was assigned by other team members to be the group leader. I tried hard to focus on the main goal of our group in the first place.”

### 3.3. Working with new people vs. conflict resolution

For most of the students, it was their first experience working with new acquaintances. Some viewed this as a hindrance, in that it required extra time to get to know each other.

“Working with people you do not know is a challenge because you have no idea how to deal with them.”

On the other hand, some students saw it as an opportunity to apply conflict resolution principles to resolve issues among group members.

“We faced some conflicts, but this was beneficial as I learned how to deal with problems and be an effective team member.”

### 3.4. Variation vs. collaboration/creativity

Students expressed their concerns about the diversity of ideas and personalities among group members. For some students, it amounted to a lack of cooperation. One student wrote:

“The biggest challenge was the diverse opinions and thoughts, and different personalities among group members.”

For other students, the diversity among group members was an opportunity for creativity and a chance to come up with novel ideas.

“As we got to know each other, we started to work and find creative and strange ideas to use in our group projects. We were laughing

and joking at times and... [Then] working hard.”

### 3.5. Time management vs. constructive competition

Many students voiced concerns about their lack of good time management skills. The experience was described as, “Exhausting work, it needs time and effort”. One student noted:

“Inability to set a fixed time for meetings to work on course requirements that suit all team members because of conflicting course schedules.”

For many students, the experience with the course assignments triggered a great deal of constructive competition among each other. Attending group presentations and appraising the presentations and learning approaches used by others, helped push many students forward. One student stated:

“When I saw the presentations of other groups, I wanted to do better and get the full grade.”

### 3.6. Wasting resources vs. flexibility

Not utilizing available resources, including the assistance of the instructor and technology, was also considered a challenge. One student mentioned:

“All group members had four clinical days per week and could not attend the extra lectures provided by the instructor.”

However, the flexibility and availability of the course instructor-facilitated learning and achievement of some student learning outcomes:

“The doctor's availability through email and in person gave us the opportunity to have a positive learning experience.”

### 3.7. Proactivity/active engagement

Students reported that the bonus requirement of the course helped them initiate the process of participating in extracurricular activities since they were voluntary and not part of the mandatory course requirements. In addition, students indicated that the lottery system promoted active participation in in-class activities. One student wrote:

“It was a great thing that gave an opportunity for innovation, development, and progress since the bonus was given in a fair and equitable way.”

One student expressed how the lottery-based token economy led to achieving active engagement in the class:

“It was a successful reward system and gave more benefits for students. I started participating in all the lectures.”

## 4. Discussion

This paper presented the findings of Nursing students' experiences with a novel teaching approach for the Communication and Health Education course. The themes that emerged from students' reflective journals provided a better understanding of students' experiences with a flipped classroom, team-based learning, and lottery-based token economy. The uniqueness of the current study lies in combining the listed teaching approaches.

The findings from the current study were consistent with the literature promoting students' course experiences. For example, teamwork in a student-centered context has been associated with improved performance and mastery over course content (Koles et al., 2010). These

**Table 2**  
Side by side comparison of the traditional and novel teaching methods from the in the light of the A-B-C model.

Teaching method A-B-C	Traditional teaching	Mixed method teaching
Antecedents (e.g.)	<ul style="list-style-type: none"> <li>● Course rules</li> <li>● Course requirements</li> <li>● Course material</li> <li>● Lectures</li> </ul>	<ul style="list-style-type: none"> <li>● Course rules</li> <li>● Course requirements</li> <li>● Course material</li> <li>● Extra Lectures</li> </ul>
Behaviors	<ul style="list-style-type: none"> <li>● Memorization and recall</li> </ul>	<ul style="list-style-type: none"> <li>● Proactivity</li> <li>● Active engagement</li> <li>● Conflict resolution</li> <li>● Collaboration</li> <li>● Sense of achievement</li> <li>● Role fulfillment</li> </ul>
Consequences	Grades for how well the students memorize learned material for the purpose of examination	Grades for how well the students apply pertinent academic behaviors

benefits were reflected through role fulfillment, preparedness, collaboration, and sense of achievement in the findings of our current study. In addition, flipped classroom has been correlated with a better learning experience and an increase in students' class engagement (McLaughlin et al., 2014). Corresponding themes emerging from this study that are consistent with these findings are students' engagement and sense of achievement. Lottery and token economy systems have been shown to promote students' participation and engagement in classrooms (Boniecki and Moore, 2003; Nelson, 2010; Thorne and Kamps, 2008). In turn, class participation promoted academic performance, class preparation, and mastery over course material (Iwata et al., 1976; Luiselli et al., 2009; Thorne and Kamps, 2008; Jalongo et al., 1999). These benefits manifested in better preparedness and active engagement.

Other themes from the current study, such as constructive competition, warrant further investigation. As indicated by students, competition with other students' groups pushed them to try harder. Such behaviors need to be investigated more closely to see if they are also applicable to the individual components of the new teaching approach or, even, traditional teaching. The same applies to other themes that could not be directly linked to the benefits of the alternative teaching approaches we found in the literature.

Using the A-B-C model helped troubleshoot the issues inherent in traditional teaching methods as cited in the literature. In addition, it directed us to cover a wider range of targeted academic behaviors. Traditional teaching is focused mainly on memorization and recall of factual information with the ultimate goal of passing exams (Gaddam et al., 2016). On the other hand, a careful look at the themes shows that the novel teaching method used in the current study allowed students to engage in academic behaviors more pertinent to the course objectives. For example, one of the course objectives involved the application of conflict resolution strategies to solve communication problems. However, traditional teaching methods have been considered an ill-structured approach in the areas of application and information processing (Betihavas et al., 2016). Under the new teaching method, the application of conflict resolution principles was an evident theme that emerged from students' reflections. A more elaborate comparison between the traditional and new teaching approach is presented in Table 2.

The current course design has its own challenges. Throughout the reflective journals, students provided critical reflections on issues that must be considered when designing similar courses. Ignoring such challenges may limit the benefits of the new teaching approach. For example, the emergence of conflicts while maintaining professional communication channels with others, both in-person and electronically, were among the challenges in teamwork reported by students in the current study. The lived experience of working in teams helped students

master some essential leadership and conflict resolution skills. Considering the promising findings of the current study, we highly recommend extending the experience of such course redesign to other courses in the health professions schools. According to the university regulations, all sections of any course must be delivered in the same format. Thus, comparing the new teaching approach between experimental and comparison groups using quantitative or mixed-method design was not possible.

## 5. Conclusion

The current study showed the great potential of the novel teaching approach. This was evident by targeting pertinent academic behaviors. This is of special importance to nursing students as the clinical environment necessitates special skills such as teamwork, conflict resolution, and collaboration. However, further future studies are warranted. The current new teaching approach, as any other teaching approach, has its own challenges that need to be considered, to facilitate students' learning experience.

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## Ethical approval

The IRB approval (#20170386) was obtained before starting the course project through the IRB committee in Jordan University of Science and Technology.

## Declaration of competing interest

None

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