

Introducing debate as a pedagogical tool in pharmacy education.

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ABSTRACT: Communication skills are crucial for pharmacists' role in counselling and providing information to patients, other healthcare practitioners, and the community. This study explores the implementation of debate as a pedagogical tool into pharmacy education to improve students' communication skills. This study is part of the design-based research (DBR) project FREMFARM that aims to design, test, and evaluate the expansion of active learning modalities in pharmacy education at the University of Bergen. The project embeds an explicit focus upon the Scholarship of Teaching and Learning. The sample in the current study consisted of 4th year pharmacy students. Qualitative methods were used to explore students' perception of implementing the debate activity in the Clinical Pharmacy course. Data were collected using a short pre and post questionnaire, observation using an adapted version of the Teaching Dimension Observation Protocol and post activity focus groups. Analysis was inspired by the systematic text condensation methodology. Our main finding was that students showed a high level of enthusiasm and interest in the new learning activity. Most students agreed that the debate helped them structure their thinking and simplify their language when communicating complex concepts. Students also expressed that preparing for the debate helped them organize thoughts, spurred them to gather information from prior taught courses, and draw connections to additional fields to prepare arguments. Some students reported transformation in their learning and change of their position and perspective after the debate. Still, some students found the effort used to prepare for the debate activity too large in relation to the gains. We conclude that the debate as a teaching tool increases students' engagement and that the students experience that the activity had positive impact on their communication and argumentation skills. Despite students experiencing the debate as an unknown and demanding methodology, they considered it important for their academic and professional development. It generated opportunities for critical thinking, argumentative capacity, use of communication skills and teamworking skills. We consider the first trial successful and will continue to implement and upscale the use of debate as a pedagogical tool for future evaluation.

1 INTRODUCTION

1.1 Teaching for the future

Societal developments entail new demands on educational institutions. Students that graduate are expected to have not only theoretical knowledge, but also the competences to handle the high-paced development and information overload of the society they are graduated into. In times of fake news and pseudoscience, one important skill is the ability to respectfully disagree and meet arguments with evidence-based counterarguments. The "four C's" of 21st century learning: critical thinking, communication, collaboration, and creativity, should be an integrated part of all education, regardless of study program (Chiruguru, 2020). Controversies exist in all fields and disciplines, and the graduate of today is expected to add insight and value to interprofessional teams. The access to information has never been easier, shifting the balance for university educators, from the mere teaching of facts, to how to utilize information (Kennedy, 2007). Additionally, development in science is high paced and progress is inevitable. Critical thinking and ability to discern evidence-based information from erroneous, as well as accepting that learning and competence building is a never-ending, continuous life-long process must

be emphasized. Thus, in addition to the given educations' core curriculum, the universities need to promote students' communication-, innovation-, teamwork-, and critical thinking skills to implement in all aspects of their practice. In the light of this, the way teaching is being conducted also needs to change. A shift should be made to learning activities and assessment forms that promote a broader set of learning outcomes as well as increase student engagement. Kuh (Kuh, 2001) describes student engagement as the time and effort students devote to learning activities. Student engagement is empirically linked to desired outcomes of college and what institutions do to induce students to participate in these activities. Research shows (Christenson, Reschly, & Wylie, 2012; Reeve & Tseng, 2011; Zepke & Leach, 2010) that when students are challenged and provided with opportunities to learn autonomously and develop their sense of competence, they are more likely to be engaged and succeed.

Studies have demonstrated that active teaching methods increase student learning and performance, including in the traditional science, technology, engineering, and mathematics (STEM) disciplines. (Freeman et al., 2014; Jenó, 2015). Research has also shown that the total learning outcome for a student subjected to active teaching methods exceeds their perceived learning when compared to traditional learning methods such as lectures (Deslauriers, McCarty, Miller, Callaghan, & Kestin, 2019). This implies that student evaluation on self-reported learning should not be the sole basis for decision on learning method in a course. Despite growing evidence that active learning has a positive impact on students' learning and academic achievement, there are still barriers to implementation. A number of causes for this have been suggested, including active learning requiring more preparation time from staff, physical obstacles such as unsuitable classrooms and that students don't know how to do active learning (Bowers & Asbill, 2022; Michael, 2007). Despite these obstacles, exterior causes such as the covid-19 pandemic has sparked academic institutions to review and adapt their modes of teaching, and perhaps inspired skeptical university staff to adapt to new teaching methods in response.

1.2 Debate as a pedagogical tool

The Oxford Learner's Dictionary defines debate as "a formal discussion of an issue at a public meeting or in a parliament. In a debate two or more speakers express opposite views and then there is often a vote on the issue" ("Definition of "debate" ", 2022). Constructive controversy in the form of intellectual conflict has been demonstrated as an effective learning method and applicable to any topic as long as at least two aspects of a subject can be identified (Johnson, Johnson, & Smith, 2000; McKeachie & Svinicki, 2013). Potential learning outcomes include the ability to research an issue, how to structure an intellectual argument, view an issue from a variety of perspectives, and synthesize diverse positions (Johnson et al., 2000). Debate as a learning activity has been described as advantageous in several healthcare educations including medical-, nurse- and pharmacy study program (Erstad & Murphy, 1994; Lampkin, Collins, Danison, & Lewis, 2015; Rodger & Stewart-Lord, 2020). In terms of communication skills, the debate has the potential to increase negotiation skills, enhance language consciousness and argumentation techniques as well as highlight the crucial ability to persuade without being aggressive or condescending (Kennedy, 2007).

However, debate as a learning method can be applied to a variety of fields and topics, ranging from ethics and values to healthcare politics, as well as scientific controversies or dilemmas with a basis in the traditional STEM subjects. An example of this originates from the field of biology, where the debate was incorporated to cover learning outcomes related to the use of HeLa cells in research (Stearns, O'Donovan, & Eslinger, 2021). In this example, specific learning outcomes ranged from covering knowledge and understanding of the generation of cell lines in general, and the HeLa cell line specifically, its importance in modern day biological research, bioethical discussions surrounding use of the HeLa cell line and perspectives on historical and future use of HeLa cells in scientific research (Stearns et al., 2021). This demonstrates how the use of debate as a learning tool can increase research-based learning and facilitate learning at the higher levels of Bloom's taxonomy of learning (Moore, Clements, Sease, & Anderson, 2015).

1.3 The field of pharmacy and the pharmacist role

In Norway, joint learning outcomes for pharmacy education has been legislated since 2020, thereby explicitly dictating that the pharmacy educational institutions include communication, teamwork and interprofessional collaboration in their curriculum, as well as the more traditional STEM components

(RETHOS, 2020). This aligns with other countries legislative educational outcomes such as the Centre for the Advancement of Pharmacy Education (CAPE) in the US (Medina et al., 2013). Pharmacy as a scientific field encompasses a wide range of subjects and applications. From traditional STEM such as mathematics, biology, and chemistry to subjects closer to the field of medicine. Clinical pharmacy, considered a cross-discipline subject, includes communication and patient care as well as the practical use of medications to optimize health outcomes of patients. The course is placed at the end of the study program, and students must integrate and apply all prior knowledge from STEM subjects and clinical courses, to obtain optimal health outcomes for the patients. The pharmacist's role and place in the healthcare system has undergone changes in recent years. A shift in focus is currently evolving, from technical skills and practical production of medicines to being fully pledged members of the interprofessional patient centered teams (Holland & Nimmo, 1999; Jokanovic et al., 2017). This entails counseling patients, discussing treatment options with other healthcare professionals and providing healthcare information to the public. As the healthcare system evolves and complexifies involving a myriad of different healthcare professionals, the pharmacist must obtain an overview, and be aware of their role in the system. Learning cannot continue to focus solely on knowledge and skills but should include reflections and highlight perception of role and pharmacist identity. Research (Toklu & Hussain, 2013), students' evaluations, and feedback from stakeholders, including employers and organizations relevant to the pharmaceutical field, agree that critical thinking and communication skills are competences pharmacists need, and that, currently, these competences are understated in the curriculum. With this as a background, it was decided to introduce debate as an active learning method in a clinical pharmacy course.

2 AIMS AND PROBLEM

The aim of this paper is to describe and share how we introduced debate as a learning activity in clinical pharmacy, and students' acceptance and feedback. The broad research questions aimed to explore if the debate activity: a) has the potential to improve students' communication and argumentation skills b) increases students' engagement.

We consider this paper as a bridging stone between individual practice in the classroom teaching and higher education research, between anecdotal sharing of best practices and publication of evidence-based scholarship, between individual evaluation of teaching effectiveness and a collective understanding and analysis of learning outcomes.

3 METHODS

3.1 Research design

This study is part of the first phase in a design-based research (DBR) project (FREM-FARM) that aims to design, test, and evaluate the integration of active learning modalities in pharmacy education at the Centre for Pharmacy at the University of Bergen. DBR involves systematic implementation, analysis, evaluation, and development of an educational intervention with the aim of building a stronger connection between the research and educational practice in a collaboration between researchers, educators, and practitioners (Amiel & Reeves, 2008; Barab & Squire, 2004; Plomp, 2013; Van den Akker, Gravemeijer, McKenney, & Nieveen, 2006).

DBR employs numerous research methods to enhance the credibility of the research (Wang & Hannafin, 2005). In the present case, qualitative methods were used to produce new knowledge on students' perception of implementing the debate activity in Clinical Pharmacy as a pedagogy tool to improve their communication and argumentation skills.

The debate was one of several educational innovations that were introduced. For this paper we have extracted the data relevant to this specific innovation.

3.2 Participants

A total of 19 pharmacy students were enrolled in the course where we introduced debate as a learning method. The course is in the 4th year (7th semester) of a 5-year degree. Of these 15 were women and 4 were men. The average age was 24 years. All the students consented to participate in the study.

3.3 Research ethics

The FREMFARM study was registered in RETTE (in Risiko og ETTERlevelse i forskningsprosjekt), the UiB system for overview and control of personal data processing in research. Students signed consent forms and were informed by direct message via MittUiB, the learning management system (LMS) at the University of Bergen, about the project and participation conditions. A copy of the consent form (in Norwegian) and the recruitment letter (in English) are attached.

3.4 Data sources

Data were collected using three main sources: classroom observation, focus groups and a course evaluation questionnaire (Student Assessment of their Learning Gains (SALG)).

3.5 Classroom observation

We performed observation of classroom instruction, including the 2 lectures in the course where the debate activity was implemented. We performed the observation using an adapted version of the Classroom Observation Protocol for Undergraduates STEM (COPUS) (Smith, Jones, Gilbert, & Wieman, 2013). The use of this protocol allowed us to describe and evaluate the debate activity in the classroom. The observation was key to capture the behaviors of the instructor and students, it gave us a richer picture of students' interaction and engagement during the activity. The COPUS involved coding the actions of the instructor and students every 2 minutes in addition to note taking in the same platform, and therefore yielded descriptive data. Data was also collected anonymously from students using Mentimeter® during classroom activities.

3.6 Focus group

Focus groups were included to provide richer data about the student experience than the other forms of data collection could provide. Focus groups created a space where students could largely control the conversation, consistent with a student-led approach to teaching. We performed a total of two focus group interviews, the first had three participants, and the second had five participants. The focus group interview guide was developed based on the FREMFARM research questions and clinical pharmacy learning outcomes.

3.7 Course evaluation questionnaire

The course evaluation questionnaire was built on a combination of the basic online version of the validated and field tested questionnaire: "Student Assessment of their Learning Gains" (SALG) instrument and a course evaluation questionnaire developed by Dee Fink (Fink, 2013; Seymour, Wiese, Hunter, & Daffinrud, 2000). The questionnaire included questions regarding themes such as the overall course design, the learning outcomes, and the teaching activities. The questionnaire included two specific questions about the debate, and it was answered by 9 out of 19 students.

3.8 Data analysis

The focus group conversations were recorded and then transcribed and translated by the main researcher. Analysis was conducted by the main researcher in consultation with the course teacher, following a protocol inspired by the systematic text condensation methodology (Malterud, 2012). For the present paper, debate activity related data was extracted and analyzed. The resulting analytical text was reviewed and assessed along with the results of the observations and the questionnaires

A triangulation process of the data was performed by examining evidence from the sources and to build a coherent justification for themes (Creswell & Creswell, 2017). Triangulation of observations with other sources of data increases the expressiveness of the collected data (Flick, 2018). The data used in this paper was extracted from the whole project data.

Subsequently, a set of major categories representing different aspects of the study goals about active learning, communication skills, the debate activity as a pedagogy, among others, were identified and coded.

3.9 Design of the learning activity

The choice of implementing the debate activity was a result of the collaboration between the course leader and the educational researcher.

Building on Biggs' constructive alignment theory framework (Biggs, 2003) an initial literature search was performed to explore what has been done in the field to improve student communication and argumentation skills. Later, a review of the course learning outcomes was done in addition to a review of the course plan. After a period of reflection and dialogic collegial conversations, the debate activity was chosen.

An outline of the debate activity was created, and 5 former students were invited to share their opinion on the design of the activity and the learning outcomes. This was done mainly to explore whether the activity would be welcomed by the students and if they would be motivated to try it out. The students agreed on the feasibility of the activity. The debate activity framework is described in Fig. 1. It was allocated a total of 5x45 minutes, distributed over two sessions, one week apart, in addition to student preparation time. The introductory lecture focused on debate as a learning activity, started a meta conversation explaining the learning outcomes, as well as gave the students an introduction to the field of rhetoric. For the introduction to argumentation, learning material was adapted and translated to Norwegian, from the "Derek Bok center for teaching and learning" online resources for classroom debate, and specifically the debate moves cards were used for student practice ("The Derek Bok center for teaching and learning," 2022). The students went through two rounds of warm-up debate collectively as a group. In the first round, a low stake statement was made (e.g. Taco is delicious) and in turn, each individual student continued the debate using statements provided from the debate moves cards, such as "other people may say that ____, however I find ____" ("The Derek Bok center for teaching and learning," 2022). For the second round the level 2 debate moves cards were used, increasing the complexity of the arguments, as well as choosing a higher stake topic, namely "pharmacists should be allowed to prescribe medications in Norway" and debate moves such as "opponents often argue ____. In isolation, they might be correct. But if we look at the evidence, we can see that ____" ("The Derek Bok center for teaching and learning," 2022).

Activity framework

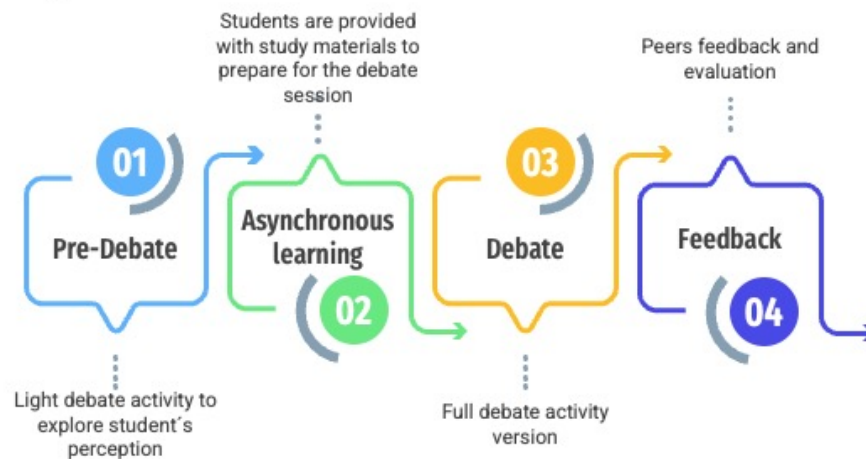


Fig. 1 Debate activity framework, Clinical Pharmacy (FARM321), fall21

To choose the main debate topics, we asked the students to suggest some statements that they would like to debate and then we used an online voting system (Mentimeter®) to choose the two most voted for titles. The most popular topic was suggested by the teacher ("Medicines should only be sold in pharmacies in Norway") and the second most voted one was suggested by the students ("All pharmacy education in Norway should have the same curriculum").

The students had one week between their clinical pharmacy lectures, giving them time to work on their preparations for the debate, including making an introductory statement, rebuttal and concluding statement. Fig. 2 describes the phases of the debate. In order to prepare for the debate session, students were provided with a set of resources on MittUiB such as debate cards with tips on sentences and

expressions that could be used ("Ta ordet!," 2022) for them to go through asynchronously. Additionally, audiovisual materials showing examples of good and bad ways of debating from the Norwegian tv show "NRK Debatten", and information and examples about the rhetorical appeals of ethos, pathos and logos (Killingsworth, 2005) were provided.

To collect data from the activity prior to the debate a poll was conducted using a student response system, asking the groups' opinion on the subject to be debated. Immediately after the concluding remarks, another, identical poll was conducted to observe a possible change of opinion, followed by general feedback using open-ended questions. A few weeks later, students were recruited for the focus group interview.

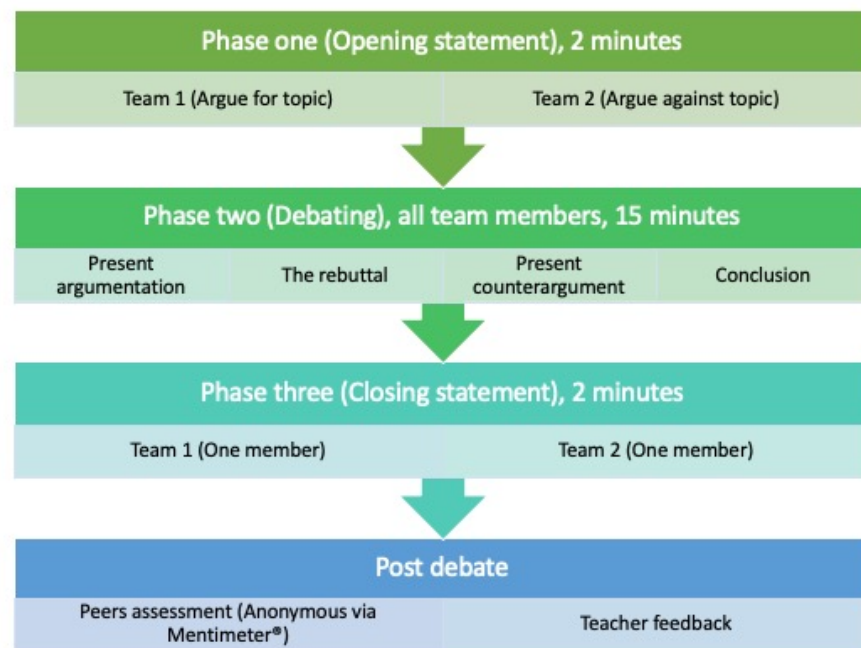


Fig. 2 Debate activity phases, Clinical Pharmacy (FARM321), Fall21

4 RESULTS AND DISCUSSION

4.1 Collaborative scholarship model

In our work we embedded an explicit focus upon the Scholarship of Teaching and Learning (SoTL) inspired by the collaborative scholarship model (see Fig. 3) designed by Weaver et al. (Weaver, Robbie, Kokonis, & Miceli, 2013).

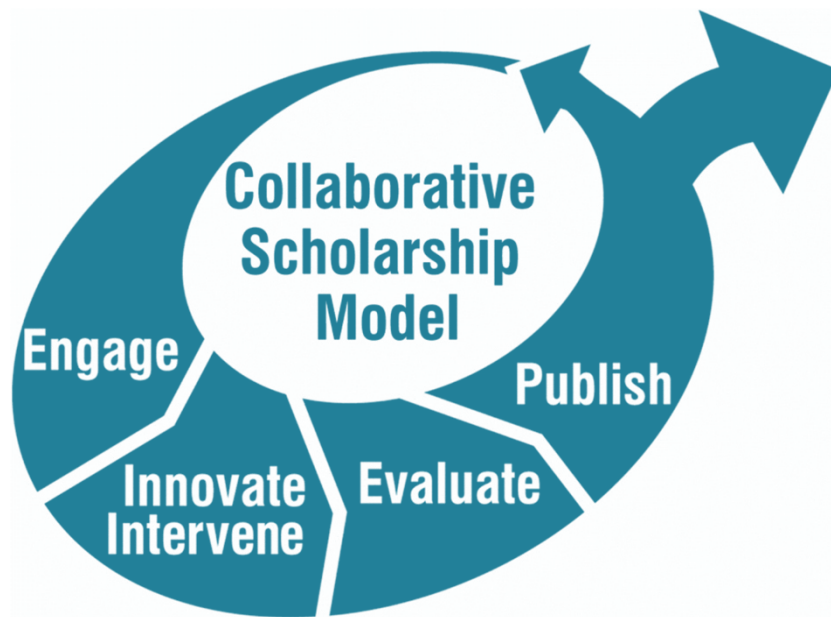


Fig. 3 The four stages of the collaborative scholarship model - Weaver et al

The design of the model was informed by research on learning and teaching, linking theory with practice and focusing on sharing and disseminating. Boyer's (Weaver et al., 2013) theory of the scholarship of teaching provided a framework for the design of the model.

Our main finding was that overall, all the students showed a high level of enthusiasm and interest in trying a new learning activity. Most of the students agreed that the debate helped them structure their thinking and simplify their language to communicate complex concepts. Students also expressed that preparing for the debate helped them organize their thoughts, spurred them to gather information from prior taught courses, and make connections with additional subjects to prepare their arguments. Some students reported transformation in their learning and change of their position and perspective after the debate. Still, some of the students found that the effort used to prepare for the debate activity was too large in relation to the gains. The time spent on a specific teaching activity should always be justified in relation to the actual learning outcome for the students. In contrast, the feedback regarding the high workload could also reflect the negative correlation between actual learning vs. the feeling of learning described by Deslauriers et al. (Deslauriers et al., 2019) when using active learning techniques and the resulting cognitive effort the students need to apply compared to traditional student passive learning. Interestingly, other studies measuring student's perception of learning outcome from debate learning activities have similar findings regarding workload and time spent on the activity (Charrois & Appleton, 2013; Hanna et al., 2014). Nevertheless, our positive findings mirror those reported from others who have introduced debate in pharmacy curriculums: ability to formulate arguments, review information, teamwork and expanded knowledge of the topic being debated (Dy-Boarman, Nisly, & Costello, 2018).

Fink's Taxonomy of Significant Learning describes an integrated approach whereby different kinds of learning can stimulate each other (Fink, 2013). This taxonomy is described in the domains of foundational knowledge, application, integration, human dimension, caring, and learning how to learn. Thus, if a learning activity can incorporate several, or ideally all, of these forms of learning, one achieves what he refers to as significant learning. Fink's approach switches the emphasis away from content toward the outcomes in terms of knowledge and skills that the instructor wants his or her students to acquire during the course. This approach could also mitigate the risk of "the illusion of learning", described by McKeachie et. al. (McKeachie & Svinicki, 2013) as a situation where an expert explains a complex concept to students, who may perceive it as simple, but later they are unable to utilize the concept in problem solving (McKeachie & Svinicki, 2013). In the following we will present findings that indicate that introducing debate as a learning method created grounds for significant learning.

4.2 Towards a pedagogy that fosters critical thinking

As a starting point, students showed an enthusiasm toward trying the debate activity for the first time. When answering a single open question about using debate as a learning method, students were positive toward trying a new method but skeptical about the time needed for preparation. Examples of their answers in relation to that point are provided in Table 1.

Table 1 Preparatory session feedback - Mentimeter®

<i>What do you think about using debate as a learning method?</i>
Fun with variety, but maybe a little too much time
Fun with something new, but the downside is that it takes a lot of time in everyday life now that we have a lot to read. Will therefore not spend a lot of time and thus learn little
Exciting and different, you can also have fun!
Looks exciting and educational!
Useful experience 😊
Different
Weird but interesting, a little time consuming
It's brand new but we'll see how it goes
Different point of view
I think it's good that you can practice and learn a lot about communication.

During the preparatory sessions no real debate was generated, students were participating in a “debate game” using short, close-ended answers. Although initially skeptical, the students demonstrated increasing engagement throughout the preparatory games.

In the main debate activity some of the students showed a much higher engagement and enthusiasm toward the closing arguments, than they had initially. At the beginning of the activity, student corporal and verbal language was mainly directed towards the teacher but as the activity progressed, they switched to being directed to the opponent team, started using more corporal gestures and raised their voices, indicating increased engagement and interest.

The above was confirmed from the focus group conversations where all participants affirmed that they were open to trying something new although some had hesitation at the beginning. As expressed by one of the students:

“At the beginning I had a negative feeling about the exercise. It is always a challenge to try something new ... but while we were debating, I became happy, and I engaged in the practice. I never thought that I could learn by debating. It was a great learning experience” Student 1- Focus group 1

In addition, the observation data shows that student engagement during the debate session was mainly high or medium as shown in Fig. 4. Following the COPUS user guide, criteria for measuring the level of engagement where: percentage of the students in the immediate area of the observer (a) actively taking notes, or (b) looking at the instructor/course materials.

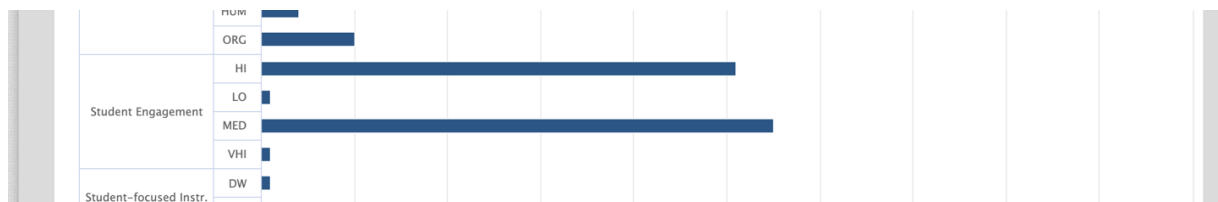


Fig. 4 Debate session 2 data overview – Source COPUS observation protocol (HI: High, LO: Low, MED: Medium, VHI: Very high)

The students reported that the debate activity challenged them to gather information in a different way than they usually do. For instance, one of the debated topics was: “Should medicines be sold only in pharmacies?”. Although this topic is a question founded in community/political aspects and the arguments at the start of the debate focused on access to medicines and rules and regulations, students proceeded to incorporate arguments that were founded in research, namely that the number of medicine overdoses among young persons and use of paracetamol has increased after grocery stores and gas stations started selling this medicine in Norway. Thus, they incorporated their knowledge of the pharmacology and toxicology of the medicines and synthesized it with the topic being discussed. They had to look for facts that sustained their point of view and think about the opposing arguments as well as how to retribute them. Studying the topic from all possible sides gave them a more complete knowledge.

The observation data showed that students who were usually more passive or had reservations on speaking in public seemed at ease in sharing their opinion in the more structured activity that the debate was, where they were assigned a role and a specific task. The more active students showed an even higher engagement than before, indicating that a range of students gained from the learning activity.

In addition, students affirmed that their participation in the debate helped them realize the existence of complex problems with no clear right or wrong answer. In that sense, the debate stimulated a process of reflection and analytical and critical thinking. The ability and process of explaining and arguing their finding about a topic is crucial for critical thinking (Goldsmid & Wilson, 1980).

4.3 Toward a simpler patient-communication language

The students had to write their argument in a concise and simple language due to the time restraints of the activity. This exercise helped the students to explain complex concepts in a simple language, one of the key components of the patient centered communication skills, that this activity was intended to help the students develop and improve.

Although challenging, students reported that the requirement to compose short concise oral arguments for the debate session was one of the benefits they achieved from the assignment. As expressed by Student 3 who participated in one of the focus group sessions:

“I think that it was a good thing to do. When we as pharmacists are at the pharmacy you sometimes need to convince the customer. And when we are convincing, we need to use good arguments and we must learn it here so we can use it in daily life later and in the pharmacy. I think that it is a very good technique and to learn how to build the arguments ethos pathos logos. I think that it will be a win-win practice for the pharmacy and for the customer.” (Student 3)

Students acknowledge that in order to construct and contribute to a patient-centered pharmacy it is crucial for them to be able to communicate in a simple and clear way with a variety of patients (Ratna, 2019).

In addition, good communication with the patient can improve the relation between pharmacist and patient. building trust. This can be an important factor in increasing patient adherence to medication, increase customer loyalty and improve pharmacist-patient care in general (Castaldo, Grosso, Mallarini, & Rindone, 2016; Penn, Watermeyer, & Evans, 2011). This was also pointed out by the students themselves:

“Using a simpler language can not only improve the patient understanding but it can increase the patient trust level”. (Student 2)

4.4 Teacher role and feedback

As explained by Boud (Boud, Cohen, & Sampson, 1999), learners and teachers can participate in the same feedback activities but their roles and required competencies vary. Peer feedback can help develop skills such as critical reflection, listening and acting on feedback, and encourages students to share judgement based on specific criteria (Carless & Boud, 2018; Liu & Carless, 2006). Learners can build on the peer feedback and reflect on the choices they made.

The feedback process was structured to enable students to give formative feedback to their peers and to optimize the opportunities available to them. Feedback was given by peers immediately after the activity using the online tool Mentimeter® which enabled a more efficient and scalable feedback process. Students were asked to answer two questions; in the first one they were asked to give a general team performance feedback by evaluating 6 items: argument foundation, argument support, argument presentation, the rebuttal, the counterarguments, and the conclusion (see Fig. 5), the second was an open-ended question where they had the chance to give more personalized feedback.

Feedback TBL 4: Against

Mentimeter

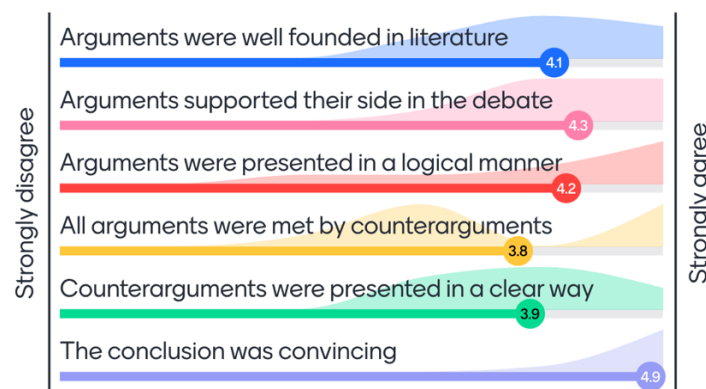


Fig. 5 Debate peer evaluation, Clinical Pharmacy (FARM321), source Mentimeter®.

During feedback, some comments were constructive offering a specific way of improvement. For example, encouraging their peers to use evidence-based argumentation:

“Very good. Good arguments. But maybe for next time build the argument on facts from the economy to be realistic” or “Well done, could focus more on the role of the pharmacy than a regular grocery store.” Anonymous comments from students, source: Mentimeter®

Some other comments were focused on the student behavior and the language tone. For example:

“Very strong arguments used both logos pathos ethos”, “Got a real debate feel on counterarguments and posts. It reminds me of politicians”, “Good arguments but sometimes a bit aggressive”. Anonymous comments from students, source: Mentimeter®

The observation data show a high level of engagement where the students became the guide and driver of the active learning process. This represents a semi-open teaching model, where the fundamental information is provided by the teacher, but the activity is entirely carried out by the students. This format provided a larger space for students to actively contribute to their learning and have an impact on their peers’ learning.

The teacher organized and coordinated the overall activity, ascertained that the active participation of all teams’ members was maintained, and that peer assessment was useful and reasonable.

4.5 The activity structure

As the activity was being tested for the first time and after consultation with the FREMFARM students' group, the teacher decided to keep a strict format and provided the students with information MittUiB for asynchronous study about the debate components, examples of good and bad debate, the origins of the debate, styles, and types of arguments in addition to research papers and articles about the debated topics.

Although it was useful for the students to go through all the materials, some of them found the structure a bit rigid and would have preferred to be more flexible:

“We, pharmacy students, have the tendency to study a lot and to go through all the material provided by the teacher. I think that it was a heavy week to prepare for 20 minutes debating. I really enjoyed the experience but maybe we should have a more spontaneous format next time and practice more often” (Student 3)

In the same line, students mentioned that they were concerned about the time required to prepare for the activity, and they found that the gains were perhaps not large enough given the time spent on the preparation.

“It was really fun as a new experience to try something new, but the downside is that it takes a lot of time in everyday life [in a very busy semester]” (Student 3)

On another note, students commented that their choice of topic was not ideal, and they need more guidance to choose the topic. The debated topics were interesting from the students' point of view, but it was not easy to find facts and research about them. As expressed by one of the students:

“We chose the topics ourselves, but I think that it was a problem. So maybe instead of focusing on which topic is more popular, focus on which one can generate more discussion and engagement.” (Student 2)

We believe that a higher engagement could be stimulated if the topics are a) Subject related, b) related to current events in society and c) controversial health matters.

4.6 What have we learned

This study is part of a three-year project (www.fremfarm.com) that aims to implement active learning activities in pharmacy education to achieve goals such as improving students' communication skills. It is a qualitative, small sample, limited to one semester and one main debate session, therefore it is subject to contextual constraints and validity issues. Despite this, it indicates positive outcomes of the integration of the debate as a learning method to improve students' communication and argumentation skills and foster critical thinking skills.

Despite debate being an unknown and demanding methodology, students considered it important for their academic and professional development, it generated opportunities for the exercise of critical thinking, argumentative capacity, communication skills and teamworking skills.

The debate activity was originally discussed and designed in alignment with the course's academic objective and learning outcomes. In this way, the student is actively constructing the knowledge of the debated topic. Because they need to know it, research it, communicate it and defend it before an audience. Consequently, the student's knowledge is significant and not inert or an illusion of learning (Fink, 2013; McKeachie & Svinicki, 2013). Significant learning happens when the student is the center of the activity while the teacher is acting as a learning process companion (Fink, 2013).

We found that the debate presents an effective strategy to generate discussion in the classroom where students are actively involved. Students need to engage with concepts and procedures and construct meaning to truly understand and learn (Petty, 2016).

However, to become proficient in any skill, repetition is crucial. Therefore, introducing activities such as this at an early stage of their study is recommended. From the data analysis we can see that the debate can help the students to improve their communication and argumentation skills. However, to fully master the debate techniques and achieve maximum benefit from this activity, it has been recommended to

implement debate already in the first year of pharmacy education (Burke et al., 2008; Medina et al., 2013).

Additionally, explicitly aligning the activity with the learning outcomes is pivotal, for the students to understand the reasoning behind the activity (Fink, 2013) and gain significant learning. The initial meta conversations about why we were introducing debate were crucial in this.

4.7 Limitations and way forward

Several limitations and challenges were detected. The success of the debate depended on several factors: fitting the debate into the busy schedule of students and combining with other active teaching methods, students' interest in the debate topic and participation, where a more contemporary-focused topic may stimulate a higher engagement, and the type of feedback and assessment given retrospectively, where more guidance is required. Another issue was that some of the students found the debate less beneficial for their learning compared to other activities like role play and Team Based Learning (TBL). In that sense, we believe that it is necessary to review the overall structure of the debate to create clear links between the activity and the student's perception of its relevance and meaning for their learning.

In conclusion, we summarize that the debate as a teaching tool does have the potential to improve students' communication and argumentation skills, and that it increases student engagement. Therefore, we consider the first trial successful, and we will upscale and implement it in our classrooms for future evaluation.

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