

Dialogical narrative approach to enhance critical thinking and student engagement during lecture-based classes

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Abstract

Introduction: The dialogical narrative (DN) approach is an interactive teaching method designed and applied to the teaching of physiology to medical students. It uses an interactive conversational style within a narrative design. This study sought to answer the question “How do medical students perceive the effectiveness of the DN approach in promoting participation, engaged learning and critical thinking?”

Methods: Physiological subject matter was presented to a class of second-year medical students in a manner that combined storytelling and a question–answer conversational style. Soon after, two focus group sessions, each with seven participants, were conducted to determine the students’ perceptions of the effectiveness of the approach. Recordings from focus group sessions were transcribed and subjected to qualitative thematic analysis, informed by narrative inquiry and dialogism.

Results: Analysis revealed that students felt the DN approach: encouraged critical thinking, was more engaging and conducive to active participation than traditional didactic lectures and provided a narrative flow and logical progression of material. The approach challenged students who were not used to public speaking and encouraged students to be well prepared. The teacher needed to upskill in managing the approach and asking the right questions.

Conclusions: The students were divided between those who feel comfortable with active, open dialogue in the class and those who do not, but most believed the interactions fostered skills that are important. Most students preferred the DN approach over

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traditional lectures. The great strength of the DN approach is the manner in which it integrates practical teaching measures within a sound theoretical framework.

Keywords: physiology; dialogism; didactic lecture; narrative; medical education; critical thinking; dialogical narrative.

Introduction

“There are, therefore, real demands on all health professions to educate newcomers so that they are ready both for the practice of today and ready to cope with the practice of tomorrow, even though we cannot be certain what the practice of tomorrow will look like” (Loftus & Huggett, 2019, p. 218).

The practice of medicine is changing rapidly and has been for many years. The rate of change seems to be accelerating. Medical education, therefore, needs to adapt to this change and prepare students so that they can cope with a practice that will be continually changing throughout their working lives, and changing in ways that we cannot always anticipate. We cannot simply present them with up-to-date information in our teaching. We also need to foster their critical thinking skills so that they can judge new information as it becomes available. Despite the shift towards more small group learning in many medical schools, conventional lectures still play an important role today. Conventional didactic lectures may be an effective means of conveying information but do not easily foster critical thinking. In this paper, we describe a modification of the lecture format that aims to go some way to address this issue.

Concern over conventional, lecture-based approaches to medical education is hardly new. In 1899, William Osler (1913), one of the pioneers of modern medical practice and education, claimed that medicine had become so complex that conventional lecturing was inadequate. Osler even suggested abandoning conventional lectures all together. He believed lectures neither encouraged proper qualities in medical students nor promoted a lifelong appreciation for learning. The Flexner (1910) reforms, in North America, did much to improve medical education by insisting on a scientific basis but did little to address the details of pedagogy, and conventional lectures continued to dominate.

Conventional medical curricula still typically involve large group lectures (Long & Lock, 2014). In these settings, the medical students' level of engagement is open to question. Conventional teaching approaches are often conducive to superficial learning, where students are often passively memorising information rather than actively and critically acquiring and understanding knowledge. Lectures often require little or no interaction to find out whether or not the students engage with, and understand, the subject (Coles, 1990; Kassebaum, 1989). A lecture-based classroom emphasises learning for individuals but offers little in the way of interpersonal and social learning (Sternberg, Grigorenko, & Zhang, 2008). We believe that incorporating interactive and engaging exercises within lectures can promote active learning. The goal of this project was to develop an approach to interactive and engaging lectures that would be firmly grounded in appropriate theories. In a previous paper (Kamel-ElSayed & Loftus,

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2018), we argued in more depth for the combination of the particular theories we use. This argument is briefly recapped here.

The first theory we used was dialogism, based on the work of Bakhtin (2014). Dialogism emphasises the importance of relationships for generating meaning and informs dialogic teaching. Relationships can be between students and the material we want them to learn, and between the teachers and the learners. Another theory we used was narrative medicine and narrative inquiry (Davidhizar & Lonser, 2003; Diekelmann, 2001; Loftus & Greenhalgh, 2010). A narrative approach emphasises the importance of stories and storytelling for human beings to generate meaning. We also made use of threshold concepts (Cousin, 2006). These are the key ideas that students need in order to understand a topic. By focusing on such key ideas, we can avoid the “drinking from a fire hose” phenomenon that many students complain of. Threshold concepts allow a “less is more” approach and encourage participants in the teaching/learning experience to focus on working with the key ideas and “trying them out”. We want students to see how these key ideas make up the meaningful stories of the material we want them to learn and to question how robust and meaningful these stories are. These theories are explored in more depth below.

Dialogic teaching

While the theory of dialogism is based on the work of Bakhtin (2014), it can inform an understanding of “dialogic teaching”, which can be traced back to Socrates. In dialogic teaching, the teacher’s role is to encourage students to question their knowledge and its underlying assumptions. The teacher uses a question and answer dialogue to challenge students and encourage participation, thinking and learning (Fisher, 2007). The teacher not only asks questions to elicit student responses but also encourages students to ask further questions. This leads to discussion and argumentation that can challenge students to think critically rather than passively accept information (Alexander, 2006).

Dialogic teaching involves ongoing discussion between the teacher and students rather than lectures in which only the instructor is active, and this shifts some initiative and power to the students. Through dialogue, teachers can elicit students’ perspectives, which allows a teacher to more accurately identify and overcome any misunderstandings (Alexander, 2006; Linell 2007). In the wider education literature, dialogic teaching is seen to enhance students’ critical thinking (Frijters, ten Dam, & Rijlaarsdam, 2008; Hajhosseiny, 2012; Slavin, 2006). For example, a 2008 study explored dialogic versus non-dialogic teaching approaches in prevocational secondary education implemented in biology. The results indicated that the dialogic learning condition, compared to the non-dialogic, resulted in a more positive effect on the critical thinking competencies of the students, both in terms of generative fluency of reasoning and quality of value orientation (Frijters et al., 2008). Additionally, the results of a study on university students’ critical thinking indicated that dialogic methods improved truth seeking and open-mindedness, as well as social interaction in the classroom, including taking responsibility, interaction and intimacy with the teacher and each other (Hajhosseiny, 2012). Dialogical practices promote an inclusive environment, where students who

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normally do not speak in class can gain the confidence to contribute, ultimately nurturing the student's engagement, confidence, independence and responsibility (Alexander, 2006). In our approach, dialogic teaching was also combined with a narrative approach.

Narrative teaching

One of the most effective methods of sharing information is through storytelling. We, as humans, are storytelling creatures. Our stories capture interest and attention, enable recall of details by association and bring facts to life by putting them in meaningful personal scenarios (Davidhizar & Lonser, 2003; Wertsch, 2009). When sharing and transferring information within the field of healthcare, a narrative framework provides rich information, detailing human experience, which promotes empathy and understanding by the listener (Sandelowski, 2000). Employing a narrative approach in teaching practices has the potential to open up students' thinking and allow them to explore subtleties of professional knowing and decision-making. Loftus and Greenhalgh (2010) state that "a narrative approach reminds us to answer all the relevant questions of practice: who, what, why, where, when and how, and not just the how and what of a purely scientific approach" (p. 85).

The use of a narrative framework to present subject material, or storytelling, has been extensively documented as a research-based, innovative alternative for reforming the education of health professionals. It is widely seen as a useful tool in teaching practice within the education programs of several health professions. For example, a narrative approach to nursing education was first researched and analysed by Diekelman (2001). Narrative pedagogy, as an adjunct to course content, focuses on processes such as teaching, interpreting, critically thinking and analysing concepts, ideas and situations. Students have attributed success in testing to being able to associate or recall facts with a story (Davidhizar & Lonser, 2003; Diekelmann, 2001). Brown, Kirkpatrick, Mangum and Avery (2008) explored the narrative approach and its usefulness in education as a way to expand the pedagogical literacy of healthcare educators. Brown et al. stated that the ability to know and connect with students becomes the focus of the learning environment. Using this approach, teachers and students form a partnership and publicly share and interpret their experiences (Brown et al., 2008).

The specific teaching approach we used in this project was to tell the story of a physiological system (the thyroid hormones) during an interactive lecture, making use of the DN approach and threshold concepts, such as homeostasis (Kamel-ElSayed & Loftus, 2018). This study sought to answer the question "How do medical students perceive the effectiveness of the 'dialogical narrative approach' in promoting learning and critical thinking?" We investigated how students perceived the effectiveness of this approach as well as their perceptions of the levels of engagement and participation that the approach encouraged.

Methods

Ethical considerations

Institutional review board (IRB) approval for this study was obtained by Oakland University's IRB [883433-4]. The focus groups were conducted by the medical student researcher (BKG) rather than a teacher so that there was no power relationship to interfere with data gathering.

Participants

The majority of 100 second-year medical students attended a non-mandatory, 50-minute lecture on thyroid physiology, given by one of the authors (SES). They were invited by the student researcher (BKG), via email, to participate in focus groups. There were two focus group sessions, each consisting of seven students and the researcher.

Study design

A lecture using the DN approach was delivered to a class of medical students. The week prior to the lecture, all the students were informed that the lecture on thyroid physiology would be given via the DN approach. Students were provided with PowerPoint slides of the lecture material designed by the teacher (SES) and encouraged to review the material beforehand. The lecture itself was delivered by the teacher using an interactive, narrative approach.

The interactions followed a storytelling format that incorporated simple questions and answers at regular intervals, using a modified version of the PowerPoint slides. Examples of how the theories influenced the lecture and its interactions include the following. An early set of questions asked the narrative questions who, where, what and how. *Who* were the main "characters"? In this instance, they were the T3 and T4 hormones. *Where* was the action occurring? The important location was the follicular cells of the thyroid gland. *What* was happening and *how*? The students were prompted to provide many of the details, including thyroid stimulating hormone receptors, mechanisms of action and functions such as iodine trapping and the iodination of the hormones and their transport through follicular cells and to the circulatory system. The final part of the lecture was devoted to clinical conditions and emphasised the importance of negative feedback and homeostasis, a threshold concept, in a discussion of iodine deficiency. The students were encouraged to comment on and build upon the answers of other students. Following the session, the focus groups were conducted to evaluate the learners' perceptions.

Data collection

Two focus group sessions, consisting of seven students each, were conducted within small group meeting rooms at Oakland University a few days after the lecture. A student-facilitator (BKG) led the focus group sessions. Discussion questions to assist in facilitating the focus groups included:

1. How was this lecture different to previous lectures you've attended?

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2. In what ways did this lecture alter your thinking process?
3. How did this lecture alter your understanding of this concept?
4. Did this lecture leave you with a deeper understanding of the material?
5. In what ways did this method allow you to integrate basic and clinical sciences?

The sessions were audio recorded and transcribed by BKG with participants de-identified.

Data analysis

Thematic analysis of the data was performed by BKG, SL and SES. This involved immersion in the data, requiring repeated reading and rereading of the transcripts. Careful attention was paid to ways in which the overall research question was answered in addition to other insights that emerged.

Validity and rigor

All three researchers read the transcripts separately and, only then, met to compare and discuss findings. There was consistent agreement between the researchers on the themes that emerged. Any differences were resolved by careful rereading of the transcripts.

Results and analysis

The focus group participants were all volunteers from the second-year class that had just received the lecture. The participants were self-selected; therefore, it is not possible to state how representative they were of the class. Thematic analysis of the two focus group sessions highlighted both positive and negative attributes. The main positive attributes were:

- enhancement of critical thinking
- enhancement of engagement
- narrative flow.

The main negative attributes were:

- being prepared
- nature of questions
- comfort with active participation.

The themes are discussed in the following text, and representative quotes are provided for each theme in Table 1.

Positive themes

The capacity for the DN approach to enhance critical thinking was borne out by the participants' comments. Participants explained that because their peers were explaining concepts and answering questions, they had a greater sense of skepticism towards their answers as compared to explanations from the teacher. They were more inclined to

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Table 1
 Themes and Comments from Focus Group Sessions

<p>Enhancement of critical thinking</p>	<p><i>It gets you listening and thinking in a way that you're not used to. It makes you question what other people are saying, which is a good thing. We should be questioning what our colleagues say; we should be verifying everything we hear. Because if you identify gaps in yours or your colleague's knowledge, both parties will learn and benefit greatly. (S1)</i></p> <p><i>I wasn't necessarily thinking differently, I was thinking critically about what everyone else was saying because you had to synthesise what you had read and what you knew and the info, and what other people were saying; whereas when a prof usually talks, I take that as the bible. I take it as "that is correct". When a student is presenting it, I begin to question it and wonder if it's correct. (S2)</i></p> <p><i>I really enjoyed when students were explaining concepts in class. I think there may still be a sense of suspicion and "Is that right?" but I also think it made me follow along with my notes, and the double checking really helped me learn the material. (S3)</i></p>
<p>Enhancement of engagement</p>	<p><i>I think engaging is the best way to describe this, compared to other lectures. It's a lot easier to pay attention and follow because of the interactive atmosphere. There's other people talking for once, allows you to stay interested in the topic. (S3)</i></p> <p><i>Personally, I liked it when there was a change, or disruption, in the class in which a new voice began to explain concepts. It got me engaged and focused on what material was being covered. And I also found it helpful when students may have made a mistake when explaining these concepts, because then when the instructor identified and explained the mistake, I felt that I had understood and retained that information better. Unfortunately, it doesn't help when a student may say something that I think may be wrong, and it doesn't get addressed, but I like having the different perspective. It forces me to engage and question the material. (S4)</i></p> <p><i>I'm always really frustrated with class when it's just one professor talking for 50 minutes, and you can tell that no one is paying attention. The classes I remember the best, and the ones that really stand out, are the ones that were more engaging. It's conversational; it's active; and it's engaging. Those are the kinds of qualities that really promote active learning, and I think that no matter what your learning style is, whether it's visual or auditory, the more engaging and active a process is, the more questions that are asked, the more it makes you think and the better you will remember it. (S1)</i></p> <p><i>I enjoyed this one in the sense that it was very engaging, a lot of the students talking. Students who have never spoke before volunteered and spoke up. I felt that it was really back and forth and engaging. (S5)</i></p> <p><i>The interactive quality of the lecture really forced me to stay engaged because I could have spoken at any moment.</i></p>
<p>Narrative flow</p>	<p><i>It was also easier to follow along as we were going from slide to slide because we weren't changing topics. There wasn't this huge break or harsh turnaround. It was a logical progression through the ideas that really helped you get a 3000-foot view of the big topics, and then we delve into the details of the topic. (S3)</i></p> <p><i>I had a pretty good idea of the big concepts coming into this lecture, but I think because it was this narrative, it helped me fill in all the details that I may have missed the first round through. I felt that the narrative approach of discussing thyroid physiology from start to finish in the chronology of its release, regulation and physiological effects really helped condense the material. I also think that this sort of material is usually presented in this way, and it should be. It helped me understand it wholly, from start to finish. (S5)</i></p> <p><i>I really like the organisation of this lecture, I felt that it made sense in its chronology, going through it step by step. It made sense, and it was easy to follow. (S7)</i></p>

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Table 1
 Themes and Comments from Focus Group Sessions (contd.)

Being prepared	<p><i>I think it's great if you're prepared and if you got a chance to read up on it, but if not, it can be really terrifying. (S1)</i></p> <p><i>I would like this method more for later review sessions. I don't want to learn my primary material through question and answer. This format really only benefits those who are prepared. (S3)</i></p>
Nature of questions	<p><i>I think the question and answer format works really well. I just think that you have to do it in a way where it flows well and it's not choppy and fragmented. I feel like you should ask questions that are clear and quick, one word maybe. If you ask a question that requires a 4-minute response, you lose the flow of the lecture, and you're going to get people that fall in and out of paying attention. There was a moment when one student was asked to explain a quick mechanism, and she did it in less than a minute, and I thought that was really helpful and did not disrupt the flow of the lecture. And if you had a fill-in-the-blank-style question, it could be answered quicker from the class without even requiring a hand to be raised. Students can just yell out the answer, and that can promote the participation of a lot more people by relieving the anxiety students may feel from answering bigger more-detailed questions. (S5)</i></p>
Comfort with active participation	<p><i>I don't think it's appropriate to call on people in a class this big. I think it would be really great and more appropriate if it was a smaller class. It puts people too much on the spot. I don't think it's fair. (S1)</i></p> <p><i>I think that the challenge here is that sometimes you have to sacrifice some student's comfort to push them into an area where they are uncomfortable for them to learn. (S3)</i></p> <p><i>Speaking as a student who hates speaking in front of the class, it is a terrifying moment, and it's a very high level of anxiety sometimes. ... I understand how it would benefit if more people were speaking, but it's one of those things that's a comfort level, and you really don't want to mess up. (S4)</i></p> <p><i>It's okay that you failed this time, and this will make you stronger as you progress through your career, because as professional physicians, we are going to have to speak in front of people all the time. So build those skills now while the stakes are very low.(S6)</i></p> <p><i>I know from personal experience that this is a safe environment. I'm taking every opportunity to fail now because I know that I will do things wrong. ... There will be no repercussions for what I fail at now, but in the future, there will be. So I want to make the mistakes now. (S7)</i></p>

simply accept information from a teacher who is seen as an authority, whereas a fellow student might have misunderstood an idea. This prompted students to be more critical and to question what other students said. Occasionally, students did make errors, and this allowed the teacher (and other students) to correct misconceptions. Participants also expressed an increased level of engagement and participation. A range of voices in addition to that of the teacher gained their attention. The opportunity to critique and judge the understanding, or misunderstanding, of peers was, in itself, engaging. There was also the chance that anyone could have been called on to answer a question, which encouraged full attention. Participants remarked positively on the flow of the lecture, stating that the narrative framework of the content allowed them to better follow the material. The progression of ideas and how they fitted together was more obvious.

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Negative themes

Some participants expressed more negative views of the DN approach. There was a realisation that they had to come well prepared if they were to gain the benefit of this teaching approach. Some felt that this approach would be better if used later in the course to help them review material. There were also comments on the questions posed during the lecture. Some participants felt that the questions were too broad and vague and that more precise questions with a narrower range of possible answers would be better—they felt questions that required long answers could disrupt the flow of the class. Lastly, there were some who generally felt comfortable actively participating and engaging in dialogue and some who did not. Some participants did not like to speak in front of a large crowd and admitted to high levels of anxiety when called upon to answer, however others noted that the class was a safe environment where it was acceptable to make mistakes and that learning to speak before an audience is a skill that medical students need to develop.

Discussion

The responses of the participants to the research question suggest that the DN approach promises to improve lectures by engaging students more deeply in teaching sessions. Students paid close attention especially when their peers were speaking and were particularly sensitive to possible errors. This suggests that the approach can foster critical thinking, which was one of the goals of the approach. If this approach was a regular feature of many lectures, then it can be argued that this would foster a lot more critical thinking throughout the curriculum and could encourage medical students to be better critical thinkers from an early stage. There is a growing recognition that critical thinking is a key aspect of clinical reasoning, and therefore, this skill should be developed as soon as possible (Croskerry, Cosby, Graber, & Singh, 2017).

Because students had to articulate their understanding, it became apparent when there were misunderstandings. Other students, or the teacher, were able to point out these misunderstandings and provide a corrected view. These kinds of interactions reinforce an approach informed by threshold theory, where it is recognised that some important ideas can be troublesome to learn (Cousin, 2006). Students need a safe opportunity to articulate what their misunderstandings might be and have them corrected. Threshold concept theory also recognises that particularly troublesome ideas might take some time to understand, and there is a need for a “liminal” space in the curriculum where students have the opportunity to grapple with these ideas. Lectures using a DN approach can provide some of that liminal space.

The question arises as to the relationship between the DN approach and the flipped classroom. The DN approach has much in common with the flipped classroom approach. The students are required to come prepared and are expected to be active and use the information they learn beforehand. The DN approach could be seen as a pedagogical tool for peer learning that can be used to improve a flipped class. Some of the students in the study did not like the interactivity of the DN approach, and

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many students do not like the flipped classroom. One viewpoint is that this is due to unfamiliarity with these peer learning methods and that if the DN approach and the flipped classroom were frequent, and regular, parts of the curriculum then they might be more acceptable. In other words, there needs to be an educational culture where this approach to teaching and learning is accepted as part of the mainstream. Another viewpoint is that there are many learners who are happier with more traditional didactic approaches where they do not have to speak and interact as much with their peers and their teachers. It may be that we need a more sophisticated combination of approaches to accommodate different learning styles.

The question arises about the implications of the DN approach for assessment. One answer is that, as with all pedagogy, there must be constructive alignment between the aims and objectives, the assessments and the pedagogical activities that seek to fulfil those aims and objectives (Biggs, 1996). The DN approach is one pedagogical activity that can be used, especially if some critical thinking is required in addition to factual recall and comprehension. However, it will not be appreciated by students if they know that critical thinking will not feature in the assessment in some way. Therefore, teachers wishing to make extensive use of the DN approach will need to ensure that the assessment will demand some critical thinking from the students and that the students are well aware of this.

Another issue is whether the components of the DN approach can be split apart and evaluated separately. In other words, to what extent is the effectiveness of the method attributable to dialogic teaching and how much is attributable to narrative, the topic or the teacher? This is an extremely difficult question to answer, especially in the context of a medical school setting. This is the kind of issue that has puzzled medical educators for years, exemplified in the long debate about the effectiveness of a student-centered problem-based learning curriculum in comparison with a more traditional curriculum (Christenson, Loftus, & Gwin, 2019; Loftus & Higgs, 2005). The conventional experimental approach to investigating this question would seek to provide one cohort with an intervention and use another cohort as a control group. The effectiveness of the intervention would then be measured when students do an assessment.

Such questions assume that medical students are like rats in mazes and can be subjected to straightforward educational experiments. These questions fail to recognise that medical students are bright, highly motivated and mostly do well on assessments, no matter how good or bad the interventions are. Once it is clear that an intervention does help students learn, it may be better to ask ourselves, "How does this intervention prepare students for the realities of practice?" If we believe that critical thinking is important for practice, then what pedagogies are available to promote this? The DN approach does seem to encourage critical thinking, and it should be part of the armamentarium of teachers. It may be possible to do a long-term research project, over some years, and ask junior practitioners to reflect back on their education and tell us what pedagogies they believe prepared them well.

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Limitations

The ability of the teacher to implement the DN approach can limit the effectiveness of this approach. The effectiveness is, in part, dependent on the skills of the instructor to manage the interactions within the class, both student–student and instructor–student interactions. Additionally, instructors who do not entirely understand the educational theories underlying the approach, i.e., threshold concepts together with dialogic and narrative teaching, may adopt a superficial approach. The DN approach is not simply a way of fostering interactivity; it is interactivity with a deeper purpose. The purpose is to encourage the students to fully engage with key concepts, critique them and see how these key concepts fit within the overall narrative of the human body so that, eventually, they can see how these concepts fit within the overall narrative of individual patients.

Limitations of the current study include the focus group sample size (two focus groups, $n = 7$ each) along with the fact that the participants were self-selected. There was also only one study site and one experience of a DN lecture. Additional focus groups following similar lectures could address this issue. Further limitations include the use of students' self-perception as evidence. Self-perception of the effectiveness of a particular teaching design may be seen as a weak form of evidence from those who demand only objective measurable evidence, and we have discussed this issue to some extent above. We would also add that subjective evidence is needed if education is to be fully evaluated. As Boudreau, Cassell and Fuks (2018) point out, "When the subjective is eliminated so is the person" (p. 5). Medical education, like medical practice, needs to recognise the importance of the subjectivity of the people it deals with.

Another limitation is that some of the questions asked of the focus groups could be seen as somewhat leading, and this could introduce bias into the study. Greater care in asking questions that are more open-ended is recognised. This relates to the issue of reflexivity. In all research, the investigators need to be conscious of how their interests may bias the research. Having a student investigator conduct the focus groups was a deliberate attempt to be more open and unbiased, as the academics involved understood that they had a vested interest in seeing the DN method succeed, whereas the student held a more neutral *a priori* view.

Conclusion

The dialogical narrative approach, employed in this instance to teach physiology to medical students, is a novel and interactive teaching method that is firmly rooted in a synthesis of strong theories. The proposed approach combines aspects of three extensively researched and refined educational theories: dialogism, narrative and, to a lesser extent, threshold concepts. When compared to traditional didactic lectures, students perceived the dialogical narrative approach to be more engaging and conducive to active participation throughout the lecture. Many students described finding themselves thinking more critically with the approach, possibly due to their natural skepticism towards their peers' explanations and/or the possibility of potentially engaging in further dialogue and interacting with the instructor.

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On behalf of all authors, the corresponding author states that there is no conflict of interest. All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. Informed consent was obtained from all individual participants included in the study.

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