Qualitative Investigation of the Flipped Classroom Teaching Approach as an Alternative to the Traditional Lecture

Abstract

Objectives: To determine students' perception of the traditional lecture and other methods of teaching and learning the students have already experienced, and to determine students' expectations and attitude towards the flipped classroom teaching method.

Methods: Two focus groups were conducted with 11 undergraduate pharmacy students in two pharmacy schools in the UK. Focus groups discussions were audio-recorded, then transcribed verbatim and analysed thematically using the inductive method.

Results: Six key themes were identified: (1) Teacher characteristics and competence; (2) Having the right tools to learn; (3) Learning can be emotional; (4) Group work: what is in it for me?; (5) Scaffold the delivery of teaching; and (6) To prepare or not to prepare.

Conclusion: The flipped classroom teaching approach was thought to tackle perceived limitations of the traditional lecture including limited student engagement and the inappropriate pace of instructions. It was also deemed to help students understand the taught subject and prepare for summative assessment.

Keywords: Flipped classroom; Traditional lecture; Pharmacy education; Teaching approach, Pedagogy

Introduction

In the traditional lecture-based method of teaching, the class time is generally spent on delivering the content of the curriculum rather than engaging students in active learning exercises (Gannod et al., 2008).

Active learning is described as an approach to teaching that requires students to participate in classroom activities that have been designed by educators (Gleason et al., 2011). Previous research suggests that active learning is linked to improving learning outcomes of students involves increased knowledge of the content, interpersonal skills, critical thinking and problem-solving skills as well as improving attitudes towards learning (Anderson et al., 2005; Kember and Leung, 2005). In addition, active learning has been found to improve learners' motivation and self-study skills (Zhou et al., 2016).

The Master of Pharmacy (MPharm) programme offered in the United Kingdom (UK) is a four-year undergraduate course followed by 52 weeks of pre-registration training (General Pharmaceutical Council, GPhC, 2011). Upon graduation, the MPharm graduates are expected to be equipped with a range of pharmacy-related cognitive, practical and transferable skills such as the independent learning ability that is necessary for their continuing professional development as a pharmacist (Quality Assurance Agency for Higher Education, 2002). According to the GPhC, standards for the initial education and training of pharmacists (2011), MPharm degree curricula must be integrated. This means that the education and training components need to be linked in a coherent way which involves upward spiralling of the content and incremental development of skills and attributes throughout the programme . In addition, the curricula must cover subjects with an increasingly more complex approach with an aim to reach the right level of understanding (General Pharmaceutical Council, 2011). Learning opportunities must be designed to provide an integrated experience of relevant science and pharmacy practice, a balance of theory and application, and independent learning skills (General Pharmaceutical Council, 2011).

A flipped classroom is one of the active learning approaches to teaching that utilises technology to shift the traditional lecture outside the scheduled class time and uses the face-

to-face time to engage students in interactive activities and discussion (Missildine et al., 2013). This teaching method shows promising results in terms of students' satisfaction (Cotta et al.; McLaughlin *et al.*, 2014; Muzyk et al., 2015; Pierce and Fox, 2012) and academic achievement (McLaughlin et al., 2013; Munson and Pierce, 2015; Pierce and Fox, 2012; Prescott et al., 2016).

The flipped classroom has been gaining popularity in various academic institutions, but it seems that there is a lack of in-depth understanding of this teaching method among MPharm students. The aim of this qualitative study was to explore the teaching and learning experiences of the final year MPharm students and to gain an understanding of students' views about the flipped classroom teaching method.

Methods

Design

This study adopted a qualitative study design using focus groups for data collection.

Participants and settings

This research took place in two different pharmacy institutions in the UK that offer an accredited MPharm programme: School of Pharmacy I (SOP I) was based in London, and School of Pharmacy II (SOP II) in the Southern region of England. Students enrolled in year four of the MPharm programme academic year 2014/2015 were invited to take part. The reason for choosing the final year of the MPharm was based on the assumption that this group of students has experienced more teaching and learning methods than earlier year groups, but it was known to the research team that the flipped classroom was not an approach used at either of the Schools.

Sampling strategy

A convenience sample strategy was used to select and recruit the focus groups participants in which focus groups were added to an already scheduled meeting with the people who met the eligibility criteria of the study (Krueger and Casey, 2015). In collaboration with the Department of Practice and Policy in each school, a member of the research team communicated with one potential participant who facilitated the seeking of views and agreement from others regarding participating in the focus groups.

A total of eight students agreed to take part in the focus group at SOP II, and seven students were recruited at SOP I. The focus group at SOP II was scheduled just before an academic meeting. SOP I's focus group was arranged just before a social gathering. All recruited participants were sent a confirmation email for the focus group indicating the time and location. Additionally, they were sent an electronic copy of the participant information sheet and consent form a week before the scheduled focus group.

At SOP II, six out of eight students attended the session. Five out of seven students attended the focus group discussion at SOP I. A total of four recruited participants did not attend the focus groups due to clashes with important personal matters that came up at the last minute.

This led to a total sample size of 11. Guidance on the sample size of a focus group suggests a minimum of 4 and a maximum of 12 participants per group (Carlsen and Glenton, 2011). However, it was indicated that dividing the participants into smaller groups (e.g. 2 focus groups of 4 participants each) yields more information than having the same number of participants in a single focus group e.g. one focus group of 8 participants (Carlsen and Glenton, 2011).

Ethical approval

This study was approved by the SOP II Research Ethics Committee (Project ID Number): 5832/001. Collaborating departments at both pharmacy institutions were informed about the study and agreed to participate.

Materials and procedure

The focus groups were conducted by MA and were held in a meeting room in the main building of each pharmacy school. Before commencing the focus group, participants were familiarised with the information sheet and given the chance to ask any questions regarding taking part in the focus group.

Each focus group discussion lasted no longer than 60 minutes and was audio-recorded with the permission of the participants. Both were conducted with the aid of a topic guide which involved a number of open-ended questions related to the current learning experience of MPharm students as well as their expectations of the flipped classroom teaching method. The literature review informed the questions that were included in the topic guide, which was then reviewed by the wider team who are experts in the field. A pilot test of the topic guide was conducted with two MPharm students at SOP I. This pilot testing helped to identify if the questions were easy to ask aloud and if the words flowed smoothly. Additionally, it helped establish the clarity of the questions (Krueger and Casey, 2015).

The recorded focus group discussions were transcribed verbatim by MA and were checked for accuracy by AC. Transcripts were analysed using the principles of thematic analysis using the inductive method (Clarke and Braun, 2013). After immersion in the collected data by repeatedly reading the data and searching for meanings and patterns, a complete coding

process was conducted by MA. This was followed by combing related codes into relevant groupings. The last two stages of the analysis involved reviewing and interpreting each theme. The coded data and the identified themes were reviewed by AC and discrepancies were discussed until consensus was reached. Small changes were made to the final themes following double coding.

Reflexivity

This research falls into three disciplines, 'pharmacy,' 'education' and 'psychology'. MA was a registered pharmacist in her home country, Saudi Arabia, and she had been exposed to a range of pharmacy services through training experiences. She was also engaged in a postgraduate clinical pharmacy programme and had a hospital placement experience at a London hospital. However, she have never taken an academic position in higher education at the time of conducting this research, although she had been engaged with activities related to teaching and learning. Education in Saudi Arabia is segregated by gender and it was of interest whether a flipped classroom approach could enable equity in learning.

JP is an academic with vast experience in pharmacy education and AC an academic and psychologist, familiar with flipped classroom teaching in a psychology setting.

Results

This qualitative research section reports on 11 participants in total (*n=5* from SOP I and *n=6* from SOP II). Participant demographics are presented in Table I. The main findings suggest that there are several factors that influence learning experience of students. From the thematic analysis, a total of 6 overarching themes were identified. The key themes related to student's learning experience and their views of the flipped classroom were 1) '*Teacher characteristics and competence'; 2) 'Having the right tools to learn'; 3) 'Learning can be emotional'; 4) 'Group work: what is in it for me?'; 5) 'Scaffold the delivery of teaching'; and 6) 'To prepare or not to prepare'.*

Theme 1: Teacher characteristics and competence

Students' learning experience was thought to be influenced by the characteristics and competence of the tutor, both positively and negatively, irrespective of the subject area or the teaching approach being used. Participants referenced both negative and positive teacher characteristics they came across in their MPharm programme. The positive qualities included approachability, helpfulness and creativity. These positive qualities could create a positive learning environment by, encouraging a good student-teacher relationship, encouraging students and helping them to overcome their fear and shyness in the classroom, and also introducing some elements of creativity into the classroom.

> ***Some lecturers who like actually... they like ENCOURAGE, they encourage not intimidate you, they encourage us to participate and give our opinion and ask questions [P1, SOP I]***
>
> ***Most of them will say come and knock on my door, come and say hello it will be really open door policy, so I think most of us have quite a good relationship with the lecturers as well [P3,SOP II]***
>
> ***I think I like it [the group work] when they make it creative, not like by presenting but by like more fun to learning instead of just memorising" [P5, SOPI]***

The negative characteristics were poor communication skills, low motivation, lack of confidence, intimidating and not providing enough guidance. These in turn could negatively impact the students' learning experience, leading to annoyance, disengagement and boredom.

> ***It depends... if the lecturer, the tone of voice as well, sometimes it tends to be very monotone, it is very hard to keep up and stay awake [P2, SOP I]***
>
> ***It is really dependent on the mood the lecturer's in as well. If no one, hardly anyone is turning up, then they'll be like what's the point. It's sort of negative feedback then if they're not bothered, we're not bothered and then there's less people next time. It ends up being just me sat there going… [P10, SOP II]***
>
> ***Unfortunately I think it [identifying students who didn't do the pre-work] involves, installing fear that you are going to get caught out for us to do it, its terrible thing to say, yeah, as we've grown up I think you have kind of seen the benefits of doing it anyway [P7, SOP II]***
>
> ***There was not normally enough guidance [in labs], they [the teachers] expect too much. I do enjoy them [labs] but I just think some of the teachers don't explain it well enough and they are sort of why you don't know! I don't know, that's why I am here!! [P10, SOP II]***

Carefully planning learning sessions is essential for creating a high-quality learning environment. The focus group participants expressed concerns over organisational aspects of some of the active learning sessions. In terms of the publicity of the pre-work, the students acknowledged a need for improvements. One suggestion is uploading the pre-work for students in advance on a virtual learning platform such as Moodle, followed by subsequent reminders. Additionally, the participants were apprehensive about how the session time is used, and they thought that some sessions are very long in relation to the class activities.

> ***Some of the pre-work ... we see out of the blue...I think if they send it in advance maybe I will do it [P5, SOP I]***
>
> ***Sometimes that we are just sitting around for like half an hour waiting for the next bit [P9, SOP II]***

The focus group participants felt concerned about the appropriateness of some topics to an active learning format. Thus, educators should carefully align the learning outcomes of the course with an appropriate method for delivery.

> ***Sometimes you think is it really appropriate to that format, so is it really appropriate to having it in a workshop, [They sort of shoehorn things in] [P3, SOP II]***

Lectures need to be engaging

This sub-theme explored a negative aspect that is a common feature seen in most traditional lectures. The lack of student engagement during traditional lectures could trigger student boredom and result in them being unattentive or distracted.

> ***But some people are practical learners, so it's quite difficult to sit there [in a lecture] and listen [P9, SOP II]***

> ***Difficulties staying awake sometimes...if it is too long and not interactive [P5, SOP I]***

When discussing the benefits of the flipped classroom teaching approach for students' learning, the participants referred to the challenges of the traditional lecture, and they pointed out that the flipped method could foster class engagement. The pre-class learning gives students a foundation knowledge, which in turn gives them an indication of what to expect during the contact time. Thus, this fosters student confidence and attention, and encourages active engagement with the lesson.

> ***I think you will be more confident as well with what you're saying instead of trying to hide which I do [P11, SOP I]***

> ***I think it is a good idea, because when you do the pre-work and then attend a lecture, you feel so much better because you know what they are taking about" [P4, SOP II]***

Pace of lectures has to meet my needs

Participants highlighted a lack of fit between the pace of the traditional lecture and students' needs.

> ***There are a few of us in our year that have the actual time dyslexia kind of things, so we process things differently and sometimes slower as well and then it just takes you a little bit longer to kind of process and personally I hear the first bit of the sentence and maybe write it down and the second half is gone, and that's normally the important bit [P3, SOP II]***
>
> ***I have already gone through that, I am not going through it again... you haven't gone through it well enough [P7, SOP II]***

Stemming from the fact that the pace of the traditional lecture is not appropriate for all students, especially when it is used for delivering a new or difficult concept, the participants felt that the flipped classroom might be a suitable alternative since students could benefit from viewing the recorded lecture in their own time, and at their own pace.

> ***Sometimes the topic is so confusing when you go to the lecture, the lecturer just completely loses you because they are going to something else and you are just on page one ... and so I think in terms of really confusing topics I think that would be a good idea [P8, SOP I]***
>
> ***It [the flipped classroom] is definitely useful for really difficult subjects or new subjects that we've never done, biology, chemistry we have done at GCSE, whereas clinical subjects introduced in third year or second that's it, so its brand new [P7, SOP II]***

Theme 2: Having the right tools to learn

This theme captures the necessity of equipping students with what they need for learning that complements each particular teaching method. With respect to the traditional lecture, participants acknowledged the need to provide access to lecture slides during the lecture to aid students with note taking. Having access to recorded lectures was seen as positive as it could assist those students who find the pace of the lecture is too quick for them to absorb the information. In addition, students stressed that there is a need to offer comprehensible learning resources to help students learn the lecture afterwards.

> ***One of the lecturers I think one year, she gave slides and then she gave us supplementary notes and that's quite nice because the slides are quite brief and you make your own notes, but sometimes they are really quick for you to write everything down, so ... you have to record it or its quite nice when they give you extra notes I think it is really helpful [P1, SOP I]***

Regarding learning activities that require preparation, the participants highlighted that there must be a match between the learning material assigned and the planned activity. In other words, the learning resources must be relevant to the active session. In addition, providing access to internet-ready devices such as iPads during active learning sessions was perceived as positive. Thus, students can benefit from accessing a wide range of web-based resources.

> ***Sometimes they don't give relevant ones [pre-work] like for XXX [a teaching pharmacy] ones they gave an article that wasn't relevant [P11, SOP I]***

When discussing the potential challenges of the flipped classroom teaching method, the participants stressed that the pre-session learning has to be directly related to what is to be discussed in the class. Thus, the pre-flipped learning should be relevant to and integrated into the active flipped session.

> ***I think that would work if when we come to the class we actually use them because sometimes we do the work and we come to lecture and it is not... it's not related [P6, SOP II]***

Additionally, the focus group data suggested that the pre-flipped classroom learning materials should be provided in different formats, thus accommodating student diversity and different learning styles. For instance, some students prefer listening to a recorded lecture when preparing for active sessions while others prefer reading.

> ***I think articles are better than videos because you can do it anywhere rather than a video [P6, SOP II]***
>
> ***I do appreciate a video I think .. I think I find it more engaging than reading a piece of paper and answering questions, I don't tend to do those to be honest [P7, SOP II]***
>
> ***I don't want one or the other, both is ... having the option then [P3, SOP II]***

Theme 3: Learning can be emotional

The focus group data suggested that different learning environments could trigger students' emotions, both positively and negatively. Anxiety is one of the negative emotions that is frequently experienced in unfamiliar learning environments, or those that make students feel

scrutinised. Asking or answering questions in large groups such as in a lecture have been seen as threatening, and students would avoid being in these situations.

> ***Those who don't have the confidence to speak up in class, I don't, I hate asking questions, in fear that it's a stupid question or I would get an answer wrong [P7, SOP II]***

Small classes, however, have been perceived as an emotionally safe environment where shyness and fear of being humiliated are not common features.

> ***It is easier when we have smaller groups, in a huge lecture hall it's too hard, it's too intimidating ... When we have a smaller classroom say 30, 20 it is easier to be interactive, easier to talk [P2, SOP I]***

Exposing students to a new or a challenging learning environment could trigger negative emotions such as frustration, anger and anxiety, yet student appreciate the learning that came come from being put into these environments.

> ***I am glad they did it [first year simulation workshops] because it sort of forces you to push yourself [P10, SOP II]***

Theme 4: Group work: what is in it for me?

This theme captures students' attitudes towards group work. It was apparent in the focus groups that there is a great distinction between assessed and non-assessed group work in terms of students' satisfaction. The students reported that random group allocation for the assessed group work forces them to work with students with diverse levels of ability, effort and input. They felt this was unfair as the group members have different goals and therefore they expend different amounts of effort, but they are awarded the same grade.

> ***Sometimes if you are being pushed ... mashed up into a group without any choice you are kind of dragging along people that aren't as good as you or lazier than you or don't try as hard and don't get as good a grades so you are thinking you wanna two or first then they just wanna pass, and that's a bit disheartening [P7, SOP II]***

However, the data suggested that active learning through group work promotes higher-level thinking and skills development.

> ***We have to work in groups even though ... some people find it difficult to work in groups we have to learn that for when we do go out into the work environment so it helps us build the skills that we will need and also the presentation as well it helps our confidence if we don't do it so we won't have that confidence [P2, SOP I]***

Theme 5: Scaffold the delivery of teaching

This theme was identified when discussing students' views on the expected impact of the flipped classroom teaching method on their learning and assessment. It captures how learning through a flipped classroom environment could potentially overcome the pitfalls of the traditional lecture approach by building knowledge and skills in layers.

> ***I still like it [the idea of the flipped classroom] because I feel like I'm doing something before I go to the lecture, because usually I am having to rely on going to the lecture and then finally doing the work after the lecture, and I find that harder because I usually end up doing it towards revision period which is not a good idea [P1, SOP I]***

The flipped classroom is expected to better manage students' studying, and greatly reduce their exam revision workload. In addition, the contact time is expected to allow students to identify gaps in their knowledge, benefit from asking questions and also learn from their peers. Therefore, deep understanding of the materials taught and learning consolidation could improve students' grades.

> ***When you cram it's more like memorising things and trying to write the stuff down, but if you have something like this [the flipped classroom], we understand ourselves so we are not really memorising or writing stuff down, it is sort of from your understanding [P9, SOP II]***

Theme 6: To prepare or not to prepare

This theme illustrates the difference between the traditional lecture and the flipped classroom teaching method with respect to approaching the learning through the scheduled contact time. The data showed that there is an ease associated with the traditional lecture approach as students are expected to show up to the class and listen to a lecturer. In this teaching approach, the lecturer is responsible for both preparation of and transmitting the information to the audience. Students can also benefit from peer support and having face-to-face contact with a lecturer.

> ***You get to a point that ok I think today I am not gonna bother, no one is going to pick on me and sit back [P9, SOP II]***

On the other hand, students are expected to take responsibility for their learning in a flipped classroom approach. In other words, student preparation by completing a pre-flipped session independent learning is fundamental for student engagement with the in-class learning. This judgment has been based on previous experience of different teaching methods that have similar requirements to the flipped classroom.

> ***Sometimes if you didn't do the pre-work and you go in and you don't gain as much because you didn't do the pre-work, so like if it is different style of lecture like spoon-feeding, like you'd gain as much as everyone else, yeah [P8, SOP I]***

Helping students to take control of their own learning through the independent learning required for the flipped classroom is expected to develop professional attributes essential for the pharmacist career. The participants thought that the flipped classroom teaching method might create autonomous learners, introduce good working ethic and promote professionalism.

> ***It helps your CPD as well because if you are doing something in the shop or in the hospital or whatever and you say 'All right, OK I don't know that' ... what sort of thing to look at, how to approach it how would you approach it because you have done it in your own time [P10, SOP II]***

Preparation for the flipped active session, however, requires motivation, which could be difficult to specify in light of the diversity of students in a single classroom. Students seem to perceive a task as worth doing in response to motivational factors that range from extrinsic to intrinsic. Adding an incentive in order to encourage students to complete the pre-flipped session learning is an example of extrinsic motivation, while completing the task because of understanding its long-term rewards is linked to intrinsic motivation.

> ***But then you need some rewards and some incentives for that I think, instead of having exams towards the end of the year, you could have things which add up throughout the year, either if they are small percentages or five, ten percent worth [P3, SOP II]***

> ***I don't think I need incentives, if it was going to take the burden of me towards the end of the year, I think I'll do it, and also if you gonna be asked in the lecture a question, you going to want to know the answer. You don't wanna look stupid so I think that is an incentive enough for me, I don't think I need an examination [P7, SOP II]***

High workload is another factor that could be a barrier to pre-flipped active session preparation. The increase in the workload associated with the preparation in the presence of other concomitant coursework was found a challenge that might promote disengagement with the learning.

> ***To be honest, if we had to do it now I don't think to be realistic it's a good idea, it wouldn't work because we have a lot of things to do, we have a project, we have a frameworks.. we probably just can't do it, I can't fit it in [P6, SOP II]***

Discussion

The main purpose of this qualitative study was to explore the teaching and learning experiences of the final year MPharm students and to gain an understanding of students' views about the flipped classroom teaching method. The study reported the importance of the teaching style and a perceived need to engage students actively with the learning process in the traditional lecture classes by adopting strategies that attract students' attention, and to deliver the content at a pace that takes into account student needs and subject difficulty. Lectures that lacked interactivity were found to trigger student boredom and in response they lost concentration. Similarly, lectures delivered with little enthusiasm and at an inappropriate pace or level were found unsatisfactory. These findings seem to be consistent with the growing body of research highlighting the limitations of the traditional lecture-based method of teaching (Biggs and Tang, 2011; Bligh, 2000; Brown, 1978; Buckridge and Guest, 2007; Davies et al., 2013; Dijk and Jochems, 2002; Gannod et al., 2008; McLaughlin et al., 2014; Moravec et al., 2010; Morss and Murray, 2005; Pierce and Fox, 2012).

Creating a dynamic lecture and engaging students with the lesson lies mostly in the educator's hands. Thus, strategies could be adopted to make the teaching more engaging to captivate students' attention. Frequently, the minimal or lack of interactivity in the lectures was attributed tbytime constraints associated with delivering the content of the curriculum (Morss and Murray, 2005). Undergraduate university classrooms involve a large number of students with a wide range of academic capabilities (Biggs and Tang, 2011; Buckridge and Guest, 2007). In addition, the undergraduate curriculum consists of variety of topics that need to be covered. Lecturers are confronted with heavy burden to cover all the topics in specified time period (Chireshe, 2011). Therefore, time, pace and volume of content should be considered as these factors influence students learning experience.

This study reported that learning can be emotional and students could experience anxiety from engaging in a large classroom environment. Thus, it is likely that they will respond to this perceptively threatening environment by disengaging. The flipped classroom teaching approach was expected to serve as a positive tool to overcome the emotional challenges of the

traditional lecture. Students could benefit from viewing recorded lectures in their own time, and at their own pace. This finding mirrors those observed in earlier studies where undergraduate pharmacy students appreciated the flexibility and convenience of viewing recorded lectures (Khanova et al., 2015; Koo et al., 2016). In addition, allowing students to complete independent study before attending the scheduled class time could improve their confidence, attention and engagement with the lesson, and in turn reducing anxiety. This argument was not investigated in previous research; therefore, further research should be conducted to confirm it.

Within this study, students acknowledged the need to adopt organisational strategies when running teaching sessions in order to maximise students' outcomes and consequently their satisfaction. With regard to the teaching sessions that require students to complete independent learning prior to the class time, the educator needs to assign the work for students in a way that helps them to complete it. For instance, the educator could put a notice in the virtual learning environment about assigned pre-session learning in plenty of time, followed by a subsequent reminder. Another important practical implication is that the educator should plan the session activities well with respect to dedicated session time and ensure activities are adequately linked.

It was determined in this study that equipping students with the right learning tools is crucial for positive learning experience. In addition, these learning tools need to be well balanced with respect to their quantity and relevance to the subject. Concerning the learning tools for the flipped classroom teaching approach, the current study reports a necessity to integrate the pre-class learning into the scheduled session by providing relevant learning materials. What is more, these learning materials need to be provided to students in different formats, i.e. both text-based and audio-needs and visual, to accommodate student diversity and satisfy their preferences. Khanova et al. (2015) documented a number of patterns of instructional misalignment when they examined multiple flipped courses in a PharmD curriculum. These included excessive redundancy in the learning material for the pre-class and in-class phases or introducing completely new material during the class time (Khanova et al., 2015).

The current study also showed that, unlike the traditional lecture, the flipped classroom pedagogy might possibly encourage students to take ownership of their own learning and consequently develop the professional attributes required to be a pharmacist. However, motivating students to complete pre-class learning is essential, and the increase in workload associated with the flipped classroom independent learning in the presence of other course commitments could be a potential barrier for preparation. This speculation was confirmed by Khanova et al (2015) who found that the flipped classroom is associated with an increase in workload particularly in the presence of concurrent coursework, and the unmanageable workload was found to be a reason for students turning up to the flipped active session unprepared.

Similar to what has been observed in previous research, this study suggests that scaffolding the delivery of teaching through the flipped classroom could potentially help students to adopt a deep approach to learning and overcome the tendency to adopt a surface approach to learning that is common with the traditional lecture method (Galway et al., 2014; Khanova et al., 2015; Love et al., 2014; Muzyk et al., 2015). Therefore, this could lead to better understanding of the taught subject as well as improved assessment outcomes. Developing the skills and abilities that are expected from MPharm graduates requires deeper learning and a greater level of cognitive processing.

New or challenging learning environments that require students to work out of their comfort zone, such as simulation workshops, was found to trigger negative emotions. Resistance to the change in the learning environment is likely to be temporary as students usually learn strategies to deal with mastering the new environment and overcome their negative emotions. Based on the students' experience, introducing the flipped classroom into the MPharm programme is likely to be faced with resistance initially. This could be due to the new responsibility that mandates them to step out of their traditional roles, which is often comfortable and involves passive learning. Bovill and colleagues (2016) argue that resistance to change and innovation in higher education could be a consequence of developing a habit towards a current practice. In addition, it might occur as a result of the perceived risk

associated with redefining traditional roles of students and academic staff (Bovill et al., 2016). Thus, in order to give students a chance to adjust to the unique requirements of the flipped classroom, this method should be introduced in the early years of the MPharm programme. What is more, students might benefit from understanding the value of learning through the flipped classroom approach. Thus, teacher support is important particularly in contexts where active learning is not an existing practice or where students' skills in mastering the flipped approach are low.

MPharm graduates in the UK are expected to demonstrate a range of pharmacy-related cognitive and practical skills and a range of transferable skills. Ultimately, the limitations of the traditional lecture highlighted in the current study provide further support for the need to reconsider how the scheduled class time is used (McLaughlin et al., 2013). The flipped classroom is an example of active learning approaches that could be implemented selectively in the curriculum with balancing its benefits and drawbacks. Perhaps this method could replace some of the traditional lectures that are not complemented by tutorials or active learning methods.

This study has a number of limitations which have to be taken into account when considering its findings. Firstly, there was no variability within the focus groups sample in terms of gender since almost all the participants were females. Therefore, views of male participants are underrepresented in this study. Secondly, the participants in this study were in their final year of the MPharm programme. Thus, the findings from this study are not reflective of the other year groups of the MPharm programmes at both pharmacy institutions. What is more, the sample presented in the current research is not representative of the study population as the sampling technique used was convenient sampling. Thus, the views of the study participants are not reflective of the entire final year cohorts in both pharmacy institutions.

Conclusion

The current study found that students perceived the flipped classroom teaching approach could potentially assist them to overcome the shortcomings of the traditional lecture including the lack of student engagement and the inappropriate pace of instructions. Additionally, the

flipped classroom could help students understand the taught subject and prepare for summative assessment. However high workload on students could be a potential barrier for the pre-class learning and therefore a successful flipped classroom.

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Conflicts of interest

The authors declare that there are no conflicts of interest.

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This table should be inserted in the results section

Table I. Focus Groups' Sample Demographics

Participant number	**Gender**	**Institution**	**Age**
P1	Female	School of Pharmacy I	22 years
P2	Female	School of Pharmacy I	21 years
P3	Female	School of Pharmacy II	21 years
P4	Female	School of Pharmacy II	22 years
P5	Female	School of Pharmacy I	21 years
P6	Female	School of Pharmacy II	23 years
P7	Female	School of Pharmacy II	22 years
P8	Female	School of Pharmacy I	22 years
P9	Female	School of Pharmacy II	22 years
P10	Male	School of Pharmacy II	21 years
P11	Female	School of Pharmacy I	23 years

Supplementary files

Topic guide for the focus groups

1. What do you think of the usual lecture-based method of teaching?
2. What are the difficulties and benefits of the traditional lecture to you?
3. What other different teaching approaches have you come across while you are doing your degree? Describe each with advantages and disadvantages to you, personally.
4. If any, what are the differences in teaching approaches between science-based subjects such as pharmacology, and pharmacy practice subjects such as therapeutics?
5. What technologies have been used so far for teaching in your MPharm degree? How do you feel about them?
6. How would you feel about introducing a teaching technique that involves pre-class preparation by viewing a recorded lecture, and participating in active learning exercises during the class time?
7. How do you think this method would help your learning?
8. How do you think this method would prepare you for assessment?
9. How do you think this method would prepare you for being a pharmacist?