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Flipped learning in the context of postgraduate public health higher education: a qualitative study involving students and their tutors

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Abstract

In higher education institutions, there is a growing popularity of the use of flipped learning (FL) pedagogy to enhance the learning experience of students. At the undergraduate level, there is increasing evidence to demonstrate the potential benefits of this teaching and learning approach. However, at the level of the postgraduate education, evidence is limited on potential impact of FL on students' learning experience. We conducted qualitative in-depth interviews and focus groups involving postgraduate students and tutors to explore their perspectives of FL. Campus-based students pursuing the masters of public health (MPH) course, and their tutors at the School of Health and Related Research (ScHARR), University of Sheffield, UK were sampled to participate in the study. Tutors generally demonstrated good knowledge and understanding of the concept of FL and its application, although different tutors use different terms to describe FL. Motivations for the use of FL among tutors were identified as: decision informed by available evidence; curriculum design suited for FL; knowledge/expertise acquired through participating in an online FL short course; advise from colleagues and perception of how higher education students should be learning. Students' views about FL suitability for their courses were generally positive, with only a few students showing a dislike of this teaching and learning method. Our study results show that tutors and postgraduate students in public health higher education place high value on FL pedagogy, and reported positive experiences of their encounter with the FL pedagogy. The results are encouraging and suggest that higher education institutions running postgraduate masters' degree courses, particularly public health, could consider adopting and using FL approach to enhance the learning experiences of their students.

Keywords: Flipped learning, Postgraduate students, Tutors, Public health, And higher education

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Introduction

Globally, higher education institutions have continuously tried to identify ways to mainstream digital technology and innovative pedagogies in the classroom to enhance their students' learning experience (Schmid, 2013). Undoubtedly, technological advancement has impacted positively on every aspect of student learning, both in the classroom, outside of it, as well as off-campus (online learning) (Jensen et al., 2015). Technology has been used in education for different purposes: to increase students' engagement, improve academic performance, facilitate administrative work, and to improve the teaching and development of students' knowledge and learning skills (Aston, 1992). Technology has also been used in educational innovation in an attempt to enhance the quality of traditional classroom teaching. Davis and Tearle (1998) have outlined several ways technology has impacted on the quality of education: "potential to innovate, motivate, accelerate, enrich, deepen skills and engage students, to help them relate school experiences to work practices, create economic viability for tomorrow's workforce, as well as strengthening teaching and helping schools change" [p. 2].

Technological enhanced-learning models such as flipped Learning has been recently embraced, and used by educators in higher education institutions to enhance the learning experience of learners since the beginning of the 21 century (Chen et al., 2015; James et al., 2014; Jensen et al., 2015). Flipped learning is a teaching and learning model in which direct instructions is moved from group learning to individual learning space, and the resulting group space is transformed into a dynamic, interactive learning environment where the educator guides students as they apply the concepts and engage creatively with the subject matter (Bergmann and Sams (2012). The model was developed in 2004 as instructional practice due to the need to provide instructions to students who could not be physically present in the classroom (Bergmann & Sams, 2012). The philosophy underpinning FL is that it gives tutors the chance to teach both content and process using a student-centered learning environment (Bergmann & Sams, 2012; Hamdan et al., 2013a, b). Flipping the classroom ensures that students become more active participants in the learning process compared to the traditional way of teaching (James et al., 2014; Jaster, 2013; Mazur, 2009; Murray et al., 2015; Strayer, 2012; Uzunboylu & Karagozlu, 2015). Using this teaching/learning approach frees up class time, allowing for more individual and small group interactions (Hamdan et al., 2013a, b; Kim et al., 2014). Many tutors described FL as an effective teaching/learning pedagogy, which can improve students' academic performance (Uzunboylu & Karagozlu, 2015). Proponents of FL have further argued that the approach helps students to become more aware of the topic and course content, and they tend to get better prepared before coming to class.

What is the evidence available in support of FL?

Research evidence on FL has been positive. In a cross sectional survey of undergraduate students, Driscoll (2012) reported that 80% of students who benefited from FL generally agree that the approach encourages positive interaction among students and their teachers during class time. In this survey, students reported that they had more access to the course learning materials and the instructions provided an opportunity for debate among themselves. Kong (2014) reported a significant increase in students' domain

knowledge when FL was used in an integrated humanities class. In a higher education context students described FL as a learning model that promotes critical thinking and analysis (Howard et al., 2017). In a post-FL evaluation, Davies et al. (2013) further observed that examination grades of students following their participation in a FL lessons were significant higher compared to the previous semester when FL was not used. According to Warter-Perez and Dong (2012), flipped learners understood the course material and developed analytical skills faster. Their observation was reinforced by a follow-up survey to explore the students' views and satisfaction of the teaching approach. The survey found that 70% of the students valued FL, and expressed satisfaction of the lessons. Students involved in this survey strongly agreed that FL allowed them to gain better hands-on design skills, and they understood the content delivered much better. Papadopoulos and Roman (2010) found that students progressed through learning material much faster, and understood the topic discussed in greater depth in a FL class compared with the traditional teacher-led learning approach.

Despite the growing popularity of FL in higher education contexts, and the body of evidence demonstrating effectiveness at undergraduate education, at the postgraduate higher education, the evidence is limited, especially in postgraduate public health traing context. In their recent review of the evidence, DeLozier and Rhodes (2017) found that limited research have explored teachers in higher education institutions' engagement with FL. The review also found limited research on postgraduate students' perception of FL. In an earlier review, Bishop and Verleger (2013) found only 11 studies that have examined students' perception of FL-teaching, and most of these studies focused on undergraduate level training, in a non-public health training context. In the United States of America, Canada and Australia where research on FL in higher education have been widely promoted, mixed results have been reported [see e.g. (Butt, 2014; Davies et al., 2013; Galway et al., 2014; Hung, 2015; McLaughlin & Rhoney, 2015; Ratta & Carol, 2015).

Public health programmes, especially those offered at the masters' level, are designed primarily to develop the core competencies and skills of learners to effectively practice public health. As a result these programmes are regulated by accredited professional bodies (e.g. Agency for Public Health Education—APHEA and the Council on Education for Public Health—CEPH) to ensure that the course content and the skills learners acquire are meeting the basic practice requirements. Given that FL has the tendency of developing or enhancing the critical thinking, knowledge and professional skills of public health learners to function well in their jobs roles, it is imperative to explore the perceptions and views of the learners and the tutors who train them 'about the use of this approach. A good understanding of their perceptions will provide evidence to improve FL in postgraduate public health programmes, thus allowing a shift in learning culture, moving away from the traditional lecture centred approach of passive learning to a more students centre model (Hamdan et al., 2013a, b).

Therefore, the aim of this study was to understand the views, perceptions and experiences of postgraduate students and tutors regarding FL model in teaching public health at the postgraduate level. Our assumption prior to this study was that students' studying at postgraduate/masters' level and their tutors would have positive views and good experience about FL, and this is supported by recent findings from Australia (Butt, 2014;

Kong, 2014). In Australia, Butt (2014) reported that students were more receptive to FL compared to the traditional method. In their study, only a few students showed a dislike of the FL.

Materials and methods

How the FL was used in public health teaching

The FL approach was implemented on students enrolled on the Master of Public Health Management and leadership course run by the School of Health and Related Research (ScHARR), the University of Sheffield in the UK. ScHARR is one of nine schools within the Faculty of Medicine Dentistry and Health (FMDH), with over 300 research and academic and non-academic (professional) staff. The school has an international reputation and track record for the delivery of high-quality teaching and research outputs. As a result, the school attracts a large number of local and international students to its masters' courses, particularly the Master of Public Health courses (which include, the Masters of Public Health, Masters of Public Health in Health Services Research, and the Masters of Public Health in Management and Leadership). These courses have all received a professional accreditation from the Agency for Public Health Education Accreditation (APHEA). The Master of Public Health programmes enrols around 150 students annually (and this include those studying online and on-campus), from over 30 different countries across the world.

Prior to the adoption of FL, students were taught through the traditional teacher-led approach where the teacher is the centre of attention to deliver teaching to students. However, in the last 3–5 years the FL pedagogy has been increasingly patronised. The students who enrolled between 2019 and 2020 to pursue the Public Health Management and Leadership course benefited from this innovative type of learning. It is for this reason that they were recruited to participate in this present study to share their experiences and views of the teaching. In the FL process, the traditional idea of teaching in the classroom, led by the teacher, was reversed or "flipped". The students became the centre of attention as they were made to engage with the lesson materials (which included videos, case studies and academic articles). The lesson materials were developed by the teachers and given to the students, at least 3–5 days before the lesson, to learn individually at home. In class, on the day of the lesson, the students then discussed the content of the material in smaller groups' sessions, facilitated by the tutors. The students worked through the case studies to solve problems and the teacher clarified doubts and addressed the students' queries during the session. Murray et al. (2015) noted that this approach to teaching allows the tutor to be able to reserve class time for more interactive activities.

Study design

We used focus group discussions and semi-structured in-depth interviewing approach to assess the postgraduate Master of Public Health students' and their tutors' views and experiences with FL. The choice of this approach stems from the fact that, a qualitative method allows flexibility for data collection, analysis, and interpretation (Ritchie et al., 2013). The qualitative design is particularly appropriate in this study as it allowed us to hold a natural interaction with the students and tutors about the topic (May, 2011). Well

captured by Corbin and Strauss (2014), qualitative research aims to produce findings that are not arrived at by statistical procedure or other means of quantification. It is particularly suitable for use in studies of this kind that aims to understand the views held by tutors and students about a teaching and learning methodology which may appear new to them (Golafshani, 2003). The guidelines from the consolidated criteria for reporting qualitative studies guided the study design (Tong et al., 2007).

Participants and recruitment

We purposefully recruited students who were enrolled on the on-campus version of the MPH management and Leadership course, and their tutors. Purposive sampling is particularly relevant when the aim is to select participants who have been exposed to the subject or are knowledgeable about the issues being discussed. Overall, 20 participants (12 students and 8 tutors) were recruited to take part in a focus group and individual interviews respectively.

Data collection

Data collection took place in the spring semester of 2019. The students participated in a focus group session to share their views about FL, whereas the tutors were individually interviewed to explore their understanding, motivations, experiences and challenges of flipping their teaching. Interview guides were developed and used to guide and direct the interviews and the focus group discussions (Morgan, 2014; Ritchie et al., 2013). Using the guide allowed us to engage and enter into an interactional exchange of dialogue with the participants, and we were able to generate in-depth views and opinions from both the students and their tutors regarding flipped classroom learning as well (Morgan, 2007). It also created order in the way the questions were asked during the interviews and the focus group discussion session. Furthermore, interview guides are useful in qualitative interviews as it allows some flexibility for participants to ask questions and to clarify issues with the researcher and vice-versa (Gill et al., 2008; Ritchie et al., 2013). The individual in-depth interview guide covered issues related to the tutors understanding and experiences of teaching using a FL approach, their main motivation for using this approach, and the challenges they faced implementing FL. The focus group discussion guide addressed the issues related to the students' views and impressions about FL, and whether they think this learning approach is relevant for public health training at the postgraduate level. Students were further asked to discuss how the use of a FL approach has impacted on their learning experience.

All the interviews and the focus group were conducted in English language, at a quiet location in ScHARR and audio-recorded with all participants' permission.

Data analysis

Analysis and interpretation of the interview data are crucial to bring order and understanding of participants' views and experiences about FL. Three types of qualitative data analysis are described by Smith and Firth (2011): (1) sociolinguistic methods, such as discourse and conversation analysis, (2) grounded theory, which focuses on theory development, and (3) thematic analysis. The data analysis approach that we considered appropriate, out of these three, was the qualitative thematic data analysis

approach. This data analysis approach allows researchers to transcribe the interview records and systematically searched for patterns in the transcripts to provide an illuminating description of the issues explored (Tesch, 2013). If applied well, thematic analysis can provide rich insight into complex phenomena, and can as well be applied across a range of theoretical and epistemological approaches (Smith & Firth, 2011). We transcribed all the interviews and focus group discussions verbatim, in the first instance, to create interview transcripts. We then read through all the transcripts to familiarise ourselves with the data. Notes were written in the margin of each of the transcripts while reading. We explored the data in line with what the research sought to address (the research questions), and thus created and presented the results along the following broad themes: tutors understanding of and experiences with FL; tutors motivations for adopting a FL approach; students views of the FL approach, and the challenges tutors face using a flipped methods in public health education.

Ethics and consent statement

The University of Sheffield's Ethics Review Board granted approval to conduct the study (Approval ID: 90239902). Participants gave a written informed consent prior to conducting the interviews and the focus groups. Before signing the written informed consent, each participant was provided with a participant information sheet, which contained details of why the study was being conducted, why they were invited to participate and a statement assuring participants that their personal data will be handled in line with data protection guidance. All participants were informed that the information they provide would remain anonymous and confidential to the researchers only. Informed consent sought included consent to publish the study findings, and we assured participants that their identity would remain anonymous in all publications.

Results

Table 1 below summarises the demographic profile of the study sample (students and tutors). The study results are presented in broad themes reflecting the research questions addressed.

Table 1 Demographic profile of participants

Participants' demographic profile		Students (n = 12)	Tutors (n = 8)
Age range (years)	20–29 years	6	0
	30–49 years	2	7
	50 + years	0	1
Gender	Male	2	2
	Female	9	6
Ethnicity	White	7	6
	Asian	2	1
	African	2	1
	Caribbean	1	0

Experiences with FL—tutors perspective

During the interviews, the tutors were asked to explain their understanding of FL and their encounter with the approach compared with the traditional teacher-led strategy of teaching and learning. The results from the interviews revealed that the majority (six out of eight tutors) demonstrated understanding of the concept of FL. Some of them indicated that they have had the opportunity to practice (have used) FL in their student days. Almost all (seven out of eight) the tutors confirmed that they were using flipped teaching in their current teaching practices, and the aim was to bring innovation in their teaching, and to enhance the learning experience of their students. The results, however, show that although the tutors demonstrated an understanding of what FL mean, four out of the eight tutors interviewed said they did not use this term FL. They used the term "blended learning" or blended teaching, which they described as flipped learnning.

Comments from three tutors regarding their understanding of FL are summarised below.

> *"For me, a FL is where you take away most of the informational aspect of your teaching before you interact one-on-one or one to group with the students, so that the time is spent in doing sort of [...] more sort of high-quality engagement, where the students really need your presence in order to appreciate the concept or ideas or issues that are being discussed [T1].*

> *So you provide the students with materials that will introduce them to the issues, give them the most they can, before they come to the class so when you meet them they already have some understanding of the issues, and they have some questions, so it could be that they have actually tried out something using the approach and they have some difficulties somewhere trying to apply the principles, and you are there to help them address the challenges" (T5).*

> *"In my days in the university, I guess we use to do FL although this wasn't referred to as FL. They send you a book, videos or things to watch and you teach yourself, and then when you get to the classroom, which is infrequently, and it is much interactive. It is more like a seminar, but the lecturer isn't delivering the content, but the lecturer is answering questions, giving activities, leading discussion, solving problems and so on" (T1).*

Our initial assumption before the study was that, FL in ScHARR was only recently trialed among students pursuing the masters of public health programme. However, this study has found that several academic/teaching staff within ScHARR have encountered FL, even if they do not call it so. One tutor remarked that;

> *"I think someone has redefined it as FL; I think it wasn't called so. A lot of teachers are unaware that they are using FL, but it has been around for sometimes now" (T4).*

The view expressed by the two tutors above, seems to align well with the reports from the Higher Education Academy asserting that the concept of FL goes back much

further than 2004 (https://www.heacademy.ac.uk/knowledge-hub/flipped-learning-0) when Bergmann and Sams (2012) coined the term. The following tutor holds a similar view, as he narrates his understanding of what FL means until it got its "new term".

> *"My understanding of FL seems to be… [Because it's a term I haven't really heard until now]. Probably it is what we used to call student led-teaching. Which is where the student do some preparatory reading before they come to class, and in the actual class session the teacher explores with them what they have already learned out of the class" (T2).*

Describing how the FL concept can be applied in postgraduate education, one tutor shared with us how she applies FL in teaching her psychology module in the public health course.

> *"So in my session, I give students what is effectively lecturing concepts and also give them some activities and things to think about before the session. So I put it on the virtual learning ……and they are meant to look at it before these sessions and then turn up ready to have some discussions. I believe I am applying FL because the traditional view is to have the lecture content in the session and do additional learning afterwards. In summary, flipping your teaching means you are trying to consolidate the learning in the classroom, the lecturer doesn't have to be physically present to do them (T3).*
>
> *"I make them read materials that I have prepared, and I also suggest reading and things to think about. I put some hand-outs on there as well, so they have the option of printing it out and making notes or making notes on their computers, so they can come to the session fully prepared ready to discuss it. The idea is we have more in-depth discussions, so they can engage a bit more and get more into it" (T1).*

The tutors shared lessons they have learned through using FT method. One tutor who has been using FL for close to 3 years in her teaching said:

> *"What I learnt in the first year of doing this is that they provide them with guidance and signposting so the first year, if I had an activity they will expect me to think of the right or wrong answer and it had to be absolutely perfect' (T3).*

Generally, the tutors held a positive view and experience about FL, and they preferred this to the traditional (teacher-led) model of teaching and learning. When asked whether they would recommend the approach to their colleagues, the response was overwhelmingly positive.

Tutors motivations for using FL

We asked the tutors to share with us what informed their decision to adopt a FL approach in their teaching. From the interaction, a few made their decisions to pilot the FL approach in their modules based on the [available evidence] in the literature demonstrating the positive benefits of FL over the traditional model.

> *"I was quite amazed about the volume of literature that is available about FL when I started to read about it. There is really a growing interest among teachers, and some of their expressions of how their students have come to value it made*

me to try it, and it works" (T2)

One tutor said she made the decision to try it based on [knowledge she acquired through participating in an online FL short course], but also the design [of her module suited the use of a FL approach].

"I took a short course online on FT and this is when I found out about the differences between this approach and my way of teaching, and the advantages of FT. Also, I set up the module to be half sort of lecture delivery of information and half of group work, so consolidation and basically on these sessions, the content was…! It was quite a lot of content. That bit going on for quite a long time and [….] group work" (T3).

Another tutor's decision to use the approach was informed by [advise she received from her colleague] who taught a module with her.

"…And I was talking to someone who I taught with on the module, and they actually suggested this approach, and I thought of, and I thought yeah I could actually do that. So it's mostly reading what they have to do" (T4).

Two tutors said they were motivated by what they [perceived as knowledge about how higher education—masters' level—student should be taught]. These tutors commented that;

"Students should be going off and finding out information themselves, working on stuff and we should be facilitating their learning in class instead" (T5)".
"I think some students can see the benefits because they have been taught way previously at undergraduate level" (T4).

The tutor perceived that master' students, as adults' learners, should be made to take control and responsibility of their own learning. Tutors commented that as adult learners, students should be able to own and self-regulate the pace of their learning, with the teacher playing a facilitator role. They argued that the design of FL, in itself, is best suited for postgraduate level teaching and learning.

"If you look at the design of FL, it is best suited for postgraduate level learning. As a master's student, you should be able to do a self-direct your learning and take control of the pace of the learning. I belief we can only facilitate this through FT" (T3).

Students' perceptions of FL

To address the objective of students' perspective of FL, we asked the students to share their views on how they have benefited from FL classes that they have been part of, and their experiences of learning in this way. Similar to their tutors' responses**,** almost all the students interviewed demonstrated a high preference for FL. Only three of the twenty students who participated in the focus group discussion indicated their dislike of the FL approach. The views expressed by the students regarding FL are categorised into positive views and negative views/experiences. These are reported below.

Positive views/experiences

In the focus group discussion session, more than three quarters' of the students' held the view that FL is a useful learning model. The student indicated that FL helped them to work in small groups during class sessions and that this approach did encourage interactive learning among them. They also indicated that working in groups was also useful because the less experienced students had the opportunity to learn from the more experienced members in their groups. Three students expressed their views on how FL has enhanced their learning experiences positively. The students' comments are summarised below.

"There are people in the class who are more experienced than me. I really learn a lot from them whenever we were grouped to work on a case study. On my own, I could not understand some of the concept, but it became clearer during the class group discussion" (FG participant).

"I think it actually did help me, e.g., the economic evaluation module, I have zero knowledge of economics, but the materials we were given to work in groups, plus the subsequent class group discussion with the tutor did help me to understand more. So that is how I was able to get a grip of the module" (FG participant).

"When you learn from colleagues its sticks better than self-learning or the teaching just passing on information in class. This is why I consider the flipped approach a useful learning approach (FG participant).

Students said they and their colleagues were more engaging in several class activities such as group discussion, role-plays and the case studies sessions. This was absent in modules where flipped was not used, according to one student observation. Example of the views of two students regarding how FL promoted engaged learning, in their view, are stated below.

"One difference for me is the way colleagues were engaging in the role play exercise. In my group, for instance, everyone was taking part and contributed in the drafting of the policy statement, and in the debrief session the participation was excellent because they had understood the concept and content" (FG participant).

"Even in the leading and managing health service class, we did enjoy the group work on case studies—my best module so far (FG participant).

Negative view/perceptions

However, there were a small number of students (n = 3 students) who expressed dislike of the FL. These students believed that FL is not suited for certain courses. However, these students acknowledged that they found flipping in other courses quite useful. The following are highlights of the comments from these students.

"I think it is different; I feel like when it comes to teaching yourself, I am not a fan of it because I am here to be taught (…all laughs). Like honestly, you know! I mean, but it is different when in the policy module or in disaster management module when the tutor gives you a scenario and say read about this disaster scenario so we can

talk about it, it is different you know what I mean. Unlike in epidemiology or statistics class where they say here you need to learn this by yourself, and I am like, I am not teaching myself this because it is too complicated I think that is where it depends, I won't, I don't want to teach myself" (FG participant).
"But for some modules, I think it actually did help, like the economic evaluation, the leading and managing health services and the policy modules" (FG participant).

Despites attempts by the students who felt positive views about FL, to convince their colleagues to appreciate the benefits of the FL approach, the students who had held negative feelings about flipped learning maintained that FL did not work for them for some modules. For example, one female student who was flexible about FL argued below saying;

"No, but for masters programme you are expected to do a lot of extra work. With FL, if you do not want to prepare before you come to class, I think it is a waste of time because you won't be familiar with the topic. But when I […] prepare before I find it way more productive than just coming to class without reading the material. You are able to relate how to apply the theories, especially in case studies" (FG participant).

But this is what one of her colleagues who dislikes FL entirely and holds the belief that it doesn't work for her had commented;

"The problem is, for me, I am not a fun of self-directed learning" (FG participant).
"In fact me too, that is why I sign up for face-to-face masters. If I wanted to teach myself, I would have done an online study. For some modules like statistics it just doesn't work for me - FL, it is like wasting a lot of time. It is hard to even grasp some concepts" (FG participant).

Students in this study reported that although FL was useful some improvement was needed for them to maximise the full benefits. They recommended that, to improve, tutors should be clear to students right from the start of the course by explaining the teaching approach they intend to use and why. Students reported that the majority of the tutors who used this approach did not communicate the reasons or the suitability of the approach to them, and this could be the reason why some are expressing dislike of the flipped classroom idea.

Students also reported that, in some modules, the materials they were given to prepare before class was not what they ended up discussing in class. They believe this could be contributing to the reasons some students feeling negative about FL. To improve, students suggested that tutors should only give materials that are relevant to the topic they want to teach, and this should be discussed in class. This way they can get the opportunity to discuss or ask questions on issues they did not understand while doing individual learning out of class.

Challenges tutors faced using FL with students

The third and last objective of the study was to understand what might be the potential barriers to adopting or implementing a FL model in public health education. So during the interaction, the tutors were asked to share their challenges using FL, and what

they think needs to be addressed in order to help facilitate the implementation of FL in ScHARR more easily and widely across all courses.

The general views of the tutors are that FL is very resource-intensive. One tutor indicated that quite a lot of time is needed to put together all the material for students, especially "when you want to pre-record videos for students on a public health case to watch out of class" (T3). One tutor explained how he navigates through these difficulties;

> *"As for videos I never produce my own video. I use existing videos [...] I download them from YouTube, or stuff that are open access" but the good ones best suited for my course are difficult to find (T1).*

Another challenge tutors highlighted was the difficulty in getting students to engage with the materials tutors prepare or recommend to them to watch before the come to class. One tutor narrates her experiences regarding students' engagement challenges, as follows;

> *"I have often found that most do not read what you have asked them to read, and when you [...] in a flipped model, when they don't read the material it is difficult to have an effective class session. I think a lot of students think that it is our job to tell them what they need to know. It is not their job to go off and do homework if you will like pre-session planning and come along and do that, and that is always a challenge" (T5).*

Tutors also said they face a challenge using FL model in a diverse group of students who have different learning needs and expectations. One tutor remarked that:

> *"It depends on what the students are used to, so it could be cultural or the style they have been exposed to previously before enrolling in the masters' course. If they are not having to go and do work and come along to teaching session then [....] we only have a year, and then you are stuck there. Because the students, it take them a semester before they realize they have to get into that and so it is challenging. You need to prepare the students, and we do not have the opportunity and time to do that" (T3).*

Tutors also noted that flipping the classroom requires that tutors have the requisite skills and expertise to be able to redesign their curriculum to suit with the FL model. Tutors suggested the need to consider capacity building for staff, especially those new in teaching, to understand the FL pedagogy. One tutor summed it all up as follows:

> *"You need to be very familiar with the materials you give to the students because they will come and ask, if they come back and say we don't understand what you're talking about. It's okay to say, if is little nitty gritty issue, to say you will have a look, But if you're clueless about a broad content, you can't go away with it. You need to pair your activities in the classroom quite closely with the materials that you gave them otherwise they get illusion. They spend so much time to read the material and they had difficulty getting it and then they turn up and what you are doing has nothing to do with that, then they feel it's like a waste of their time. And they will be less motivated to do the reading next time. So you have to make sure that the two things work closely together. Training on flipping can help address this issue (T-1).*

"I think it's a completely different way of teaching and, if you think you can just throw things in there, you will be disappointed. I am not saying people can't do it, and we do it, I try to throw in bits, but it's not going to be done properly (T3).

Discussion

We adopted a qualitative design in this study to understand the perspectives postgraduate students and their tutors have about FL in public health masters' education. The findings suggest that both students and tutors have high preference for the FL model. The tutors believed that FL could help improve the thinking ability of postgraduate students and enhance their learning quality and experience. The tutors perceived that using the flipped approach promotes engaged learning as it encourages interaction among students themselves and also with them during class discussion. Tutors demonstrated good knowledge and understanding of the application of the approach to teaching, although it was clear that the term "FL" is not commonly used by all the tutors, instead the terms blended and interactive learning was used by some of the tutors to described FL. The views of the tutors regarding the FL terminology is unsurprising as it is, according to the literature, a relatively new concept and only came into general use in the academic literature in the mid-2000s (Bergmann & Sams, 2012).

Focus group discussion with students reaffirmed the tutors' views. Students agreed that flipping the classroom encourages interactive learning both outside and inside the classroom. According to the students, within FL environment, individual students who would not normally contribute to class discussion actively take part during FL. The students explained that this is so because FL methods provide students the opportunity to prepare individually according to their pace of learning before coming to class. Consistent with the literature [see e.g. (Butt, 2014)], this study found that some students may dislike FL, but this could be because of the learning styles they have been exposed to in their previous education or educational culture they have followed previously.

Our findings reaffirm conclusions drawn from earlier studies that FL has been widely accepted by students worldwide, and that postgraduate students in particular who have ever experienced flipped learning tend to value this method of learning (Butt, 2014; Musallam, 2013; Uzunboylu & Karagozlu, 2015) Bergmann and Sams (2012) described the flipped learning model as an effective strategy for reducing cognitive loads and that it encourages interactive learning among students. The FL approach is student centred, and challenges students to self-direct their learning (Uzunboylu & Karagozlu, 2015). Students take responsibilities of their own learning, a concept described as metacognition which helps students to construct their own meaning of concepts by reading lecture notes or watching videos in or out of class or online on their own pace prior to the teaching session (Tanner, 2012). This helps students to adequately prepare for the class discussion during teacher time (Chen et al., 2015; Murray et al., 2015). These findings are consistent with what we found in this study.

Our findings suggest that the majority of students studying at postgraduate level, as well as their tutors who use this teaching/learning pedagogy, value and appreciate FL. The findings also suggest that the approach is very relevant in public health education, and could be used to enhance the learning experience of students studying the masters of public health course, because of its potential to promote interactive and

students-centred learning. The negative feelings expressed by a few students who participated in the focus group discussion corroborate similar previous studies conducted in Australia (Butt, 2014) and the United States (Jaster, 2013; Strayer, 2012) exploring students' views and perception about FL. Their findings suggest that only a minority group of the students interviewed were unsatisfied with their learning experience participating in a FL session. Jaster (2013) reported the students who were unsatisfied rather preferred the traditional teacher-led model. Like the current study, some of the students interviewed felt that more work was involved in doing FL. For instance, these students stated that it was time-consuming watching online videos prior to class, and it appeared to them as if they were being asked to teach themselves.

The tutors noted some challenges using FL with large, diverse group of students. They indicated that because students may not have the same level of expectations, it is often difficult to meet individual students learning need with a FL model. These findings add to the literature to enhance the wider debate about students and tutors views on FL approach in higher education, as previous studies have not explored this especially at postgraduate study setting.

Study limitations

Firstly, given the small number of participants whose views were solicited (8 tutors interviewed, and two focus group comprising 12 students), the findings may not be representative of the general population of students and tutors who have experiences in flipped learning and so should be interpreted with caution. But this argument maybe irrelevant in the case of the present study, as the purpose of qualitative research, is not about representativeness and for that matter the generalization of research findings. The overacting purpose of the present study was to listen to the participants' subjective views of regarding flipped learning, and not to determine proportion and numbers.

Secondly, the lead author who is based in the students department conducted the data collection for the study. For this reason, the potential for respondents/interviewee to introduce bias was possible. In particular, bias from the students' responses was possible as some of them were more likely to want to please their tutors by responding positively rather than negatively to please their tutors. However, this was dealt with prior to the interviews by informing the students that the responses they gave could also be used by ScHARR to improve teaching quality. The students were reassured of the privacy and anonymity of their responses (see methods section for details). The interviews were deliberately conducted after students had handed in their course assessment work. This was aimed to reduce any perception that the student may have that providing negative response could lead to reduction of their marks.

Conclusion

This study reaffirms previous studies' conclusion about the value placed by students and their tutors on flipped learning. Within the context of postgraduate public health education, the findings of this study suggest that FL is highly relevant, and could be well applied in the training of public health professionals in higher education institutions. In future, however, research could consider using a mixed methods study design to collect and analyze both quantitative and qualitative data from students and tutors to better

understand the value of FL. A mixed methods study will help us to have a holistic picture of the evidence around students' views of FL. Also, as many courses are planning on trialling the FL approach, an evaluation of the approach to measure its effectiveness across courses compared to current traditional methods of teaching would be useful. The literature on the effectiveness of the approach in the UK is very limited, and such a study could help address the evidence gaps.

Abbreviations
FL: Flipped learning; MPH: Masters of Public Health; ScHARR: School of Health and Related Research; T: Tutor; FG: Focus group.

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Authors' contributions
RA conceived and designed the study, conducted interviews and led data analysis. EAA and HOK helped with the interviews, transcribed the interviews and independently reviewed the manuscript. All authors read and approved the final manuscript.

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Availability of data and materials
The datasets used and/or analysed during the current study are available from the corresponding author on reasonable request.

Declarations

Competing interests
The authors declare no competing interests.

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