University of Huddersfield Repository

Brooke, Jane and Lister, Heather

"Oh, Flip That!" An Evaluation of Flipped Learning in Initial Teacher Education

Original Citation

This version is available at http://eprints.hud.ac.uk/28958/

http://eprints.hud.ac.uk/

'Oh, Flip That!' An Evaluation of Flipped Learning in Initial Teacher Education

Jane Brooke
Selby College
HUDCETT

Heather Lister
Selby College

Abstract
Technologies are already '*established and stable*' in Further Education Colleges (AoC, 2014: p. 11), such as distance and blended learning packages, virtual learning environments (VLEs), e-portfolios, messaging and plagiarism detection, however, these technologies often mean there is no interaction between the users, or, when there is, it follows the more traditional didactic method. There is increasing pressure in all education sectors to broaden the use of digital technology in teaching, learning and assessment, and flipped learning has been seen to contribute to this. What makes the flipped classroom different is the use of technology in order to encourage collaborative teaching and learning. This paper will first provide a general overview of flipped learning and then evaluate its effectiveness within Initial Teacher Education (ITE) in the Lifelong Learning Sector (LLS) via a summary of a small-scale research project with in-service trainees. The conclusion emphasises that Teacher Educators require time and support in order to develop and embed e-learning effectively.

Key Words
Flipped Learning; Lecture-Centred versus Student-Centred; Digital Technologies; Lifelong Learning Sector.

What is Flipped Learning?
Flipped learning is a model which utilises digital technologies in order to '*…shift direct instruction outside of the group learning space to the individual space, usually via videos*' (Hamdan et al, 2013: p. 3). Thus, the flipped classroom means that students listen to and/or view lectures in their own time, enabling class hours to be dedicated to the discussion and application of theories, as well as freeing up time for one-to-one support. Ideally, flipped learning encourages students to become 'agents of their own learning' (ibid.) as well as enabling tutors to personalise learning within and outside the classroom: listening to a lecture at home helps students to better engage with the concepts, as students work at their own pace, rather than trying to capture the content of a live lecture; the classroom itself becomes a more active environment as students engage in collaborative and co-operative learning (Mattis, 2014). Much of the literature emphasises how flipped learning replaces the traditional in-class lecture approach with a more flexible model; its innovation lies in how it '*…weds the sage on the stage with the guide on the side*' (Gilboy et al, 2014: p. 113). There are other benefits such as providing additional support, for example, allowing students who are absent to catch up, and providing a revision mechanism for all students outside of class.

Background
Any research into flipped learning inevitably leads to Bergmann and Sams (2012), who are regarded as pioneers of this approach. As chemistry teachers based in a Colorado high school, they were concerned that extra-curricular activities resulted in

students skipping classes. They therefore introduced live video recordings, utilising screencasting software to record their lectures, which were then loaded onto YouTube so that students could access them whenever and wherever. Although ostensibly employed as a strategy to ensure absentees were able to access lectures, they found that after they flipped their classrooms, students interacted far more during class. They also found that 'flipping' the classroom allowed for more flexibility during contact time: students who were behind were given more time, whereas more advanced students could still progress.

Why Should We Be Flipping?
In their professional and personal roles, most in-service trainee teachers within the LLS are immersed in social media, and thus have a well-established set of digital literacy practices, which are enhanced throughout their Certificate in Education/Postgraduate/Professional Graduate Certificate in Education (Cert Ed/PGCE). However, many are inexperienced in how technology can be used in the classroom; furthermore, designing teaching and learning resources per se is a highly developmental process, and for volunteer trainees, whose time in college is limited (see later), it is even more problematic. One of the Further Education Learning Technology Action Group's (FELTAG) recommendations was that '*…the entire [FE] workforce has to be brought up to speed to fully understand the potential of learning technology*' (FELTAG, 2013: p. 4). The Education and Training Foundation's Professional Standards also make explicit references to how teachers should '*…promote the benefits of technology and support learners in its use*' (2014: online), and in terms of their summative grades, trainees should be innovative in order to achieve the Higher Education Institution's grade of 'outstanding'. Yet, for many of our trainees, the practical application of ICT skills, such as constructing a PowerPoint, presents a real challenge.

And what of the ITE tutors who are trying to equip their trainees with the multifarious skills required to work in the sector? ITE tutors form a heterogeneous group whereby teacher education is usually not their first chosen specialism, yet they need to be able to actively model good – and up-to-date – teaching practice (Lunenberg et al, 2007) which will meet learners' needs across the sector; collectively, Teacher Educators need to be cognisant of pedagogical developments. On a more personal level, as Teacher Educators ourselves, harnessing technology to teaching and learning was a challenge for us, the authors, too, so the need to develop our own skills was a motivating factor in undertaking this project, thus affording a duality of purpose whereby we were both the tutors and the learners (Littlejohn et al, 2008).

The Project
We decided to develop flipped learning materials which focused on theories of learning in order to support Year 1 Cert Ed/PGCE trainees for the Teaching, Learning and Assessment module because it is so content-heavy, and dedicated class time is necessarily restricted. As Higher Education (HE) students, trainees are expected to engage in their own academic research, however, the typical demographic of ITE students in the Lifelong Learning Sector often falls outside the typical demographic of Higher Education students. That is, trainees often manifest a resistance to pursuing personal research for a variety of reasons such as lack of time and inexperience in terms of engaging with higher level study (Brooke et al, 2012). In addition, this particular Year 1 group was atypical of our other Cert Ed/PGCE groups,

past and present, in that out of ten trainees, only two are currently employed as teachers, the rest gaining their experience in a voluntary capacity. This presented challenges for both us as their tutors and for them: in addition to those related to HE study, most of the volunteers had full-time jobs elsewhere in non-teaching roles, and their teaching practice consisted of one day at a college, during which they had to immerse themselves in teaching as well as try to learn about all of the additional responsibilities and practices of a Further Education tutor.

This lack of professional identity and, in some cases, feeling alienated rather than belonging to an established community of practice, exacerbates the problem of engaging with much of the subject-specific knowledge. In our experience, engaging with learning theory is often problematic for traditional ITE trainees (i.e. those who are already in a bona fide teaching role), an assumption supported by our earlier research project, *I'm Confused: Supporting The Fragile Learner* (Brooke et al, 2012). Often, the approach taken by trainees when completing assignments is to '*…drop in*' a bit of theory, thus '*…bestowing gravitas without doing any theoretical work*' (Reay, 2004: p. 423). By flipping the learning, we hoped to introduce the trainees to a variety of learning theories in order to engender discussion and debate regarding the application of learning theory in their own practice.

Flipping the Learning
Our first efforts were restricted to producing 20 to 30-minute screencasts via PowerPoint presentations which incorporated videos and voice-overs using software such as Screencast-O-Matic. These seemed to encapsulate the central idea of flipping the classroom: that is, inverting the lecture-style approach.   We felt that this would help to embed the HE experience. Our videoed lectures were intended to provide an overview of principles of learning by problematising learning theory per se, with the message that we should view learning theories as a means of providing alternative orientations towards teaching and learning which lead to contrasting classroom practices (Swan, 2006), rather than a learning theory being a prescription which must be followed. This route was taken in order to help trainees consider a much broader perspective to learning theory, and aimed to 'prime' trainees for the active learning tasks in class (Hamdan et al, 2013: p. 8). As well as these lecture-style PowerPoints, we also produced traditional ones, that is, no video or voice-overs.

We then moved on from the pure lecture-style to develop more interactive resources using Prezi and Nearpod, both of which easily facilitate the integration of complementary activities including embedded online quizzes and submitting evaluative comments which automatically feed back to the tutor. Ensuring that there is an element of formative assessment in a flipped lecture seems to be imperative in order to secure student engagement (Mok, 2014).

Although our focus was on Year 1, we also used Padlet with our Year 2 group, and Educreations. The former can be used to create a discussion platform, or 'wall' (similar to a blog), for example, we encouraged trainees to consider creativity. As well as posting their initial thoughts on this, there were video links on the 'wall' to help engender discussion. This 'wall' aimed to prepare trainees for the work covered in class. Educreations turns the iPad into a virtual whiteboard with voice recording, enabling the creation of short voiced-over slide shows which can then be emailed to

students via a link (there is now a similar app for Android tablets: Lensoo Create). The benefits of this app, apart from the speed and ease with which resources can be created, is its spontaneous and dynamic nature, resulting in animated slide shows using both typed script, handwriting and images. Although the recording time is up to 30 minutes with this app, it is recommended that slide shows are kept to about five minutes, as the Educreations team believes students prefer multiple short lessons rather than long ones.

Discussion
Year 1 trainees were invited to complete a short questionnaire generated on SurveyMonkey. This comprised eight questions asking trainees to state their preferences for the different strategies used, as well as inviting them to comment and justify their responses. We achieved a 70% response (7/10). Overall, the trainees liked the variety of presentation formats used (0% did not like any of them), however, 57% of respondents preferred basic PowerPoint presentations – that is, no videos or voice-overs. Morgan (2014) points out how, in a traditional HE setting, the formal lecture is often perceived as too fast by some students, but too slow for others. Flipping the lecture so that students can engage with the content outside the class should allow students to control the pace and review material, so the feedback here was disappointing, however, it does support our earlier comments regarding traditional versus non-traditional HE students. Perhaps our trainees' preference was because of the ease with which one can 'click' through a PowerPoint compared with fast-forwarding video clips. Overall, we found that the most valuable evaluation was via informal discussion groups and individual feedback, for example, one trainee emailed us with very positive feedback:

> "*Good Evening,*
> *After my Moodle issues were resolved I started to work through the content.*
> *I just thought I would feedback on what I thought about it. When I look at a presentation that is absent of any human content; such as, a voice or video, I feel its [sic] difficult to connect with it. This is helped by having some interaction with the content; for example, a quiz or independent learning activity. However, if there is that 'human' element I feel connected to the presentation and so I learn better.*
>
> *I particularly liked Marion's* Principles of Learning *screencast. It felt like a Skype session and the slight informality of it created, for me, an enjoyable experience. I particularly enjoyed the occasional feline interruption[1]. What I thought could be improved was the content on punctuation. If this was done using the screencast method, with tasks inserted much like Susan has in her Prezi presentations, I think it would be extremely effective.*"
> (Student email, 21 March 2014)

Overall, the feedback reflects some of the findings of Gilboy et al's (2014) study into flipped learning which, despite being on a larger scale, is still comparable to our own project in terms of '*lessons learned*' (Gilboy et al, 2014: p. 112). In their study, 196 students participated, with 142 completing the evaluation survey. In their evaluation, 76% preferred watching video lectures, particularly if these were delivered by their

---

[1] The student's cats interrupted the proceedings at one point

own lecturers, 70% commenting that they '…*felt connected to the teacher*' (ibid.) during the lecture. Question 8 of our survey asked: 'Do you prefer commercially produced presentations or course tutor presentations?' The majority, 86%, preferred the latter, although 14% had no preference. This preference needs to be addressed for there is a wealth of excellent available material, such as the TED[2] talks, encouraging trainees to see the value of these other voices which can only extend their Higher Education experience, as well as reducing preparation time for tutors. For Gilboy et al (2014), time to digitalise lectures was an issue, as well as devising complementary active learning strategies. We certainly found that preparing lectures and then recording them, as well as devising complementary activities, was very time-consuming.

In the Gilboy et al study from 2014, students also valued being able to work at their own pace, a concept that, worryingly, many of our own trainees seemed unable to grasp. That said, Gilboy et al (2014) add the caveat that online lectures should be only 10 to 15 minutes long, otherwise, students become distracted. This comment is also supported by our own survey. Most of the trainees found the lecture-style videos too long. Question 6 asked: 'How long should a presentation last? Do you have a preference for the length of voiced-over presentation or video?' The majority, 43%, responded 'up to 15 minutes', however, 29% felt that a presentation should be no longer than five minutes. One of our lectures was circa 30 minutes, thus too long, although it was clearly split into two parts.

Despite the ubiquity of Bergmann and Sams' 2012 study in any literature concerned with flipped learning, this approach has been around since the 1980s (Johnson and Renner, 2012). What has changed is the proliferation of technologies allowing teachers to flip, which is not necessarily helpful as '…*the development and use of digital technologies is often not coherent or linear*' (AoC, 2014: p. 7). The AoC continue by pointing out that the challenge for teachers is to recognise the pedagogical usefulness of these various devices and apps in order to develop innovative teaching and learning experiences.

'*Clarify, Expand, Apply, and Practice*': After the Flipping is Done (Johnson and Renner, 2012: p. 3)
There is a consistent refrain throughout the literature: the teacher provides materials in advance of the class; the students engage with the materials in their own time and in an environment where they are most comfortable and can review the materials whenever they want as well as engage in additional research; and classroom time is given over to active learning, including discussion, which helps students to deepen their knowledge and understanding of any concepts. It sounds ideal. But what if some of the students have neither watched the lecture nor completed any of the introductory activities? Indeed, a common perception for some of our trainees was that the flipped tasks constituted extra work rather than activities to support both their assignment work and overall professional practice. Mok (2014) makes the obvious point that for flipped learning to be successful, it is critical that students are both

---

[2] TED (Technology, Entertainment and Design) is a non-profit organisation: 'a global community…devoted to spreading ideas, usually in the form of short, powerful talks (18 minutes or less)'. These talks are available online at https://www.ted.com/about/our-organization.

prepared by having watched the assigned video, and that they attend the subsequent class in order to take part in the active learning session. Although students can watch the lecture during class time, this does rather defeat the object in terms of being able to actively model classroom practice (Loughran and Berry, 2005). Thus, what is important is to ensure students *'buy-in'* to the flipped learning concept (Gilboy et al, 2014: p. 110). For us, this will mean giving a clearer and greater emphasis on this approach from the start of the course, and ensuring that we timetable flipped learning activities into our existing teaching calendar provided to all trainees at the start of the academic year.

But what of the active learning activities following the flipping? In theory, the flipped classroom means that teachers can capitalise on students' preparation by using the time to apply students' new knowledge via active learning strategies. West argues that this approach '*…frees up class time for Socratic-style instruction based on questions and problem-solving*' (West, 2011: p. 2, in Kellinger, 2012: p. 530). For Kellinger, however, the focus seems to be on the technology as there is little research conducted into the active learning that should complement the flipped learning. Although there are claims that flipped learning '*…leads to better learning outcomes with less mental effort*' (Clark et al, in Mattis, 2014: p. 232), there is little evidence of rigorous research into how learning outcomes are improved (see Mattis, 2014; Mok, 2014). Gilboy et al (2014) also refer to the lack of evidence in terms of measuring learning outcomes in the flipped classroom, but they emphasise how this teaching strategy models good practice in terms of being learner-centred whereby the flipped classroom reflects constructivist approaches for which there is a great deal of supportive research. This argument, then, should be made explicit with our own trainees, and should be a part of the active learning process. But Gilboy et al (2014) also state that it is important to use only a few active learning strategies – in their study, the main active learning seems to be jigsaw reading – so that students focus on the content rather than the process. In teacher education, however, the process is just as important in order to address meta-teaching. Thus, we need to ensure there is plenty of variety. Indeed, one student provided helpful and positive email feedback regarding the embedded activities, indicating a high level of learning transference:

> "*Hi Susan,*
> *Just got through the Nearpod. It might be useful for you to mention that today I have had a really bad day at work. Having come home I was feeling a little worn out and demotivated. Despite this I found that I still learned a lot and the questions in context of the material inspired a lot of independent thought and ideas. I hope my responses demonstrate this. In terms of constructive criticism, I'm having a hard time finding fault with it. The videos at the end were really entertaining and the inclusion of them was nothing short of genius. I think this is because they made me feel positive and may help me recall the information.*
> *Also an interesting thought occurred to me when considering the Bobo Doll experiment. In the department I work in there is a lot of external pressure and criticism on what we do. One colleague in particular gets very frustrated when this occurs and often becomes very animated in this. I have realised that this behaviour is often mirrored by others and more worryingly I often feel like behaving the same way. I wonder if this is the Bobo Beatdown occurring.*"

This informal evaluative feedback confirms that, for some students, flipped learning is valued.

Conclusion
In the wealth of literature on flipped learning, there is an emphasis on the lecture as the main teaching strategy; indeed, the emphasis is on flipped learning within Higher Education contexts. However, in Further Education, many staff do not lecture, and if they do, then this is usually for a much shorter time than in traditional HE settings; in addition, some subjects lend themselves to the lecture more easily than others. '*Pedagogy-first*' is a term often used to describe flipped learning (University of Washington, n.d.), and seems an apt definition for subjects that are traditionally lecture-based and didactic in nature. A London school-based maths teacher who has been nominated for this year's Varkey Foundation Global Teacher Prize, in part because of the videos he has posted online, is, perhaps, representative of this pedagogy-first approach; his videos harness the potential of flipped learning: pupils watch the videos in their own time and then explore the concepts in class (BBC Today Programme, 2016). Many of us are already giving students homework such as directed reading or research in order to prepare for active learning for a session, such as peer presentations, however, just because we have flipped something, does not mean that the actual classroom will be any different from our normal practice (Hamdan et al, 2013). For many subjects, particularly within the teaching contexts of the LLS, pedagogy-first complements what is common practice: homework followed by active learning. This approach is especially pertinent for in-service ITE in Further Education Colleges, where, to reiterate, there is an expectation to model active learning strategies (Lunenberg et al, 2007).

According to Hamdan et al (2013), the inverted classroom is more demanding than the traditional one, both in terms of a teacher's time and their knowledge, not just with regard to the educational software, but the ability to know what complementary activities to prepare, and how to support individual students both in the flipped stage and in the classroom. Kellinger also states that the choice of what to focus on when devising flipped learning materials is '*…a skill in itself*' (2012: p. 531), although for us, theories of learning seemed an obvious choice.

Table 1 aims to provide a brief summary of the advantages and disadvantages of some of the artefacts we used in our project, using the points below. The framework has been adapted from Littlejohn et al (2008: 764) who identified a number of factors which have a positive influence on embedding e-learning into practice, including:

- easily sourced by tutors
- durable, maintained and 'quality assured' (i.e. associated with a national organisation or publisher)
- available at appropriate cost
- accessible, ubiquitous format (i.e. can be used with different media/platforms)
- intuitive and easy to use
- engage the learner (e.g. with activities)

	Easily sourced	Well-maintained	Cost	Accessible, ubiquitous format	Ease of use	Learner engagement
Prezi	✓	✓	Free	✓	Medium	✓
Padlet	✓	✓	Free	✓	Easy	✓
Nearpod	✓	✓	Free but limitations	✓	Medium	High[3]
Screencast-O-Matic	✓	✓	Free but limitations	✓	Medium	High
CamStudio	✓	✓	Medium	✓	Med-hard	High
QR codes	✓	✓	Free	✓	Easy	✓
Educreations	✓	✓	Free but limitations	iPad	Easy	✓ This app is particularly suited to explaining concepts
VideoScribe	✓	✓	Minimal cost for iPad	✓	Considerable effort	Some students are very distracted by the constant unfolding; others enjoy them
YouTube (existing videos)	✓	✓	Free	✓	Easy	High
TEDTalks	✓	✓	Free	✓	Easy	High
Socrative (and Kahoot)	✓	✓	Free	✓	Easy	High

Table 1: An overview of flipped learning artefacts, based on factors from Littlejohn et al (2008: p. 764): advantages and disadvantages

All the products we used are easily sourced and the majority are free, however, to be able to access greater functionality, many of the products require subscriptions in order to acquire upgrades. Nearpod is a very good example: the free version limits the user by not allowing video clips to be embedded. There are different licences such as individual as well as college ones, but the latter is cost-prohibitive. The different licences and restrictions mean that this cannot be used collaboratively within departments. Some of the listed products were used post-flipping, in class, such as Socrative. In addition, we also extended the use of Educreations in order to create slide shows, which support trainees' written English skills (or minimum core) such as apostrophes, easily confused words (for example, its/it's). Indeed, we also have begun to develop other minimum core materials using Screencast-O-Matic and Camtasia, and feel that this could be very beneficial.

---

[3] With regard to 'learner engagement', by high, we mean that the tutor has to devise activities based around the presentation/lecture and video; there is no instantly pre-prepared toolbox. Thus, learner engagement will be high if the tutor is willing to commit to developing activities

In conclusion, despite the drawbacks and lack of rigorous research into learning outcomes, we believe it is important to utilise this strategy as part of the overall learning experience for our trainees, but it should only form a part of it. This approach is important in Further Education in order to address concerns raised by FELTAG. This body acknowledges that '*…the FE sector is keen to innovate, and is already doing so, but on a small scale and in a fragmented manner, without strategic support*' (2013: p. 15). We feel that lengthier and more structured training for ITE staff should be provided in order to remove some of the trial and error as we attempt to navigate our way around the proliferation of apps and other software. We are aware of the difficulties in timetabling such training, and we also appreciate the IT conferences held by a university in West Yorkshire, however, while these certainly inspire, there is never sufficient time to provide the much needed hands-on practice for the less 'IT-savvy' teacher trainers to develop both their confidence and the skills required to produce high-quality teaching and learning resources. This is vital if we are to model good practice to our trainee teachers.

References

Association of Colleges (AoC) (2014) *A Summary Discussion Of The Use Of Learning Technologies In Further Education.* https://www.alt.ac.uk/sites/alt.ac.uk/files/public/A%20summary%20discussion%20of%20the%20use%20of%20learning%20technologies%20in%20FE%20%20V04%20%282%29.pdf [accessed 7 July 2015].

Bergmann, J., Sams, A. (2012) *Flip Your Classroom: Talk To Every Student In Every Class Every Day*. Washington DC: International Society for Technology in Education.

Brooke, M.J., Lister, H., Schofield, E. (2012) '"I'm Confused": Supporting The Fragile Learner' (research report). University of Huddersfield.

Education and Training Foundation (2014). *Professional Standards For Teachers And Trainers In Education And Training – England.* http:// http://www.et-foundation.co.uk/wp-content/uploads/2014/05/4991-Prof-standards-A4_4-2.pdf [accessed 6 February 2016].

Further Education Learning Technology Action Group (FELTAG) (2013) *Paths Forward To A Digital Future For Further Education And Skills: Recommendations.* http://feltag.org.uk/wp-content/uploads/2012/01/FELTAG-REPORT-FINAL.pdf [accessed 22 June 2015].

Gilboy, M.B., Heinerichs, S., Pazzaglia, G. (2014) 'Enhancing Student Engagement Using The Flipped Classroom'. *Journal Of Nutrition Education And Behaviour*. Vol. 47, Issue 1, pp. 109-114. http://dx.doi.org/10.1016/j.jneb.2014.08.008

Hamdan, N., McKnight, P., McKnight, K., Arfstrom, K. (2013) *A Review Of Flipped Learning*. Flipped Learning Network.

Humphrys, J., Webb, J., Husain, M., Montague, S., Robinson, N. (Presenters) (2016) Annual Global Teacher Prize. In *Today Programme*. London: BBC [accessed 17 February 2016].

Johnson, L.W., Renner, J.D. (2012) *Computer Applications Course: Student And Teacher Perceptions, Questions And Student Achievement* (PhD thesis). University of Louisville, Kentucky, USA.

Kellinger, J.J. (2012) 'The Flipside: Concerns About The "New Literacies" Paths Educators Might Take'. *The Educational Forum*. Vol. 76, Issue 4, pp. 524-536. http://dx.doi.org/10.1080/00131725.2012.708102

Littlejohn, A., Falconer, I., McGill, L. (2008) 'Characterising Effective E-learning Resources'. *Computers & Education*. Vol. 50, pp. 757-771. http://dx.doi.org/10.1016/j.compedu.2006.08.004

Loughran, J., Berry, A. (2005) 'Modelling By Teacher Educators'. *Teaching And Teacher Education*. Vol. 21, pp. 193-203. http://dx.doi.org/10.1016/j.tate.2004.12.005

Lunenberg, M., Korthagen, F., Swennen, A. (2007) 'The Teacher Educator As A Role Model'. *Teaching And Teacher Education*. Vol. 23, Issue 5, pp. 586-601. http://dx.doi.org/10.1016/j.tate.2006.11.001

Mattis, K.V. (2014) 'Flipped Classroom Versus Traditional Textbook Instruction: Assessing Accuracy And Mental Effort At Different Levels Of Mathematical Complexity'. *Springer Science + Business Media*. Vol. 20, pp. 231-248. http://dx.doi.org/10.1007/s10758-014-9238-0

Mok, H.N. (2014) 'Teaching Tip: The Flipped Classroom'. *Journal Of Information Systems Education*. Vol. 25, Issue 1, pp. 7-11.

Morgan, H. (2014). 'Focus On Technology: Flip Your Classroom To Increase Academic Achievement'. *Childhood Education.* Vol. 90, Issue 3, pp. 239-241. http://dx.doi.org/10.1080/00094056.2014.912076

Reay, D. (2004). 'It's All Becoming A Habitus: Beyond The Habitual Use Of Habitus In Educational Research'. *British Journal of Sociology of Education*. Vol. 25, Issue 4, pp. 431-444. http://dx.doi.org/10.1080/0142569042000236934

Swan, M. (2006) *Collaborative Learning In Mathematics.* London: NRDC.

University of Washington (no date) *Flipping The Classroom.* http://www.washington.edu/teaching/teaching-resources/engaging-students-in-learning/flipping-the-classroom [accessed 2 August 2015].

To cite this article: Brooke, J., Lister, H. (2016). 'Oh, Flip That!' An Evaluation of Flipped Learning in Initial Teacher Education*. Teaching in lifelong learning: a journal to inform and improve practice*. 7(1), pp16-24