First inversion: a rationale for implementing the 'flipped approach' in tertiary music courses

Catherine Grant

Queensland Conservatorium Griffith University

Abstract

For several reasons, current models of tertiary education seem unviable. A shifting educational landscape with rising student numbers, an increasingly diverse student cohort, and high levels of student disengagement have led to concerns about the continued relevance of 'traditional' teaching and learning methods. At the same time, the possibilities opened up by digital technologies are both driving and necessitating radical shifts in pedagogical models. This situation underscores the need to investigate models that may address some of these shifts in higher education. In the Australian tertiary music sector, where some institutions are struggling to retain quality tuition, this task is urgent. Taking as its point of departure a collaborative constructivist theoretical framework (Garrison & Akyol, 2009), this paper examines one pedagogical approach, the "flipped classroom", for its potential to improve teaching and learning outcomes in tertiary music courses. Benefits, challenges and disadvantages of this model are discussed, as well as suggestions for implementation and further research. The author hopes to encourage consideration of flipped learning as a credible, evidence-based, and educationally sound new direction for tertiary music education.

Key words: blended learning, collaborative constructivism, digital technologies, flipped learning, inverted classroom, higher music education, music pedagogy

Australian Journal of Music Education 2013:1, 3-12

Introduction

Arguably, current models of tertiary learning and teaching are unsustainable. Innovations in digital technologies have begun to transform higher education to the point that universities must embrace change and stay abreast of trends to attract and retain students. Students themselves are disillusioned with out-dated, teacher-focused pedagogies (Barnes & Tynan, 2007), and they are increasingly disengaging with these traditional forms of teaching and learning (Barnett & Coate, 2005; Garrison & Akyol, 2009). Funding pressures and a rising teacher-to-student ratio have led to concerns about the quality of the student experience and learning outcomes in the tertiary sector (Haggis, 2006).

Music education is a case in point, where the typically "labour and resource intensive" nature of music training (Schippers, 2011, para. 3) brings with it a unique set of pedagogical and practical challenges, both for one-to-one teaching and classroom lectures. Many tertiary music schools are struggling to retain educational quality using traditional models of teaching and learning – witness the Australian context, where radical cuts to funding and degree programs have become a sombre reality (Maze, 2012) in a milieu where virtually all tertiary music institutions are operating at a deficit (MCA, 2011, p. 1). Particularly in this environment, 'old' classroom pedagogies will only further undermine the capacity of institutions to provide high-quality learning

experiences that prepare students for a successful career in a fast-changing music industry.

From a positive perspective, the possibilities are vast for transforming higher education for the better in the twenty-first century, perhaps primarily because of the new possibilities afforded by digital innovations. This paper explores the potential for one pedagogical model – flipped learning – to address some of the current challenges and issues, specifically in the context of tertiary music education.

Collaborative constructivism

This study takes as its point of departure a collaborative constructivist theoretical framework. The constructivist paradigm essentially expounds the view that learners construct their own knowledge and ideas through their past and current experience of the world (Piaget, 1970; Vygotsky, 1978). It theorises that students should be active agents in their learning; that exploring, experimenting, questioning and reflecting on real-world problems leads to deep understanding; and moreover, that engaging in these activities builds learning skills that are transferrable to other contexts. In short, by this paradigm, students learn how to learn. Their role shifts from passive knowledge-recipients to active participants with control over their learning, including the opportunity to negotiate content, processes, assessment, and deadlines (Vrasidas, 2000, p. 9). With the understanding that not all students need to learn the same material, teachers guide discussion and activities that elicit knowledge and foster understanding, and provide the support, tools, and resources students need to manage their own learning (Vrasidas, 2000, p. 9). Constructivist alignment research (e.g., Biggs & Tang, 2011) corroborates the principles of the constructivist paradigm by suggesting that student engagement in learning is greater when the learning *process* is emphasised over content, and where learning is deep and transformational, rather than surface-level assimilation of facts and information.

Collaborative learning, in which students cooperate to build their knowledge and understanding, is strongly linked to constructivist theory. One early proponent was Dewey (1959), who believed that collaborative learning was a means by which students may assume responsibility for constructing and verifying meaning. By this approach, the 'teacher' creates purposeful learning scenarios that aim to facilitate student interaction, collaboration, and knowledge-sharing. This pedagogical framework is situated in a belief that the nature of learning is inherently social (Vygotsky, 1978).

While constructivist approaches to learning are arguably a hallmark of higher education inasmuch as students are required to take responsibility for making sense of their own learning, a collaborative approach to constructing knowledge is less common in the university context (Swan et al., 2009). Swan et al. call for tertiary pedagogies to reassert the social construction of knowledge:

> [T]he traditional ideal in higher education has been discourse and reflection in a collaborative community of scholars . . . . [C]onstructivist approaches and community are necessary for creating and confirming meaning and are essential for achieving effective critical thinking. Therefore, constructivist approaches and community must be necessary parts of higher education. (Swan et al., 2009, p. 44)

From these foundations, then, it is a small leap of logic to unite the collaborative constructivist theoretical frameworks with the vast pedagogical opportunities opened up by digital technologies. Garrison and Akyol (2009) made this leap in arguing that "the successful use of instructional technology in higher education will be driven by educationally valued ideas of teaching and learning (i.e., collaborative constructivist approaches) integrated with the transformative potential of new communications technology" (p. 20). Based on this conviction, this current study

combines the collaborative constructivist theory of education with an exploration of one of the vast possibilities afforded by the rise of digital, and particularly communications, technologies.

It does so within the context of higher music education, where the time seems ripe for a study of collaborative constructivist approaches to learning. Recent research into educational practices within music institutions has tended to focus on individual instrumental and vocal tuition (e.g., Carey, Grant, McWilliam & Taylor, 2013; Gaunt, 2011; Nerland, 2007; Triantafyllaki, 2005), perhaps due to the uniqueness of the one-to-one pedagogical model within the university environment. Yet lecture-style pedagogy within conservatoires also deserves scrutiny. Specifically, what could collaborative constructivist approaches, combined with the 'transformative potential' of technological innovations, bring to the conservatoire context? What value, if any, lies in implementing these pedagogical frameworks in traditionally objectivist lecture-style courses such as music history, music literature, and music theory?

The flipped approach

'Flipped' learning has attracted research and practice-based attention for its potential to incorporate digital technologies in a new pedagogical method that is better aligned with current collaborative constructivist educational practice. Also known as 'the flipped approach' or 'the inverted classroom', it has been implemented in a range of disciplines and contexts from K-12 to adult education, and forms the philosophical foundation for a number of cutting-edge online educational initiatives fast gaining momentum, such as The Khan Academy (www.khanacademy.org/) and TED-Ed (http://ed.ted.com/).

The essence of the flipped method is that content is delivered before class time, and lectures themselves become forums for discussion, integration, and application of that content. The pre-delivered content may take several formats, most typically a series of short videos recorded using simple video-capture software and uploaded to the internet. These videos may be supplemented by Web 2.0 resources or platforms such as wikis, blogs, discussion forums, social media sharing, and social networking sites, which support active and social learning by acting as venues for collaborating, constructing and sharing information in support of active and social learning (Garrison & Akyol, 2009, p. 21). In class time, the lecturer (now a misnomer!) acts as facilitator, guiding students in discussion and higher-level problem-based learning activities, either individually or in groups (Hughes, 2012).

The benefits to this inverted model are many. Students pace and direct their own learning, exploring pre-delivered materials in their own time, repeatedly if they wish. The approach demands their active engagement in the learning process. The lecture room becomes an interactive space where students collaboratively construct their own knowledge in ways that is meaningful to them, receiving personalized guidance and becoming a part of a community of inquiry (Garrison & Vaughan, 2008). Lecturers no longer deliver (in some cases) largely static bodies of knowledge year after year, instead focusing on supporting the specific needs and strengths of the cohort at hand. Compared with traditional objectivist (lecture-style) formats, students in active learning environments like these have demonstrated better conceptual grasp of the content as well as better retention rates (Sezer, 2011), as well as increased engagement in learning and improved learning outcomes (Hughes, 2012). Koller, founder of the educational initiative Coursera, also reports higher-than-usual attendance rates in her university courses taught using the flipped approach (in Martin, 2012).

The tertiary music context

With these benefits, the flipped approach holds promise to improve pedagogical practices and outcomes in higher music education. General

benefits of the flipped approach – including the improved attendance rates, increased student engagement, improved learning outcomes, and higher retention rates described above – may well transfer to the tertiary music context (for example in subjects like music history, theory, and literature). With contact lecture hours directed to activities that consolidate and apply knowledge, the flipped music classroom holds far greater potential than traditional lecture formats to foster authentic and creative student learning activities, for example by incorporating practice- and performance-based learning tasks. More than the traditional lecture format, it can engage students engaging in real-life problem-solving in areas relevant to their future careers as musicians, and develop the entrepreneurial skills that are increasingly needed to build a successful and sustainable career in the arts (Bridgstock, 2012). Given that tertiary music students (like those in the wider creative industries) are likely to engage in "a lifetime of specialised work requiring multiple advanced skill sets in which they will continually learn and re-learn skills for performance in roles that may not have been invented yet" (Bridgstock & Hearn, 2012, p. 5), 'deep' learning such as that borne of collaborative constructivist pedagogy seems infinitely preferable over the surface-level content-driven teaching that still dominates most conservatoire lecture rooms.

Beyond these flow-on benefits, there may be other advantages for music institutions in implementing the flipped approach. Digital content may be used for subsequent cycles of a course, within other courses, or shared across institutions in the fashion of Massive Online Open Courses ('MOOCs') (Martin, 2012; McAuley et al., 2010). As MOOC content is developed across a wider range of disciplines, pre-existing MOOCs may be used as the basis for a flipped approach in tertiary music education. This would not only potentially increase inter-institutional resource- and cost-effectiveness, but also bring the substantial pedagogical advantage that the online content of these flipped courses can be developed and presented by world-class music pedagogues and lecturers.

The process of drawing on a MOOC to implement a flipped lecture room is outlined by Fred Martin (2012), associate professor at the University of Massachusetts Lowell, with regard to his undergraduate course on artificial intelligence. Instead of delivering his own classroom content in traditional lecture format, Martin required his students to complete a Stanford MOOC on the topic, taking the course alongside them. He then used weekly class time for a roundtable session, setting an assigned task before each class. It is not difficult to imagine how Martin's basic model could be transferred to music education:

> We talked about the Stanford material after each week's assignment was already due. Because of this I did not have to present the course material in a lecture format. When we met, most of my students had worked through the lectures and the homework. So I did not have to explain things to students for the first time. Instead, we used in-class time for conversations about material that people found confusing or disagreed upon. We had some great discussions over the course of the semester. (Martin, 2012, p. 27)

Specifically for music courses, the following are examples of the kind of student activities that a 'lecturer' in the flipped classroom may facilitate in class time (adapted from general activities proposed in Van der Veen, De Boer & Collis, 2000; Collis & Moonen, 2001):

- Seeking supplementary information and/or musical examples beyond those provided in the pre-delivered content, and sharing these with other class members;
- Finding and sharing 'case study' examples of musical works that illustrate or raise a certain issue relating to the course content;

- Applying pre-delivered content to an unknown piece of music as a way to problem-solve (e.g. with regard to performance practice; understanding of structure, form, and compositional techniques; knowledge of theory; etc);
- Participating in a performance-based exercise, either individually or with others, and making available a record of the process and performance for others to learn from;
- Creating a collaboratively written report, an audio/video recording, or multimedia content for others to use as a learning resource;
- Extending and applying theoretical principles to new musical settings and works, and developing the results into a course repository of extension materials;
- Creating quizzes, test questions, and other study resources for others to use;
- Engaging in group- or whole-of-class discussion and maintaining a record of its key points for sharing with others.

The internet serves as the obvious platform for sharing the resources generated through these in-class activities – the institution's Learning Management System, for example, or a dedicated course website. These resources may be used by other students in the course, by students in subsequent cycles of the course, or even by those not enrolled in the course at all, but who are generally interested in the topic (Collis & Moonen, 2001, pp. 38-39). In this way, students not only contribute to their own learning, but also directly to the course itself, and the wider body of learning and teaching resources on the course topic. Such an approach reflects the "new definition of an *active student*": "one of co-contributor to the course study resources and co-member of the course as a learning community" (Collis & Moonen, 2001, p. 26). It is also consistent with the pedagogical goal of creating "a community of inquiry where students are fully engaged in collaboratively constructing meaningful and worthwhile knowledge" (Garrison & Vaughan, 2008, p. 31).

To illustrate the way the flipped music classroom contrasts with the traditional music lecture, and how the flipped method might be applied in the context of tertiary music education, I invite the reader to consider a hypothetical undergraduate music history course that centres on the period around 1600 to 1750 (roughly the 'Baroque era'). Forty students are enrolled, and weekly lectures last for 90 minutes. A characteristic design for a lecture – let's say this one focuses on keyboard music – might be the following:

Speaking from notes, the lecturer progresses through a PowerPoint presentation, giving an historical overview of the social context and performance practice of keyboard music from the Baroque era, and an introduction to a handful of core composers. Now and then a point is illustrated through a musical excerpt played from a CD or YouTube. Five minutes at the end of the lecture are reserved for questions.

Lecture notes and PowerPoint are subsequently provided to students through the institution's online Learning Management System (LMS). Sometime during the week of the lecture, students are also encouraged to access a handful of supplementary musical examples and a set course reading through the LMS.

Grounded in a long tradition, this approach is clearly teacher-centred. Students have limited direction over the nature, content, or pace of their own learning. Opportunity to ask questions is limited to (probably) two or three individuals, and the lecture affords no opportunity for student-to-student interaction. Supplementary materials like readings and recordings of musical works are not integrated with learning, with the risk that students will not engage with them (at least, not till assessment looms). Opportunities for students to collaboratively integrate, reflect on, and apply the knowledge gained through the class are very few.

Contrast this with a possible flipped approach. In the following scenario, the topics covered and the class duration are identical to those above.

***Student preparation**: In the week preceding the lecture, students watch four short (8-12 minute) videos on Baroque-era keyboard music that the lecturer has uploaded to the institution's Learning Management System (LMS). They take a short multiple choice quiz about the videos and receive immediate automated feedback. Students move to a social networking site for the course, where they are asked to contribute a comment reflecting on the videos and/or respond to an existing post. From here, students choose one further piece of supplementary material to access. This week, the links lead to an audio recording of an early-18th century keyboard sonata performed by an internationally-renowned artist, some program notes from a recent recital of 17th-century keyboard repertoire at an international early music festival, and a YouTube clip of a recent local harpsichord masterclass. Whichever of these they choose to access, students are posed a single open-ended question, which they are invited to reflect upon in preparation for the lecture.*

***In class**: In small groups, students work together to recall the content of the lecturer's video content. The lecturer displays some open-ended questions which stimulate the students to think more deeply about that content; they discuss in groups, facilitated by the lecturer. A short whole-group discussion follows, including a short debrief about the students' pre-class experiences with the online content. (20 minutes)*

Students are invited to call out titles of Baroque-era keyboard music in their repertoire; another student types these directly into a dedicated page on the LMS (projected to the class). At random, one of these works is selected; a student quickly finds a recording of the Scarlatti sonata on an online music database. As they listen as a class, students are asked to reflect on a series of generic questions that may be asked of any performance of a Baroque era keyboard work ('What characteristics of Baroque performance practice are evident? Are there any anachronisms you can hear?'). First in pairs and then in small groups, students share their reflections. (25 minutes)

The lecturer projects the online social networking page. Starting with questions that as yet have no comments, students work together to construct short responses (and where laptop/tablet access permits, to post them directly on the site). The lecturer facilitates and guides the process. Students check in to view the comments/answers provided by their peers. A brief whole-group discussion ensures that any remaining questions are answered. (25 minutes)

As the final in-class activity for this week, students pair up with another class member who chose to access the same supplementary material as they (performance recording / program notes / masterclass). Guided by the pre-set question relating to their chosen material, students collaboratively reflect on how they may use this material to support the processes or products of their own learning as contemporary musicians (e.g. critiquing the constituent parts of the program notes, by way of preparing to write their own in future, perhaps as assessment for this course). (20 minutes).

This is not intended to be an example of flawless pedagogy; rather, I offer it as one illustration of the virtually endless ways the flipped method, grounded in collaborative constructivist principles, might be implemented in the music lecture room. It raises a number of issues that demand consideration.

Considerations

Flipped learning is not faultless, nor beyond reproach. November and Mull (2012) present (and respond to) five common objections, including the expertise and time-investment required to create initial digital content, and that the model forces students to have access

to digital technologies. Several further possible charges against the flipped approach are common to many pedagogical approaches that introduce digital technologies to higher education: increased workloads for staff (initially, at least); usability and technical issues; students' inappropriate or inexpert use of communication tools; and the priority given at the institutional level to technology over pedagogy (Waycott et al., 2010, p. 1208).

The issue of academic workload is a recurrent one in studies about implementation of digital technologies in higher education (e.g., Jefferies et al., 2004; Laurillard, 2007; O'Connor, Mortimer & Bond, 2011). Once fluent in the technology and pedagogical approach of the flipped method, the time a lecturer spends to pre-record and upload three or four short videos and plan a set of in-class activities around these videos may be only slightly more than, or even roughly equivalent to, that spent in preparing a 'traditional' full-length lecture with PowerPoint slideshow. A potential added workload in the flipped approach, however, lies in the pedagogical necessity for the lecturer to carry out some degree of 'e-moderation' to monitor students' Web 2.0 contributions and help them reflect on those made by others (Ellis, Ginns & Piggot, 2009, pp. 305-306). A lecturer may determine an appropriate amount of time to spend on this task by balancing workload and pedagogical considerations. The impact of the flipped approach on academic workload will need further investigation as implementation of the model progresses.

The flipped approach has other deep implications for course lecturers. These include a fundamental shift in the lecturer role, which now moves from presenter-instructor to facilitator-motivator (Collis & Moonen, 2001, p. 43). In this collaborative constructivist approach to in-class learning, lecturers need to be willing to give up their lecture-presentations, and to accept a greater diversity of course materials and outcomes than is the case in the 'traditional' approach to higher education. Required competencies will include the ability to plan and execute interactive class activities, to manage and monitor those activities and ensure quality results, and to be sufficiently conversant with the technologies via which the content is conveyed. Preliminary research indicates that web-based instructional models for prospective teachers of the flipped approach may be effective, especially if they include support through an in-person or online learning community to provide guidance and to enabling sharing of experiences (Shimamoto, 2012).

Another consideration is how students will receive and respond to flipped learning. A number of researchers discuss the reticence of students to embrace innovative pedagogical methods and technology in higher education (e.g., Collis & Moonen, 2001; Ellis, Ginns & Piggot, 2009, p. 307). Some have observed that "often students do not, in fact, want to become more active and co-responsible for [a] course . . . By and large, students are not intrinsically motivated by change or the use of technologies" (Collis & Moonen, 2001, p. 46). Consequently, students may provide less than enthusiastic feedback on courses that adopt an innovative collaborative approach. Thus,

> Teachers need to be protected from low student evaluation scores. Mazur and others have reported that students give lower evaluations in courses with active learning – even when the evidence shows they have learned more. Students have grown up with conventional lecture teaching, and just like anyone else, they are resistant to change. (Martin, 2012, p. 28)

Since "assessment will inevitably shape how students approach the educational experience" (Garrison & Vaughan, 2008, p. 46), one practical suggestion for ensuring student engagement with flipped learning activities is to build those activities into course assessment (see also Alexander & McKenzie, 1998). This strategy has proven successful in other e-learning environments where students were required

to engage with online tasks (e.g., Ellis, Ginns & Piggot, 2009, p. 307). Best assessment practice in flipped learning is beyond the scope of this paper, but should be carefully considered in the design of any flipped approach.

Music being a unique tertiary-sector discipline, a successful implementation of the flipped method for music will carefully consider discipline-specific concerns. One study in a high school context revealed that after receiving training in the flipped approach, teachers of music (and art) were less likely to implement the method than those teaching more conventional subjects "due to their inability to identify ways in which they could best adapt the method to their lessons" (Shimamoto, 2012, p. 7). An initial investment of institutional funds may be required to enable appropriate discipline-specific pedagogical and technological training for lecturers (equalled by an investment of lecturers' time to undertake this training). In time, though, these short-term investments may pay off several-fold for the institution (and other stakeholders, teachers and students included), not least in terms of improved student engagement, retention, and learning outcomes.

The now-common problems in tertiary music schools of heavy academic workloads and funding challenges may tempt institutions to carry flipped learning one step further: namely, to deliver some music courses *exclusively* using online modalities. However, according to the flipped approach, disseminating online content (like videos) to students does not bring the student-engaged, student-focused learning cycle to a close. As Laurillard (2010) observes in relation to websites and podcasts, videos "play exactly the same role as conventional books and lectures – they present the teacher's concept" (p. 12). Even if supplementary online activities like quizzes and discussion forums are provided to students, lecture time remains integral to the flipped method: Lectures are the environment where students collaboratively construct a learning context in which they identify with a community, communicate purposefully in a trusting environment, and develop interpersonal relationships – the three dimensions of social presence in a community of inquiry (Garrison et al., 2010, p. 7).

Closing words

One of the challenges in utilising technology in pedagogy is to ensure the former is employed in the service of the latter, not vice versa (Laurillard, 2009, p. 6). The use of digital technologies in learning requires firm theoretical bases that prioritize educational, rather than merely 'innovational', considerations. Within the context of music education (as more generally), the adoption of the flipped lecture approach needs to be carefully mapped against intended learning objectives. Preliminary indications suggest, though, that the model may advance solutions to some of the challenges and changes currently facing tertiary music education.

Further research is required to determine whether the promise of the flipped learning in tertiary music education is borne out in practice. Pilot studies might be conducted first at the small-scale, even for a single subject or with a core group of interested lecturers within a single music institution, to gauge the experiences and reactions of both students and teachers and to address challenges as they arise in a supportive and pro-active environment. Institutional leadership in the form of professional development training and concerted support will be decisive to the wider sustained adoption of this method – as with any approach that uses instructional technologies to engage students in collaborative communities of inquiry (Garrison & Akyol, 2009). For now, investigating flipped learning through practice and research may draw us closer to aligning tertiary music education with evidence-based, forward-looking, and engaged pedagogies, a goal that is in the interests of students, lecturers, and institutions alike.

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Catherine Grant PhD is Research Fellow at Queensland Conservatorium Research Centre, Griffith University (Brisbane, Australia). Her lecturing experience includes courses in Western art music history and literature, and her research interests lie in the areas of tertiary music teaching and learning, performing arts healthcare, and cultural sustainability.