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Connected Learning Journeys in Music Production Education

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ABSTRACT

The field of music production education is a challenging one, exploring multiple creative, technical and entrepreneurial disciplines, including music composition, performance electronics, acoustics, musicology, project management and psychology. As a result, students take multiple 'learning journeys' on their pathway towards becoming autonomous learners. This paper uniquely evaluates the journey of climbing Bloom's cognitive domain in the field of music production and gives specific examples that validate teaching music production in higher education through multiple, connected ascents of the framework. Owing to the practical nature of music production, Kolb's Experiential Learning Model is also considered as a recurring function that is necessary for climbing Bloom's domain, in order to ensure that learners are equipped for employability and entrepreneurship on graduation. The authors' own experiences of higher education course delivery, design and development

are also reflected upon with reference to Music Production pathways at both the University of Westminster (London, UK) and York St John University (York, UK).

INTRODUCTION

As educators, we are the navigators and guides of our students' journeys through academia. We start with the exchange of knowledge and move forwards through applications of theory, experimentation, critical analysis and synthesis, as described fundamentally by Bloom et al. (1956). First by hand-holding and then letting go, we encourage students to develop their own learning autonomy. But as educators we follow journeys ourselves, alongside students on a complete course pathway, and also within discrete modules and topics. The journey incorporates connected (parallel and sequential) journeys in leading, inspiring and challenging students, to ensure their learning is deep and embedded.

The field of music production education is a challenging one, taking in multiple theoretical frameworks of scientific and creative disciplines. Equally, its diversity of application both in a creative and practical context makes it difficult to give all students exactly what they are looking for. Furthermore, as higher education (HE) evolves some new and sometimes unexpected challenges are placed on course development (Davis, 2016). In contemporary programmes, students are encouraged to develop additional knowledge and experience in a wide set of related areas of business, entrepreneurship and enterprise. The journeys our students take, and those we ourselves experience as educators, therefore need to be fluid and with multiple permutations in order to be

successful for all. These journeys need to be covered both in the theoretical or cognitive realm, as well as the practical and professional.

In this paper, a range of necessary, independent, and interdependent, learning journeys are explored that can be encountered in music production education. Additionally, multiple, concurrent methods and strategies for educating students with expertise, desire, autonomy and employability are considered and discussed. The authors' own experiences of higher education course delivery, design and development are also reflected upon with reference to Music Production pathways at both the University of Westminster (London, UK) and York St John University (York, UK).

THE APPLICATION OF BLOOM'S TAXONOMY IN MUSIC PRODUCTION EDUCATION

Bloom's Cognitive Domain Applied to Music Production

Bloom et al. (1956) initially identified three domains of educational objectives: cognitive; affective and psychomotor. The Cognitive Domain deals with the mental capacity of the learner, in terms of knowledge. The Affective Domain deals with the self-growth and development of feelings, emotions or attitude. The Psychomotor Domain explores the manual skills and therefore application (Knowles et al. 2011). Bloom et al. released the key handbook for the Cognitive Domain in 1956 and shortly afterwards, the Affective Domain. As Hanna (2007) and Gershon (2015) both report, the original committee members, including Bloom himself, decided not to write a third handbook on the Psychomotor Domain 'although several have [since] been written by other

authors'. 'Later scholars expanded on the psychomotor domain to include all the human senses and their dimensions' Knowles et al. (2011). Hanna (2007) continues to note that those other 'handbooks' on the psychomotor domain fail to address music as an educational application, or the taxonomy in its entirety for music production as a discipline.

Whilst Bloom's Taxonomy, especially in the Cognitive Domain, has 'become a cornerstone of teaching and learning' and is 'one of the most important foundations on which much of contemporary education is based' (Gershon 2015), its assessment as a methodology to teach music production has not been vastly explored. We therefore begin to explore here how the Cognitive Domain can be broadly applied as a 'journey' in contemporary music production education.

Despite the sixty years after its introduction, Bloom's Taxonomy still persists as a solid teaching methodology across many subject areas, though many scholars have reinterpreted the taxonomy for contemporary applications. Hanna (2007) applied Anderson & Krafhwohl's (2001) new interpretation of Bloom's Taxonomy towards music education and found that

> Objective assessment of music [courses are] particularly difficult because music-learning outcomes are often judged and interpreted in a language involving subject assessment, aesthetic and psychomotor learning, and performance. In contrast, reading, writing, math, science, language, and social studies are not in this position because they are taught and assessed as objective, cognitive domain activities.

Hanna alludes to a crucial point in that subjects that lean towards creative disciplines are often difficult to assess and, it could be argued, provide more useful life skills than simple knowledge as provided by the STEM (science, technology, engineering and maths) subjects listed. Gershon (2015) notes that it

‘is hard to deny’ that the ‘cognitive domain takes precedence in the majority of formal schooling’.

This paper explores how Bloom’s Cognitive Domain, specifically, and the language Bloom’s Taxonomy used in 1956, can be applied effectively to music production education, both in the cognitive, but also within the practical application (and thus practice) of the music producer. Thus, how Psychomotor and Affective Domains can be conceived as bundled within an adaptation, or interpretation, of the Cognitive Domain. In this manner, all of Bloom’s three domains of educational activities can be applied directly, or be related, to many common taught topics related to music production and music technology.

The journeys taken by a student in order to develop experience and skills in the field of music production align especially well with Bloom’s Cognitive domain, as initially demonstrated in Figure 1 below (Bloom et. al, 1956). Bloom et. al described that the reception of knowledge alone only leads to shallow learning, and that deep learning is only developed by moving up through the Cognitive Domain, through comprehension and the effective application of knowledge. Equally, engaging in reflective analysis is essential for practitioners to learn from the application of their knowledge.

//Figure_1.png//

Figure 1. The six levels within the Cognitive Domain of Bloom’s Taxonomy.

In the context of music production education, it is possible to articulate Bloom’s Cognitive Domain with respect to specific examples, as shown in figure 2. It is clear that knowledge, nowadays, is easily accessed through publications and online resources. For the example of microphone recording techniques given in figure 2, this type of knowledge can easily be accessed from well-known

textbooks, periodicals and online networks. Comprehension can be considered to be incorporating specific context with knowledge, which is also often accessible through articles and opinions of expert and experienced practitioners. The application of such knowledge and comprehension is a critical point for knowledge holders to become actual practitioners, and in general is best done through assistance and with feedback from an experienced practitioner or educator, possibly best referred to as a facilitator in many circumstances.

The analysis of practical application is the first critical and reflective stage of Bloom's Cognitive Domain, and can be applied through a number of methods. Objective analysis can be quite scientific, for example analysing amplitude and frequency spectra of different microphone recordings. Subjective analysis in this context could incorporate listening to the recordings and making a personal judgement or considering the variance of opinions amongst a cohort of listeners. Critical analysis with respect to published literature and expert opinion is also a valuable method, for example comparing a microphone recording to the expected results discussed in the body of knowledge.

Stage of Bloom's Cognitive Domain	**Music Production Education Example**
KNOWLEDGE	Knowledge of microphone types and microphone placement techniques, as gathered from books and online videos.
COMPREHENSION	Understanding of microphones and microphone techniques in context with particular musical instruments, genres and styles.

APPLICATION	Practical recording of different instruments for different music genres with different microphones and placement techniques.
ANALYSIS	Comparing different microphone recordings with each other either objectively (e.g. frequency response) or subjectively (e.g. through listening), or critically with reference to published literature and expert opinion from acclaimed music producers.
SYNTHESIS	Conceptualising and implementing original microphone recording methods, and implementing known techniques in new or unique scenarios.
EVALUATION	Critical analysis of synthesized microphone recording techniques with reflection on the study's results, limitations and opportunities for further development.

Figure 2. Music production examples for stages of Bloom's Cognitive Domain.

Synthesis describes the conceptualisation and implementation of original methods, and implementing known techniques in new or unique scenarios. In music production and the application of microphone techniques, this can be considered to include experimentation such as development of the Glyn Johns drum recording technique, the use of a 'kick drum tunnel' as innovated by Butch Vig, or utilising pressure zone microphones (PZM) attached the walls of a recording studio's live room – all as discussed by Senior (2008). In this context, evaluation can be considered to be critically analysing a synthesised investigation and articulating the findings with personal reflection of the results

and against the current body of knowledge, understanding the experiment's limitations and giving recommendations for further synthesis.

Conversely, if considering Bloom's Cognitive Domain from a purely revenue driven perspective (as opposed to the perspective of a reflective practitioner), it is quite possible to disembark at the application stage and enjoy a hugely successful career as a music producer, recording, mixing or mastering engineer. However, it is argued that to become lifelong learners who are at the forefront of future trends and methods, practitioners should continue to complete the journey and disembark at the top level - 'evaluation', with advanced wisdom and agility.

Connected Journeys of Blooms Cognitive Domain in Music Production

Given the diverse number of fields that make up music production, incorporating technology, creativity, business and communication fields, it may therefore be necessary to take students on multiple journeys up Bloom's Cognitive Domain, with different areas of focus each time (see Figure 3). As an educator, the importance of assisting learners in climbing Bloom's Cognitive Domain is in the quest for developing practitioners who are knowledge gatherers, critical thinkers and autonomous learners with an investigative mindset and the capability to transfer skills and be articulate and reflective from a personal and contextual perspective. Indeed, these values describe the key assets of a university graduate that are embedded in quality curriculum and which justify a student embracing higher education provision rather than, for example, embarking on a number of specific professional training courses.

The connected journeys highlight the implicit synoptic nature of the music production field, meaning that the learning and creative artefacts developed in one journey, might be valuable and necessary for further development and

evaluation in parallel or future journeys. For example, a single artefact of recorded music can be appraised and utilised in many course journeys to

- evaluate the technical and creative qualities of the music production
- evaluate the quality of composition and songwriting
- evaluate the quality of musical performance
- provide the creative materials for a genre specific remix
- provide a case study for experimenting with marketing and distribution platforms
- explore the cultural placement and audience response to the original music
- provide original digital audio artifacts which enable a unique live performance
- identify and evaluate legal and contractual issues of the recorded artefact

//Figure_3.png//

Figure 3. Connected music production journeys up Bloom's Cognitive Domain

Synoptic learning strategies are valuable and enable students to develop their ability to integrate and apply knowledge and capabilities across a professional field, rather than simply in disconnected subject areas. While synoptic learning is implicit in the music production (and perhaps all music) fields, it is also important for students to continuously generate new and improved creative artefacts which reflect on prior work and implement learnings – i.e. additionally facilitating a sequential path of learning journeys.

Formal synoptic assessment strategies – where a single specified deliverable is assessed and evaluated for more than one summative appraisal - have been

implemented successfully in recent years in HE, for example as discussed in business focused education by Southall and Wilson, (2106). However, there has to date been no quantified evaluation of synoptic assessment in an arts and creative practice context. Indeed, both Herrera et al (2007) and Mussaway (2009) indicate that, for creative arts fields, flexible portfolios of student work, "unlike traditional synoptic evaluations…provide a longitudinal observation of student progress as they show incremental gains in knowledge, skills and proficiencies" (ibid). Whilst synoptic learning is seen as implicit and essential in the music production field, the authors' experience of implementing synoptic components as rigid assessment criteria is challenging and potentially detrimental to student and staff experiences. Both institutions of University of Westminster and York St John University, have previously implemented core synoptic assessment methods in the music production field, and have experienced challenges with developing mechanisms to effectively assess specific and directed assessment components for a number of purposes. Enforcing specified synoptic assessment components appears to defeat the values of its flexible and organic nature. It is important to recognise that synoptic connections between learning journeys are unique and personal for each student, and hence flexibility is required in assessment criteria that links parallel course content. For this reason, while synoptic learning has been embraced and enhanced in recent course redesigns at University of Westminster and York St John University, the removal of synoptic assessment criteria from courses has received positive responses from students and teaching staff.

Macro to Micro Approaches to Learning Journeys

David Kolb asserted that 'learning is a continuous process grounded in experience', emphasizing that 'all learning can be seen as relearning', which is

‘particularly true for adults who have such a large reservoir of experiences’ (Kolb 1984). Therefore, the key to deep understanding is in the appreciation and interpretation of learned techniques, and the development and experimentation with new techniques also.

Kolb’s Experiential Learning Model (shown in Figure 4) is an important feature in both authors’ teaching and operates hand-in-hand with the interpretation of Bloom’s Cognitive Domain, at almost every stage. The key to deep understanding is in the synthesis and evaluation of new and bespoke techniques (Kolb 1984).

//Figure_4.jpg//

Figure 4. Kolb’s Experiential Learning Model - referred to here as Kolb’s Cycle.

If we were to consider the six steps within Blooms’ Cognitive Domain as though it were a macro observation of the individual, learning journey each student takes to ‘...gaining an expert’s knowledge and understanding’ (Gershon, 2015), then each elevation, or rock face attempted will require experiential learning, and independent learning, referred to here as the micro-observation of little journeys within each of those macro ones (Figure 5).

Practitioners who have climbed to the top of Bloom’s Domain in music production have also incorporated an experiential method of learning through Kolb’s cycle of Concrete Experience, Observation & Reflection, Formation of the abstract and general concepts, then the synthesis of Testing implications and concepts in new situations. Through this cycle, the learner can reflect and begin to develop and implement their own original ideas and autonomy by ultimately demonstrating true wisdom in their field. This is especially applicable to the

Application, Analysis, Synthesis and Evaluation stages of Bloom's Cognitive Domain.

//Figure_5.jpg//

Figure 5. How Kolb's Experiential Learning Model is a key feature within music production's interpretation of Bloom's Cognitive Domain.

Both Bloom's Taxonomy and Kolb's Learning Cycle work hand in hand as reinforced by Gershon (2015) - 'Exceptional application of Bloom's Taxonomy by teachers therefore involves the creation of an environment in which students are encouraged to see their mistakes as essential steps on the path to mastery'. In order to maximise on this, further constructs, or guidance, need to be put in place.

THE MUSIC PRODUCTION STUDENT'S NEED FOR A FACILITATOR

Within the Cognitive Domain of Bloom's Taxonomy, each stage up the 'mountain' is not a linear one. It is iterative and may need to be approached from many different rock faces, so to speak. Therefore, the vision of the 'climber' approaching each stage from different perspectives, or rock faces, is the key to success, or in this case Bloom's 'evaluation', and ultimately thus expertise.

The many rock faces to be explored in order to achieve 'expertise' can be attempted by the independent learner in a piecemeal manner, and many innovators follow this route, as the 'mountain' has never been scaled before. Gershon (2015) describes this journey in Thomas Edison's development of the electric lightbulb noting that as each step failed, his team learnt something new and 'synthesised' a new approach '..put in simpler terms: trial and error'.

This method of scientific innovation through iteration is well defined, but perhaps when looking at new unexplored areas of discovery. The business of undergraduate higher education, specifically, is in the curation of those learning journeys in the form of modular study culminating in a three year journey (typically) to reach the degree

Even within this curated approach to learning journeys, the room for ‘trial and error’ is exceptionally important and is desirable for deep understanding and professional creativity especially in music production. The need for trial and error, or its synthesis, within teaching, has been explored in detail by many educational psychologists who have iteratively identified with the need to reinforce learning via repetition, questioning and reapproaching a task in order to bring new techniques and understanding. However, music production, for the reasons stated earlier, has many parallel rock faces, each with their own element of trial and error that need to be concurrently tackled to make ‘sense’ of the broad field.

Given this, it is an observation by both authors that the aforementioned curation, through course design and the use of ‘facilitators’ (a term used for the lecturer and course designer in this paper), who energise and orchestrate the multiple, and concurrent, independent learning journeys explored by our students. The key feature here is the independent learning journeys that students must undertake to achieve Bloom’s level 6 in the Cognitive Domain.

The switched perception of the role of a lecturer to ‘facilitator’ is best supported by Jourard (1972, quoted in Knowles 2011) who stated that ‘independent learning is problematic is most peculiar, because man always and only learns by himself… Learning is not a task or problem; it is a way to be in the world. Man learns as he pursues goals and projects that have meaning for him. He is always learning something’. Each learner not only needs to be facilitated up each mountain face, but where possible, also at his or her own independent pace. The

key is the experience and the reflection upon that experience. This approach to undergraduate education poses a significant challenge in contemporary universities in Britain.

This independent facilitation is exceptionally important within the field of music production. For example, only a student can begin to listen and hear changes the ‘facilitator’ is making to the master of a track during training to then assess the worth and value of that dynamic manipulation or equalisation edit. In order to perceive the change and thus understand it, a process of aural training is pre-required, which once again, can only be facilitated, rather than taught by rote. A student’s proficiency must be individual, independent and iterative. Their experience ought to cover recording, perhaps first, followed by training in mixing arguably before mastering can be considered.

This is a simple example of two concurrent and multiple journeys in music production education. Naturally there are several other journeys that will have been climbed to reach this position, in dynamics processing, effects processing, equalisation, alongside many other aspects in order to achieve an appreciation and assessment of a musical product such as the producer’s CAP - ‘Capture, Arrangement and Performance’ (Hepworth-Sawyer & Golding, 2011). The curation of these multiple journeys is in the differing flavours that separate each music production degree offering from providers nationally and internationally.

THE FACILITATOR'S JOURNEY IN MUSIC PRODUCTION EDUCATION

Educators, or ‘facilitators’, also embark on a number of learning journeys with their students. In particular, in order to assist them in climbing Bloom’s Cognitive Domain with different levels of autonomy and desire.

//Figure_6.png//

Figure 6. Educator journeys when guiding students up Bloom's Taxonomy.

As illustrated in Figure 6, students first need to be led and shown the way via case studies and through hand-holding, whilst being inspired to break free and take an autonomous journey. In order to develop more advanced capabilities, students need to be challenged and assessed to develop a competitive desire to become advanced and respected in their field. A number of learning and teaching strategies, as discussed previously by Toulson (2011), can be utilised in leading, inspiring and challenging students.

Leading Students as Mentor or Role Model

A successful educator is "more than a lecturer" and indeed needs to adopt a number of roles, including that as a mentor and role-model (Harden and Crosby, 2000). It is therefore good practice for Music Production educators to be professionally active also, as discussed by Rose (2004) and with reference to the following Rudyard Kipling quote:

> "No printed word, nor spoken plea can teach young minds what they should be.
>
> Not all the books on all the shelves – but what the teachers are themselves. "
>
> Rudyard Kipling, discussed by Rose (2004).

Students need to see that their teachers as successful in their field, not just well educated. Educators need to be practicing at the top of Bloom's Cognitive Domain themselves if they are to help their students up to the highest level too.

Toulson (2011) explains that the connection between academia and industry should be strong, as neither can succeed without the other. It is also valuable for educators to maintain industrial links and partnerships, as these can verify to students that the staff, curriculum and teaching methods are applicable and respected by commercial organisations. Van Hoek et. al (2011) explain that insights from industry and the use of industrial guest lecturers can "light the fire in students" by exciting them to the professional field that they are preparing for. Additionally, facilitating academics to engage in industrial sabbatical projects and knowledge transfer partnerships can enhance this link and exemplify the type of formal collaboration projects that students should embrace in their studies.

Boehm (2007) noted that many of the courses provided in the field of music production were offered by newer institutions (post 1992) and it is the authors' experience that direct connection with industry and knowledge transfer is unlikely in these institutions on the whole, partly due to a lack of finance, and systems to support the sabbatical. Both authors and many of their peers use their own experiences in industry (often self-sought projects, or businesses on the side) in the teaching arena to encourage and demonstrate 'ability' to the learners. Much of the work in this area by Calver, J et. al (2015) and Thorley, M., (2014) supports the benefits of this approach to both the academic and the industrialist, as well as the student, by proxy. Given current political developments within UK Higher Education, the climate is challenged by uncertainty, which reduces an institution's desire to take risks, financial or educational.

Inspiring Students to become Autonomous and Inquisitive

Fallows and Ahmet (1999) explain that, educators "must not only transfer knowledge and introduce key debates, they must also deliver enthusiasm and influence students to learn". A number of diverse factors relate to student motivation, for example, students can be motivated and inspired to learn by understanding the long-term goals that can be achieved. Husman and Lens (1999), explain that motivation is enhanced if students are empowered to discover for themselves the opportunities that are presented by their engagement with education, rather than being told that specific tasks will be important in their future career. In the context of music production, this can be implemented by considering case studies of successful practitioners (i.e. professional role-models of the students) and encouraging them to identify the key skills and experiences that have facilitated their pathway to success. For example, Grammy Winning music producer George Massenburg explains that the single most important skill in music production is the development of critical listening skills (2006), which can be used as an example to inspire and motivate students to be committed to their own development in this skill area.

Students are also inspired and motivated by the learning methods that are presented. Chickering and Gamson (1987) explain that successful learning is an active experience:

> Learning is not a spectator sport. Students do not learn much just by sitting in classes listening to teachers, memorizing pre-packaged assignments, and spitting out answers. They must talk about what they are learning, write about it, relate it to past experiences and apply it to their daily lives. They must make what they learn part of themselves.

(Chickering and Gamson, 1987)

Education in Music Production requires practical engagement, perhaps more than most subjects given the unique blend of disciplines it encompasses. The practical aspects of courses should be designed to engage students in climbing Bloom's Cognitive Domain. Raw knowledge can be taught and investigated, however students need to be encouraged to attempt self-assisted learning by practical methods, particularly with respect to music production which is both technical and subjective and highly reliant on experience and critical listening. Equally, a diversity of teaching methods can help to keep students engaged and to ensure that each student's individual learning methods are catered for. For example, some students may engage best with practical hands-on exercises while others respond better to autonomous research tasks:

> There are many roads to learning. People bring different talents and styles of learning to college. Brilliant students in the seminar room may be all thumbs in the lab or art studio. Students rich in hands-on experience may not do so well with theory. Students need the opportunity to show their talents and learn in ways that work for them. Then they can be pushed to learn in new ways that do not come so easily.
>
> (Chickering and Gamson, 1987)

Challenge-Based Learning

Challenge- (or Problem-) Based Learning is particularly relevant to music production education in ensuring that students develop wide skillsets (for example, capabilities for producing multiple music genres) and critical self-appraisal skills. Klegeris and Hurren (2011) additionally show that challenge-based learning improves student motivation and satisfaction. Problem-based learning is well-recognised in fields such as medicine for challenging students to explore and solve real problems in the field, however, this teaching

methodology has also been evaluated in multidisciplinary and create arts contexts (Kimmons and Spruiell, 2005). In music production education, students can embrace challenge-based learning by being set assignments to produce creative content to a professional brief, that incorporates multidisciplinary factors. An example of this includes a pop music production project that not only has to deliver recorded music to the expectations of a particular genre, but also is reflective of the creative process and marketing aspects of the pop genre.

Challenge-based projects are ideal for developing learning experiences that are rich in opportunities for feedback and reflective practice. Hattie (2002) states that “feedback has been shown to be the single-most contributing factor for influencing the level of students’ achievement”. Furthermore, summative assessments held in in ‘safe’ environments - as discussed by Covington (1985) - enable students to learn effectively from their mistakes. Toulson (2011) explains however that “mistakes can only be used in learning if the mistake is first identified and evaluated”, justifying the requirement for feedback to be provided and self-evaluation to be embraced in order to deliver the benefits of challenge-based learning.

MULTI-DISCIPLINARY CHALLENGES IN DELIVERING MUSIC PRODUCTION EDUCATION

The field of music production education connects multiple creative, scientific and business disciplines, that are threaded together in a successful higher education learning journey. Rather than being a subject area of its own, music production in an academic context describes a combination of academic fields that all contribute to a specific multi-disciplinary subject. Figure 7 describes the breadth of academic disciplines that are valuable in music production education, grouped together under the heading creative arts, media and communication,

engineering and business.

Academic teams for delivering music production education therefore need to be multidisciplinary, and course pathways need to be intricately designed to accommodate all learning needs.

Academic Field	**Subject Area**
Creative Arts	Performance Composition Songwriting
Media and Communication	Musicology Cultural Studies User Experience
Science and Engineering	Electronics Acoustics Computing Psychology
Business	Business and Enterprise Entrepreneurship Project Management

Figure 7. Academic fields and subject areas connected in music production.

There are a number of different challenges in providing quality music production education, not least the practical challenges of delivery of an arts-technology subject to large cohorts of students. In particular, physical space can be an issue, given that professionally designed recording studios are not well equipped for large cohorts, so learning sessions need to be in small groups and often repeated. Equally, the cost of, for example, teaching the practicalities of recording a concert orchestra in a large-scale studio is challenging to justify (Toulson, 2011).

Technical challenges include the high cost and maintenance of technical (studio) resources, particularly given the need to consider both analogue and digital technologies and rapid innovations in the field. For example, multiple digital audio workstation (DAW) software packages are required to cover diverse music production techniques, and these DAW packages are regularly improved and updated by the developers, requiring constant maintenance in education institutions. Equally, analogue and digital technologies change rapidly in music technology, meaning that a modern (high cost) digital mixing desk could easily become outdated and redundant in just a few years. Similarly, as a result of rapid innovation, literature becomes quickly outdated too and needs constantly re-evaluating for use on academic courses. Recently authors and publishers have identified this fact and, as a result, have put more attention into publishing texts that are more focused on methods, philosophy and individual expert opinion than texts focusing on specific technical aspects of music production – for example the Perspectives on Music Production series edited by Hepworth-Sawyer and Hodgson (2016).

A further challenge in delivering music production education is in simulating real-world scenarios and the commercial pressures associated with those. Simulating the creative processes of professional music production teams and incorporating commercial pressures and timescales is essential, though learners

are often underwhelmed by insistence on the sharing of creative activities and developing musical content to a specific commercially focused brief. The music field itself is critically connected to parallel industries, which learners need to embrace and learn how to connect with, specifically the radio, media, film, TV, game and virtual reality industries which all utilise produced music.

Cultural challenges exist also, particularly with respect to the diversity of music genres that require equally diverse methods of music production. For example, producing music for classical, rock, pop, electronic and urban genres require very different skillsets, facilities and resources. It is also challenging to assemble a teaching team that brings expertise in all of these areas. The culture of music and students who embrace this academic field also brings complexity, though equally brings opportunities for hybrid and original works to emerge. A specific example of a cultural shift in music production is the emergence of the 'artist producer' - as discussed by Burgess (2013) - connected to certain pop and electronic music genres, which sees the producer being the most recognized member of the creative team, for example artist producers such as Timbaland, Danger Mouse and Mark Ronson. Traditionally, the producer was considered to be an essential creative team member who remained behind the scenes and not showcased alongside the artist. This clearly brings a new challenge for music production education, in that producers nowadays need to gather more knowledge of composition, songwriting, commercial music markets and marketing methods.

Diverse student cohorts in music production also present a problem, particularly given that students arrive from very different backgrounds and may be proficient on one area but weak in others. Developing a curriculum that allows the best learners to excel, whilst bringing the weaker students up to speed is a significant challenge. Furthermore, students respond to different learning methods and usually identify skills areas in which they prefer to specialize or

concentrate more. These complexities also generate challenges for assessment, in order to give all students a fair opportunity to express their personal identity and capability. The size of cohorts can also have implications for assessment methods, particularly given that the field is generally subjectively assessed and requires individual attention to detail and strong second marking to ensure fairness in marking.

CONCLUSIONS: THE EXIT STRATEGY

A key objective of music production courses is to generate autonomous learners who are equipped with the skills for employment or freelance careers in fields related to music production. Figure 8 lists a number of exit pathways for students in music production.

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Figure 8. Exit pathways for music production students.

It is no secret that there are few employment opportunities for graduate music producers in the current day, but given the diverse skillset covered in their academic programme, music production graduates can expect to be highly employable and equipped for sustainable careers in music and related industries. Students may be ready to embark on freelance careers in music production (or as producer artists), perhaps first gaining professional experience as studio assistants or recording engineers with the aim of progressing to lead and manage full music production projects. Equally, the skills acquired when learning music production in higher education should equip leaners to be employable by equipment manufacturers and in parallel industries that rely on music assets, such as the radio, film, TV and gaming industries. Furthermore,

students should be educated to a level where they are able to take their autonomous learning to a new level and engage in postgraduate study or academic research that further develops the field of music production.

Reflecting on Bloom's and Kolb's methodologies for learning, two words that are perhaps missing in the discussion are innovation and wisdom, which are both essential and applicable to many fields, including music production. Innovation is a term used to describe the development and sharing of new tools and practices, and as such represents the synthesis and evaluation levels of Bloom's Cognitive Domain. Successful practitioners (and students) innovate both technically, creatively and entrepreneurially, and the process of innovation yields the new tools and practices that can be further synthesised and evaluated. It could be argued that wisdom itself, in music production, is defined by the combination of Bloom's connected Cognitive Domains with the inclusion of Kolb's Experiential Learning Model – i.e a fusion of Figures 2 and 4 shown previously. The wise practitioner is one who is knowledgeable, practical and innovative, with substantial in-field experience that enables intuitive decision making and the ability to impart wisdom to others. If students graduate with wisdom in their field then the facilitator's job is complete, though perhaps it takes a career of professional experiences to develop the highest form of wisdom.

It is therefore seen that the provision of music production education is a challenging one, that brings diverse academic fields and requires multiple learning and teaching strategies to deliver effectively. As a result, the field becomes a fascinating multi-dimensional journey for learners, and educators, that, when implemented successfully, yields multi-skilled practitioners that are desired and employable within a number of professional fields.

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