

# **Project-based learning in initial teacher training curricula: Incorporating a visual method to enhance student agency and reflexive engagement in the learning process**

Chris Warnock, Jill Duncan  
*Northumbria University*  
*United Kingdom*

## **Abstract**

Project-based learning in initial teacher training curricula, considers the value of incorporating visual methodologies and sequential, phased learning to (re)conceptualise undergraduate assessment models. Sequential learning is introduced through a layered concept-mapping process upon a professional poster design. The discussion explores how trainees engage with government expectations and theoretical underpinnings of lesson ideology, as a rationale for effective, professional practice within primary education, articulated through a presentational format. A resultant emphasis upon reflexive student engagement and subsequent student outcomes form key discussion threads. This is suggestive of transferable assessment archetypes, which encourage agency and offer added value to professional learning programmes.

*Key words:* Project-based learning, visual methodologies, concept mapping, reflective

## **Context**

We know that, in order to develop emergent reflective practitioners in Initial Teacher Training (ITT), student engagement must be at the heart of the learning process (Warnock, 2017). In-order-to engage our students and “develop the ways in which they think about and act within” their world, they “are required to adopt increased independence, autonomy and critical thinking within...learning” (Bovill et al. 2011, p. 198). Moore (1999) provides the challenge here, by insisting upon adding the layer of critical thinking necessary to enable true reflective analysis and appraisal of ideas. Furthermore, Bovill (2011, p. 3), via Searle (2010), “argues for the value of meaningful student engagement in higher education learning”, with the aim of providing experimental opportunities to empower and encourage students to devote greater “time, energy and response...to activities designed to enhance learning” (Krause, 2007 in Bovill et al, 2011, p. 197). It is this increased ownership and control of the learning process that sits alongside the ongoing evolution of the core provision of ITT, providing course instructors and educators alike the opportunity to adjust learning and assessment models accordingly.

This paper outlines the opportunity, provided by programme framework (re)validation in (re)conceptualising ITT course instruction, to address the localised problematic of declining student agency in reflective analysis upon their own learning. Subsequently, crosscutting the interstices between the learning process(es) (Condliffe et al, 2017) through meaningful engagement experiences (Dewey, 1933; Beard, 2018) to provide opportunities to foster knowledge construction. Therefore, in looking to harness an emerging pedagogical shift in learning, [to be achieved through engaging students in focused critical reflection, application and synthesis of the sort of experimental ideas

necessary to enhance professional practice (Warnock, 2017)], it is these experience(s) which act “as [the] optimal stimulus for learning” (Beard, 2018, p. 158).

(Re)validation provided the challenge to us, as Teacher Educators, to consider Moore’s (1999) maxim and review whether students are really equipped to appraise their own learning and critically consider sustained pedagogical changes in practice. Therefore, asking us to reconsider the tools and/or initiatives we utilise to encourage greater reflexivity. And whether reshaping the opportunities for a critical reflective analysis and cognition, enables us to understand better the ITT student’s agency and professional identity development (Warnock, 2017b).

Establishing professional identity and developing professionalism itself; through reflection in action upon and reflexive adherence to a series of competency standards is; “critical to improving teachers’ practice at all career stages” (DfE, 2012, p. 4). Such reflection and reflexive adherence reside at the heart of ITT provision and as Borchert & Schloffel (2018, p. 84) note, “Combe and Kolbe (2004) consider reflexivity as the key competency of professionalism...”. Subsequently, this paper discusses the initial phase of valuing the development of this thinking, proposing a reshaping of the programme design year on year to enable the sort of meaningful student agency in reflexive learning, as Bovill (2011, p.3) via Searle (2010), argues for. However, regarding ‘thinking like a practitioner’, it should be noted that students’ viewpoint on this experience should be regarded as the starting point, and as such they oft “seem to have barriers to beginning to see themselves as teachers” (Hungerford-Kresser et al, 2014, p. 12). Subsequently, the initial focus began with resetting the hard deck of the learning arena to (re)shape experiences, providing greater opportunity for student engagement through the introduction of a form of Project-Based independent dependent learning.

Subsequently, the desired direction and destination (Covey, 2004) from the outset was the enhancement of student achievement. This would be demonstrated by comparable achievement in module learning outcomes year-on-year, but also echoed through student module feedback (Bovill, 2011), which include, reflections upon the sort of tacit learnt outcomes which inform reflexive practice (Dewey, 1933; and Schon 1983; in Finlay 2008; Warnock, 2017). By design, students will be enabled to access new learning including new perceptions and access possibilities previously unavailable to them. Consequently, any relative impact on such preliminary student learning can be initially sampled, captured and, subsequently, determined to inform further investigation and/or application in course instruction. The initial discussion, presented in this paper, acts as the primer for this and explores the potential for further study, by considering the following:

- What impact has the project-based learning model had upon student assessment measures and outcomes?
- What challenges and successes are evident in relation to the redrawn assessment model?
- What impact does the reflective process have upon student agency?
- What transferable and/or developmental opportunities are there for this form of assessment model within and beyond ITT?

### **Theoretical framework**

The theory underlying the pilot study are related with the purpose and value of project-based learning (Blumenfield, et al, 2011; Gulbahar, and Tinmaz, 2006) and Visual Methodologies (Rose, 2016). Indeed, in the initial part of the module assessment, framed by a project-based-learning theory (Coffey, 2008), trainees are required to carry

out, independently, a sustained investigation within a meaningful context. And in this particular case, trainees are required to use children’s literature as a primary source in order to develop a range of subject-based lesson materials for either the 3-7 or 7-11 age phase within primary education. The latter part of the assessment refers to visual methodology according to Rose (2016), as an understanding of visual images effectively embedded in the social world. This part of the title specifically requires trainees to present their ideas as a professional, academic style poster project with visual imagery linked to written information. This includes five key phases (refer to Table 1) including a rationale, a sequence of three individual concept maps, each one featuring a unique focus followed by a reflective statement.

This notion of embedding trainees’ ideas is particularly pertinent to the overall success of their project as it demonstrates a clear understanding of its value and purpose within a social context (Coffey 2008), in this particular case primary professional practice. Anecdotally, trainees who could make explicit links between each of the five key phases and reflect upon their success within teaching practice performed most successfully during the assessment process. They made clear links with Coffey’s (2008) notion of social context which is supported by Dewey’s experiential learning theory (Beard 2018) who promoted “ideas about learning through meaningful and interesting experiences that involve individual, social and environmental interactions” (Beard: 2018, p. 28) as having a more profound impact on children’s learning. The assessment process would support Dewey’s theory two-fold: firstly, when trainees could articulate how particular ideas highlighted in concept map 1 could prove to be of value educationally and socially for primary children and secondly when trainees design and plan their poster project as a whole to provide us with clear, sequential ideas of value within professional practice.

Table 1. Assessment contents and briefing process

Key Phases	Content Outline
Story Selection	Select a fiction / non-fiction text, which is age appropriate.
Rationale	A rationale linked to personal and professional experience(s).
Concept Map 1	Initial lesson ideas linked to core and foundation subject areas.
Concept Map 2	Reference to government policy / Teachers Standards.
Concept Map 3	Reference to relevant theory (pedagogical and subject specific).
Reflective Statement	Review of own learning. Outline of next steps within practice.
References	Linked to Concept Map 3.
Presentation	Articulation of ideas using a sequential approach.
Phased Briefing Process	Briefing Focus
Initial Brief	Outline of key expectations and project structure.
Second Brief	Example project(s) introduced.

Third Brief	Rigorous question and answer process.
Subject Workshops	Active learning in relation to subject and theoretical knowledge.

The anticipated outcomes dictated that any initial consideration of the proposed assessment design followed an analytical, explanatory approach via the relationship with how and/or why it influences reflexive engagement in the learning process (Punch, 2006). This was carried out through sampling the module outcomes in their raw form for consecutive cohort case studies, comprising of the accessible population of first year ITT students, (approx. 120 year on year) and reflecting upon initial qualitative and quantitative outcomes comparably with those, pre-revalidation.

Incorporating and combining the professional experience and expertise of the researchers in primary English and Arts education, didactics and visual modalities (Rose, 2016) allowed for collaboration upon the adaptation of a project-based-light mode of assessment, immediately applicable for the ITT student to the real-life primary classroom. Fundamentally, this draws upon paradigmatic ideals that are social constructivist in origin, by embedding the knowledge, understanding and skills in the interactions derived throughout the project, with ourselves as course instructors and in collaboration with other students (Rose, 2016), as part of a learning community. Drawing upon these ideas of concept-mapping (Cesarone, 2007; Martin, 1994) to anchor the learning (Bransford et al, 1990 in Pritchard, 2017) enables student to picture their thinking (Siegel, 1995, in Bailey & Van Harken, 2014). Trainees are required to explain their chosen visuals through an ‘Academic Style’ poster presentation. This acts as the vehicle upon which students are encouraged to develop their sequential thinking and learning skills from acetate concept maps. Students are asked to articulate their ideas in response to the given question and/or task (Condliffe, 2017; Coffey, 2008), subsequently rationalising their reasoning for selecting an activity in their discussion of practice-based opportunities translated from the theoretical links as visualised in their final assessed piece. The idea being, “put simply, students’ thinking [would be] enhanced when...given the task of moving meaning back and forth between words and images” (Bailey & Van Harken, 2014, p. 256). Given the flexibility and autonomy offered by the assessment design, such movement back and forth, encourages opportunities for student ownership and agency in determining purposeful outcomes (Bovill et al, 2011; Condliffe, 2017). This is evident in the presentation when students triangulate their ideas interchangeably through reference to their concept-maps.

In order to maximize trainees’ potential and their ability to achieve their highest possible assessment outcome, a phased briefing process supports the assessment preparation process (outlined in Table 1). The phased briefing process allows the module leader to “thoroughly explain all tasks that are to be completed, provide detailed directions for how to develop the project...answer questions and encourage student motivation” (Coffey, 2017, p. 2). In line with institutional; ITT expectations, an initial and second briefing process for module assessments is standard. However, in this particular case, the course instructor decided to enhance this process further through the introduction of a third brief plus a comprehensive input during the second briefing process with project examples displayed and discussed. The third brief promotes a deeper reflection (Warnock, 2017) on the behalf of the trainees as they are encouraged to prepare pertinent questions and consider carefully the module leader responses.

During the initial brief, an exploration of the content outline is shared together with specific project expectations. At this point, trainees are offered the opportunity to

engage with the module assessment process and familiarise themselves with its content, structure and requirements. It is at the second briefing when the deeper and clearer understanding of module assessment expectations becomes apparent. Through the combination of a specific model designed by the module leader displaying all key phases together with a carefully selected set of previous examples provides current trainees with the opportunity to visualise the poster contents in context and to reflect upon their own thought processes and apply these to the assessment criteria (Coffey, 2017). Of particular value during this brief is the opportunity for trainees to receive guidance from both an academic and student perspective thus offering a multi-dimensional approach (Nora and Crisp, 2007) in supporting trainee learning. This guidance provides them with a deeper level of support and a newly established level of confidence and motivation at this stage in their preparation. The third brief allows trainees the opportunity to raise specific questions and comments for the module leader to address and provide finer clarification where needed. Throughout the assessment briefing process, individual questions are answered via digital means on a regular basis for further clarity and made available to the cohort for reasons of transparency. Continual subject-based and pedagogical input is taught via lecture, workshops and tutorial input. Together this robust assessment preparation process allows each trainee to engage with the assessment in a supportive and in-depth approach.

### **Rationale**

The rationale for this style of assessment links, primarily, to the project-based learning approach. The implementation of this was used as part of an international Continuing Professional Development (CPD) project in Beijing, China. A key feature of this CPD design was appropriate content, which Timperley et al (2007) argue is essential for successful professional learning. Provide trainees, individually, with the opportunity to design, plan, research and present their ideas within an expected timeframe while receiving guidance and support throughout, allows for a range of skills to be enhanced. Reflective skills, such as autonomy, creativity, experiential learning, independence and communication are encouraged from the outset through to the final presentation (Bovill et al 2011, Condliffe 2017). Similar valuable skills can be promoted through transposing the project-based learning approach to primary education, such as content knowledge, collaboration, motivation and positivity (Kaldi et al, 2011).

In addition to this, the use of children's literature (Waugh et al, 2016) as a focus and stimuli for the development of the poster presentation contents has many benefits. It could be argued that using literature enables trainees to engage with high quality written and visual communication, articulate their opinions related to the story content, characterisation and plot while considering a vast array of learning opportunities available to children across the primary curriculum (Gamble, 2013). The value, of using children's literature to support the curriculum is highlighted further by Waugh et al (2016) whereby utilising "children's literature in your teaching does not have to be limited to the English curriculum. Children's literature has the potential to be used across different curriculum areas" (p. 37). It was this notion that was taken forward to the assessment design.

Considering both the project-based learning approach and the value of literature as stimuli supports the views of Carr (2005), who determines that education should be a broad and balanced experience promoting emotional, social, personal and academic growth. He states, "that literature and other arts have an important part to play in such emotional education" (Carr: 2005, p. 137), supporting the decision to use such literature as part of this assessment design. Literature and the arts have the potential to make a

valuable contribution towards the trainee’s personal and moral development. It also helps to support them in considering how they can develop children’s social or moral development on a broader scale through reflexive agency. It has become evident that some effective lesson ideas highlighted in the initial concept map link clearly with personal, social and emotional development (PSED) within early years education or personal, social and health education within the primary curriculum.

**Impact of the assessment design**

The impact of the pilot assessment design has been largely positive with pilot quantitative and qualitative results indicating strong outcomes for trainees. An increase in quantitative results over a period of two academic years is apparent due to a number of factors (see Table 2). These include a robust analysis of **trainees’** evaluation (individual reflection commentary gathered at the post presentation stage and module survey evaluation data) and consideration of the module leader’s professional review (through an institutional module review process) combined with professional dialogue at an academic level with colleagues involved in the marking and moderation process (Bloxham *et al*, 2016). The results available in Table 2 (below) demonstrate highly positive outcomes for trainees with the potential to maintain or indeed improve further future outcomes. Utilising the qualitative comments collated at the end of each academic year together with professional discussions held at academic level also support the trend of continual improvement.

*Table 2. Quantitative outcomes*

2016-17 Academic Year (Pilot Data)		
Mean score: 65%	% at 60% or above: 71%	% of failed submissions: 0%
2017-18 Academic Year (Pilot Data)		
Mean score: 73%	% at 60% or above: 77%	% of failed submissions: 0%

The quantitative outcomes above represent pilot data in its raw form, taken directly from module assessments and collected via programme examination board results for consecutive cohorts (2016-17, 2017-18), comprising of the accessible population of first year ITT students, (approx. 120 year on year). Qualitative comments gathered have been pivotal to the success of the assessment design and indeed positive outcomes. The impact of key feedback statements gathered through qualitative means have also been a valuable method in supporting the assessment success and indeed the continual trend of improvement. Key phrases extracted during the pilot year(s) included “the assessment allowed us the opportunity to think outside of the box” (Trainee 1, 2017), “it helped to develop sequential, thinking skills” (Trainee 2, 2017), “the assessment was creative and engaging” (Trainee 3, 2017), supported strong trainee perception that the assessment design and project-based approach allowed for professional reflection upon this learning. Highlighted during the pilot year was the notion that further support with theoretical input (Moore, 1999) would be beneficial to trainees particularly in relation to the design and contents of concept map three. This was subsequently included in the phased briefing process the following academic year. Particularly reference as to how trainees could reference and articulate theoretical links was inputted during the second brief with an example. This in turn would improve their ability to think critically about their ideas and project overall (Bovill 2011 in Searle, 2010).

Further key impact phrases were gathered during 2017-18 academic year, which indicate further impact of the assessment design with reference to theoretical development. These include “I have gained an in-depth knowledge of subject-based theory” (Trainee 4, 2018), “I didn’t view this as an assignment as I genuinely looked forward to creating my poster project” (Trainee 5, 2018), and “I have learnt to be creative in developing many ideas related to a single resource.” (Trainee 6, 2018) Trainee and academic reflection would suggest that all trainees have the opportunity to share their poster project ideas with school-based mentors on placement and carry out one of their lesson ideas in practice prior to the presentation date. This will enhance their presentation quality and a deeper level of reflection (through written form via their reflective statement and through verbal communication during the presentation). However, due the conceptual nature of this pilot study, it should be noted that any results generated at this stage cannot be generalisable across future cohorts until such validity and reliability measures have been implemented. It is anticipated though, that this initial consideration offers scope for future, explanatory study, linked to a project-based learning theme, both within and beyond undergraduate ITT, which will follow. Furthermore, following the European Teacher Education Network (ETEN) conference presentation in 2018, feedback from the Reflective Practice & Teaching for Thinking TIG colleagues was positive and made reference to using the content outline and briefing focus in Table 1 within their own institution. This notion of collaborative work on an international level proved to be a positive outcome following the conference (Duncan 2018) and indeed an area that although in its infancy provides further scope for future collaboration.

## **Discussion**

“Project-based learning has its roots in experiential education and the philosophy of John Dewey” (Coffey, 2017, p. 1). Dewey’s justification was his insistence that learning is derived through an interaction between a person and experience and it is this such real-life concept (Dewey, 1933; Beard, 2018) that underpins the discussion. The argument that follows here takes the form an explanatory examination; outlining a pilot project that sets out the parameters for the inclusion of such an assessment model as central to successfully reshaping an engaging programme design. In considering such developments, Bovill et al (2011, p. 197) note that some of the “key characteristics of engaging first-year curricula include active learning, timely feedback, relevance and...challenge”, and here it is the development of these themes that forms the basis for both Dewey’s (1933) ideals of experience and therefore the remodelled project-based learning task. Although adopted here as the point of departure for the initial consideration [implemented with the accessible population of first year undergraduates], ultimately this discussion is intended to form the basis of a pilot study which sets the scene for adopting a guided approach to project-based learning to be developed across further programme design application. Thus, proposing that a deeper longitudinal study (of this conceptual idea, see Figure 1 below) is warranted. This approach would enable consideration of the perceived impact; enhanced student agency and reflexive engagement can have upon professional learning in ITT.

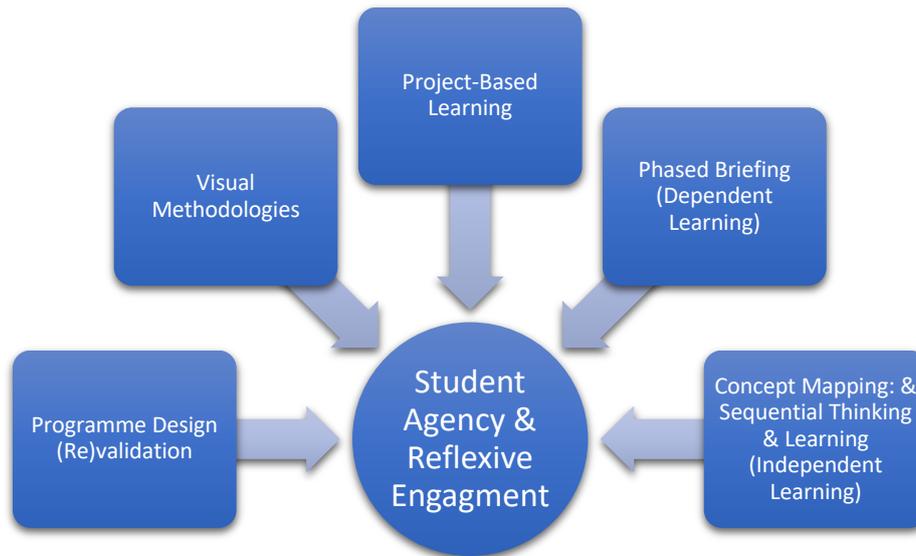


Figure 1. Visual model - conceptual idea to project proposal

Coffey, (2008, p. 1) defines project-based learning as an approach to teaching and learning that “engages students in sustained, collaborative real-world investigations”. So, it provides the opportunity to develop alternative approaches and reset assessment measures accordingly. Students were provided with a meaningful, practical task (Coffey, 2008). This approach draws holistically upon the promotion of reflective skills and interdependent modelling of the sort autonomous independent thinking required to encourage a critical appraisal of ideas (Moore, 1999). It is this such agency that Bovill et al. (2011, p. 198), regard as necessary to successfully develop the way ITT students act within their world. The resultant meaningful real-world task (Coffey, 2008) was operationalised specifically through the introduction of a systematic and sequential layered approach to engage students and develop the subject knowledge and critical thinking skills (Coffey, 2008; Moore, 1999) necessary to succeed within traditional assessment criteria. The model proposed here asks students to engage in participatory collaborative workshops incorporating concept-mapping techniques as an aid to lesson planning (Cesarone, 2007; Martin, 1994). These include the systematic layering of the sequential phases of the assessment [interdependently], to form one large-scale visual project-based assessment. This involves synthesis of; (1) rationale, (2-4) three individual layered concept-maps, including reference to; theoretical and pedagogical knowledge and (5) a reflective summary – inclusive of implications for next steps within learning and practice.

It is this real-life interaction between the learning element offered by the experience and the student practitioner we seek to incorporate here (Dewey, 1933 in Beard, 2018). The experience is offered via repurposing the academic assessment, as an authentic professional task, through the premise of the application or initial hook of a children’s literature, whereby the visual images dominate the opportunity to derive and initiate learning in the primary classroom (Gamble, 2013, Serafini, 2008). Layering systematic, sequential professional development upon this enables a “deeper exploration of [the] theoretical concepts and didactic models” (Borchert & Schloffel, 2018, p. 82) prevalent in the simple initial investigative proposition. This in turn, enables the development of “the skills and strategies necessary...to make sense of both written texts and visual images teachers need [and] to become aware of the theories and practices involved with

comprehending visual images” (Serafini, 2007). Thus, facilitate “the sorts of ‘powerful ideas’” argued as having “a high impact on student outcomes” (Hattie, 2009 in Borchert & Schloffel, 2018, p. 82) and serve as a basis for student reflexivity upon their current and future praxis.

## Conclusions

Bailey and Van Harken, (2014, p. 241) drew the conclusion that “working with visual images allowed...pre-service teachers increasing clarity in observations and interpretations of what they were seeing in classrooms where they were observing”. They noted that through incorporating such visual imagery as an anchor point (Bransford et al, 1990; Pritchard, 2017) to course instruction teaching and learning approaches, trainees “seemed to arrive at theoretical insights that were possibly predictive of future, productive classroom practices” (ibid, 2014, p. 241). In conclusion, initial qualitative and quantitative data evident from the pilot study indicate that the trialled problem-based learning model anecdotally demonstrates a potential impact upon student ownership of the learning process and in turn the outcomes of learning process. In this context, these outcomes included, the range of valuable characteristics Bovill et al (2011) regarded as key to the engagement of first-year undergraduates in their learning, which are transferable to both, other assessment modes and an individual’s professional practice. Collectively, the overall impact contributes to the initial success of and justification for the repurposed assessment model.

In order to continually maintain and improve assessment outcomes, the challenge remains maintaining a high-level of reflexive engagement through the relevance and challenge (Bovill et al, 2011) of the project-based assessment task, thus enabling trainees to make purposeful additions or amendments to practice, grounded in practise of the experience (Dewey, 1933; Beard, 2018). The successful promotion of student agency through this level of pedagogical reflection is recorded two-fold, firstly from the perspective of the course instructor(s) and secondly from qualitative commentary of the trainee(s) themselves. However, we should warn that there is the potential that the *short-stacked* practitioner, one who struggles with reflection upon professional practice, may not engage in the process and inevitably *fold* struggling to engage with the raised expectation and challenge provided by the autonomous learning experience. Ultimately, the *flop* [the outcome] is only measurable at the end of the module, via the students’ individual assessments and best reserved for a longitudinal study, in order to reinforce the validity of the findings. Subsequently, this qualitative commentary here is the key enabler and provides the testing ground [*the river*] for the measure of the metacognitive process of reflection throughout and beyond the assessment process.

Anchoring the project in such a way that encouraged the potential for reflective praxis through project-based learning in this context, promoted trainees’ autonomy, critical thinking and ultimately forward planning – as each layer of the approach enabled a greater understanding of the learnt outcome. Ultimately, fostering a prescience of thought in future practice (Bransford et al, 1990; Pritchard, 2017). What became immediately apparent here is that key to per missing such agency was the initial selection of chosen literature, fostered by the relinquished ownership and interpretation of the assessment design by course instructors to trainees. This in turn must be justified in its selection, which becomes by design the first phase of the briefing process. Subsequent reflection upon each phase/teaching episode provides the context (the how) or Dewey’s experience (Beard, 2018) as outlined above, whilst the purpose (the why) linked to this offers students the opportunity for pedagogical change by considering “their past educational experiences and how they might go about doing things

differently in their future classrooms” (Hungerford-Kresser et al, 2014, p. 12). We know that we cannot underappreciate the need to begin “to think like a practitioner” but ultimately, “it becomes important that students learn to access and critically interrogate their own social constructions” (Ibid, p. 12-14), in order to take ownership of their learning (Bovill, 2011). Consequently, the suggestive findings from this pilot exercise support the ideas raised (Bovill, 2011, Coffey, 2008 and Condliffe et al, 2017) by its conceptual design, and offer the opportunity to consider how transferable across modes of assessment models of project-based learning and visual methodologies are and whether they can empower student agency and control of the professional learning process. Thus, driving directional curricula change in ITT provision.

There are fundamentally several developmental opportunities available to the course instructors because of the pilot study outlined here, which include a variety of immediate and longitudinal options. The initial opportunity to build upon the positivity of thought and small-scale individual successes derived here allows the recommendation of an adaptation of this approach to the mode of assessment at an intermediate level – to support trainee academic and professional development within the second and third years of an undergraduate programme. The challenge resides in taking the potential gains of this pilot approach forward, in the need to “absorb...quickly and apply...in empirical studies demanding new and unfamiliar skills that often seem ambiguous and disconnected to the picture of ‘the teacher’ that is guiding them” (Christenson et al, 2002, in Bailey and Van Harken, 2014, p. 241). This, becomes a key part of a trainee’s developing professional identity through building in recidivist reflexive engagement and enhanced learning experiences. This is achieved by adjusting learning and assessment models accordingly throughout the programme’s journey towards achievement of a professional status. Christenson et al (2002, in Bailey and Van Harken, 2014, p. 241) warn, however, that the development such cognitively, challenging assessment opportunities may present a ‘rocky road’ for course instructors looking to promote reflexive agency amongst trainees, but one whereby the development of autonomous emergent reflective practitioners in ITT is the outweighing value.

Perhaps though, the long-term interest, however, resides in reviewing the opportunities presented here to develop and transfer the outlined assessment model within and across professional disciplines at Faculty and cross-Faculty levels. It is the belief that the initial benefits found could equally offer added value to other professional academic programmes as they too (re)conceptualise their assessment measures through incorporating visual methodologies and project-based learning approaches. Leading to the consideration that such a *project-based* learning assessment, “provides the opportunity for not just ‘hands on’ but ‘minds on’ engagement” (Wiggins and McTighe, 2005 p. 16 in Bovill et al, 2011, p. 2), empowering agency (Bovill, 2011) and achievement in the learning process.

## References

- Bailey, N.M, & Van Harken, E.M. (2014). Visual Images as Tools of Teacher Inquiry. *Journal of Teacher Education*, 65(3), 241 –260.
- Beard, C (2018). Dewey in the World of Experiential Education. *New Directions for adult and continuing education*, 158, 27-37.
- Bloxham, S, Hughes, C & Adie, L (2016). What’s the point of moderation? A discussion of the purposes achieved through contemporary moderation practices. *Assessment & Evaluation in Higher Education*, 41(4), 638-653, DOI: 10.1080/02602938.2015.1039932

- Blumenfeld, P, Soloway, E, Marx, R, Krajcik, J, Guzdial, M, Palincsar, A (1991) Motivating Project-Based Learning: Sustaining the Doing, Supporting the Learning. *Educational Psychologist*, 26 (3-4) 369-398. DOI: 10.1080/00461520.1991.9653139
- Borchert, T & Schloffel, R. (2018). Professional development of PE teachers based on technology. *Journal of the European Teacher Education Network*, 13, 82-91.
- Bovill, C. (2011). A brief introduction to designing course, programme and curricula. In Rust, C. (Ed), *Improving student learning (ISL) 18 Oxford Centre for Staff and Learning Development*. Oxford: Oxford Brookes University.
- Bovill, C. and Bulley, C. (2011) A model of active student participation in curriculum design: exploring desirability and possibility. In Rust, C. (Ed) *Improving Student Learning (ISL) 18 Oxford Centre for Staff and Learning Development* (pp176-188). Oxford: Oxford Brookes University.
- Bovill, C. Bulley, C. and Morss, K. (2011). Engaging and empowering first-year students through curriculum design: prospectives from the literature. *Teaching in Higher Education*, 16( 2), 197-209
- Carr, D (2005). On the contribution of literature and the arts to the educational cultivation of moral virtue, feeling and emotion. *Journal of Moral Education*, 34( 2) 137-151
- Cesarone, B (2007). ECAP Report: Concept Mapping in Early Childhood and Primary Education. *Childhood Education*, 83(3), 191-192. DOI: 10.1080/00094056.2007.10522911
- Coffey, H (2008). *Project-based learning*. Available from [http://www.integratingengineering.org/workbook/documents/Project\\_basedlearning\\_07122012.doc](http://www.integratingengineering.org/workbook/documents/Project_basedlearning_07122012.doc) (accessed 8th December 2017)
- Condliffe, B. et al. (2017). *Project-Based Learning: A Literature Review* (Working Paper). MDRC, New York. [https://www.mdrc.org/sites/default/files/Project-Based\\_Learning-LitRev\\_Final.pdf](https://www.mdrc.org/sites/default/files/Project-Based_Learning-LitRev_Final.pdf)
- Covey, S. R. (2004). *The 7 Habits of Highly Effective People: Powerful Lessons in Personal Change*. New York: Simon & Schuster
- Dewey, J. (1933). *How we think*. Boston: Heath Publications.
- Department for Education (DfE) (2012) *'Teachers' Standards'* GOV.UK Ref: DFE-00066-2011
- Gamble, N. (2013). *Exploring Children's Literature*. Sage Publications Ltd (4th Edition).
- Gülbahar, Y & Tinmaz, H (2006). Implementing Project-Based Learning And E-Portfolio Assessment In an Undergraduate Course. *Journal of Research on Technology in Education*, 38(3), 309-327, DOI: 10.1080/15391523.2006.10782462
- Hungerford-Kresser, H. Wiggins, J. L. & Amaro-Jimenez, C. (2014) *Bloggging with pre-service teachers as action research: when data deserves a second glance*. *Educational Action Research*, 22(3), 325-339 (originally published online 21st February 2014, p. 1-15
- Kaldi, S, Filippatou, D & Govaris, C (2011). Project-based learning in primary schools: effects on pupils' learning and attitudes. *Education*, 3-13,39:1,35-47. DOI: 10.1080/03004270903179538
- Jonassen, D. (1999). Designing constructivist learning environments. In Riegeluth, C. M. (ed), *Instructional Theories and Models*, 2nd edition (pp. 215-239). Mahwah, NJ: Lawrence Erlbaum Associates.
- Martin, D (1994). Concept mapping as an AID to lesson planning: A longitudinal study. *Journal of Elementary Science Education*, 6(11), 11-30
- Moore, A. (1999). Beyond reflection: contingency, idiosyncrasy and reflexivity in initial teacher education. In Hammersley, M (ed), *Educational Research and Evidence-based Practice*. London: Sage in association with the Open University (the course reader).

- Nora, A. & Crisp, G. (2007). Mentoring Students: Conceptualizing and Validating the Multi-Dimensions of a Support System. *Journal of College Student Retention: Research, Theory & Practice*, 9(3), 337 – 356.
- Punch, K. (2006). *Developing Effective Research Proposals*, London, Sage
- Pritchard, A. (2017). *Ways of Learning*. Routledge (4<sup>th</sup> Edition)
- Rose, G. (2016). *Visual Methodologies: An introduction to researching with visual materials*. Sage Publications Ltd (4th Edition).
- Serafini, F. (2008). *Approaching, Navigating, and Comprehending Picture Books*. <http://www.frankserafini.com/>
- Timperley, H., Wilson, A., Barrar, H., Fung, I., (2007) *Teacher professional learning and development: best evidence synthesis iteration (BES)*. Wellington, NZ: Ministry of Education.
- Waugh et al (2016). *Children's Literature in Primary Schools*. Sage Publications Ltd (2<sup>nd</sup> Edition).
- Warnock, C. (2017a). #framingfragmentsofthought Exploring the role of social media [specifically Twitter], in developing emergent reflective practitioners in Initial Teacher Training (ITT). *Journal of the European Teacher Education Network*, 12, 83-94