Supporting Degree Apprentices through the school/work/university transition: a social capital lens

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ABSTRACT

This paper reports on the early stages of a PhD study into supporting Engineering Degree Apprentices in a UK University through their contemporaneous transition into work and study. After briefly setting the context and rationale for the study it considers the development of the research design and integrates this with the corpus of literature to develop a framework for the primary research developed from Laurillard's Conversational Framework work and the ideas of social capital and habitus. The contributions of the overall research are noted under the Aims and Objectives section, work reported herein contributes by developing a unique framework for understanding the experience of Degree Apprentices in the UK.

INTRODUCTION

This is a methodology paper reporting on the initial stages of a PhD and represents a work in progress. It brings together desk research and informal investigation conducted at the 'exploratory' stage of what will be a large empirical study. Starting by introducing a relatively new form of educational apprenticeships, the paper considers the justification for the study and provides a theoretical setting.

Degree Apprenticeships (DAs) are a relatively new form of degree level provision introduced in England and Wales in 2015 (in Scotland 'Graduate Apprenticeships' share many of the characteristics of DAs, but there are significant differences in terms of funding structures

amongst other things). Unlike most traditional degree level engineering programmes, DA programmes tend to be collaboratively designed; co-created with employers and professional bodies around standards developed principally by industrial practitioners. Crucially, they combine work-based learning with more usual university approaches.

An important aspect of DAs in the context of this paper is that this approach is also unique in terms of the identity of the apprentices; most of whom start their 'work' and 'study' careers at the same time. Hence, Degree Apprentices are presented with a unique challenge: they must transition into higher education and the world of work at the same time, transitioning into higher education. The transition may be further complicated by the wider entry gate which is a key part of the DA ecosystem. Degree Apprentices are thus required to balance two new identities (degree/masters student and professional) while navigating the complexities of their linked but very distinct environments. The newness of the DA programmes means that the dualistic nature of the Engineering Degree Apprentices lived ontological and epistemological experiences of 'becoming an engineer' has yet to be empirically investigated, meaning there is a notable gap in academic knowledge in this area. This gap extends to pedagogic theory wherein the newness of the Degree Apprenticeship remains an under-explored academic field.

LITERATURE REVIEW AND RATIONALE

The stated aim of introducing DAs is to address long expressed issues with the breadth and practicality of traditional degree-level education. There has long been a call for graduates who are equipped with appropriate skills and can contribute to their employer immediately upon employment (Grintner, 1995; Leonardi et al, 2009). This demand for 'oven ready' graduates is not uncontested; indeed, previous studies suggest that education is about 'higher skills' which equip students to be leaders in their chosen professions (Clark and Andrews, 2014; Harrison et al, 2012; Lucas et al, 2014). There is also some argument that the development of workplace skills is more effectively conducted in the workplace (Cranmer, 2006). This means that there are competing definitions of 'success' in the world of engineering higher education; academic attainment (and, by extension, the implication of higher-level meta-skills and thinking) and employability; the capability of graduates to contribute effectively to their employer quickly and with minimal additional investment in training (e.g. Duffey and Bowe, 2010; Alpay and Jones, 2012). The Degree Apprenticeship, with its much more central role for employers and practitioners in both design and delivery, attempts to leverage the work/University nexus to produce graduates who both operate at a high academic level and are practically competent in the workplace.

The issue of workplace readiness is not confined to the employer perspective; a number of studies indicate that newly qualified graduates often feel 'incompetent' (e.g. Trevelyan, 2019), and many researchers have identified the difficulty in transition into the workplace for graduate engineers (Trevelyan, 2019; Anderson et al, 2010). This is perhaps unsurprising, given that some studies also indicate that there is little, if any, correlation between academic performance and success in the workplace (Gibbs and Simpson, 2004).

Difficult as the transition to work is, Degree Apprentices are simultaneously undergoing another transition which has been recognised in the literature as both important and difficult (Andrews et al, 2019), the transition into higher education. An evolving body of literature exists on graduate transition into work, and the means by which both the experience for graduates and outcomes can be improved (e.g. Bakht, 2018; Kovalchuk et al, 2017). A key theme within the literature is relationships; in particular, mentoring relationships with practicing engineers (Korte, 2009; Davis et al, 2017) which is supported by studies into organizational knowledge which emphasise the importance of tacit and implicit knowledge (Eraut, 2004; Eraut, 2007). Socialisation and identity formation have also been revealed as crucial by recent studies (Korte, 2009; Tinto, 1975).

Separately, the transition into higher education has long been recognised as being complex, with seminal work by Tinto (1993) forming an important basis for later studies. This text provides a solid understanding of contextual factors (both educational and social) leading Tinto to conclude that a critical component of a successful transition is creating a sense of belonging in new students, and embedding them into discipline specific narratives, cultures and identities (Tinto, 1993; Tinto, 2006). Nelson et al (2006) built on this research, extending the thinking to include 'academic belonging', and research by Clark et al (2013) argued that a holistic sense of belonging should encapsulate academic, professional, and vocational domains. This work evolved into a model focused in 3 phases: growing and nurturing engineering capital; situating student engineers as joining a distinctive profession; and developing their self-identity as engineers (Andrews et al, 2019). There are obvious parallels here with the research on transition into work with themes such as relationships, belonging and identity being common.

A related area is the concept of 'Social Capital'; the idea that relationships and experience are assets which help individuals succeed in a given set of circumstances. Bourdieu is arguably the father of the developed concept of social capital (Gale and Lingard, 2015) with much of the literature in the field developed from his seminal works. While Bourdieu was principally concerned with the creation and maintenance of advantage in societies, his work has been widely used in the literature on university attendance and success (e.g. Chen, 2005; Martin et al, 2020). Two key concepts in Bourdieu's work are:

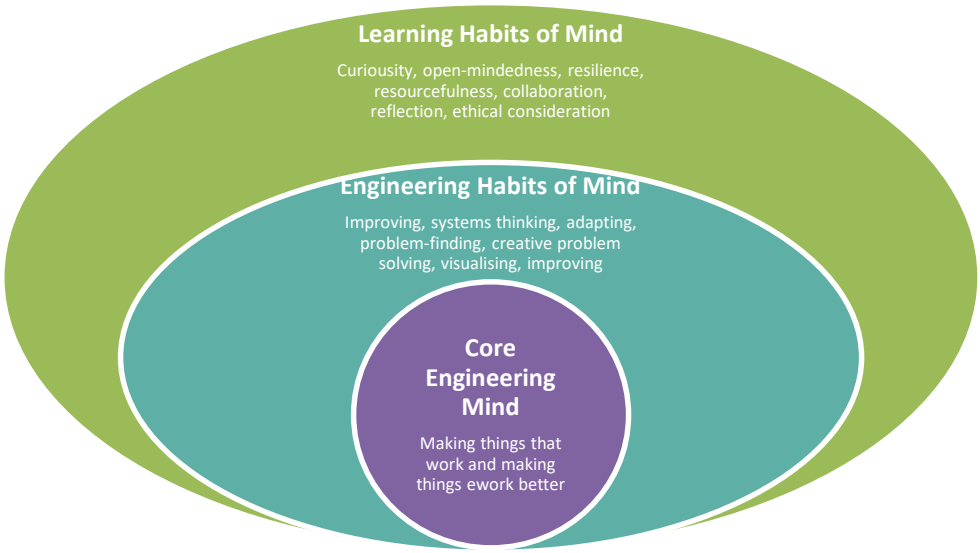
- ***Field:*** A social space of specialist domains with rules, structures and practices. Examples of fields would be education, engineering and law.
- ***Habitus:*** The idea that as one becomes familiar with a field (and one's role in it) one develops a set of specific and identifiable principles, attitudes and behaviours. These dispositions are not static but will be moulded and reformulated over the course of one's life gradually becoming ingrained and form the habitus (Mahar et al, 1990).

These ingrained ideas and attitudes can be changed (Reay, 2018) but Reay et al (2009) point out that, despite this propensity for evolution, significant change of habitus such as from school to university can result in internal conflict. New players in a new game can feel alienated and powerless because they understand the new game (University) through the lens of their own perceptions and habitus; formed at school (Reay, 2018). Familiarity with the habitus for a particular field allows one to fit in like a "fish in water" (Reay et al, 2009), but when the habitus is disrupted, it is more akin to being a "fish out of water": frightened, thrashing around, unable to make sense of the new surroundings or work out what to do. The potential relevance to

DAs where apprentices are required to swap between field requiring very different habitus on a regular and frequent basis is clear.

An extension of the notion of habitus is the concept of Engineering Habits of Mind (e.g. Lucas and Hanson, 2016) which builds upon Shulman's (2005) seminal work on 'Signature Pedagogies' seeking to understand the linkage between the way fledgling professionals are taught about how to 'think, perform and act with integrity'.

Figure 1. Engineering Habits of Mind (Lucas and Hanson, 2016)



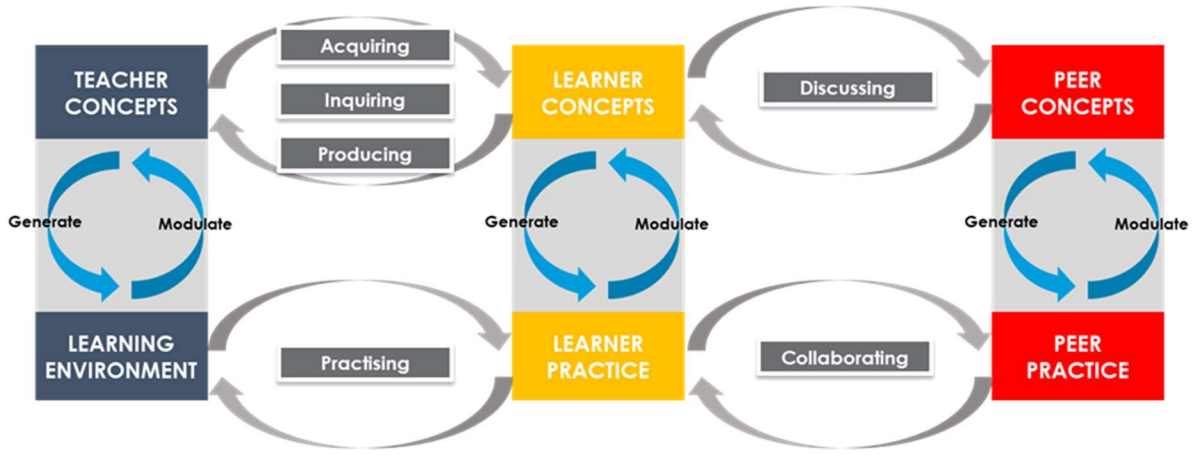
In a model which pre-dates Engineering Degree Apprenticeships but incorporates the two key aspects of 'academic' learning and practice, Lucas and Hanson (2006) defined the learning habits of mind and the engineer's habits of mind.

As presented here, and in the 'wider 'signature pedagogy' literature the habits of mind for learning and engineering are broadly consistent, but this may neglect the cultural context of the habits (or habitus). The presentation of 'Learning Habits of Mind' and 'Engineering Habits of Mind' as bounded and universal is not entirely helpful since the former are situated within the culture of the university and the latter are situated within the culture of the organization. The stress caused by the change of habitus from school to university is equally evident in the transition from university to work. For a student on the traditional path of a full-time degree followed by full-time employment the transitions happen in series and over a period of time. However, for a Degree Apprentice the transitions happen in parallel, and they are asked to switch between the two on a regular and reasonably frequent basis.

Although no research has been done from this perspective, constant and frequent moving between fields and adjusting to different rules will likely take its toll on at least some students. And, of course, it may lead to the apprentice operating like a "fish out of water" in one or other of the fields.

There are a number of frameworks for looking at the development of students through the learning experience at university. Perhaps the most useful in this context is Laurillard's (2013) 'Conversational Framework', which considers both student thinking and practice in terms of their interaction with the learning environment and their peers. The model recognises that learner's concepts and practice evolve in a co-dependent (and social) fashion; putting concepts into practice and drawing on practical experience to develop more robust and practical concepts.

Figure 2. Laurillard's Conversational Framework (Laurillard, 2013)



The PhD associated with this paper will explore these experiences and develop a framework for effectively supporting Degree Apprentices through these parallel transitions and compare it to the experiences of traditional students. Bringing together previous literature relevant to the new Apprentices' experiences this paper makes a distinctive contribution to academic knowledge and discussion in the area of the early first-year experience and transition.

AIM AND OBJECTIVES / RESEARCH QUESTION(S)

The primary research aim is to address the lack of research into what makes for successful transitional learning experiences for degree apprenticeship students in the field of engineering. The associated objectives are to conduct empirical research in order to understand:

1. What constitutes success in this context.
2. The unique and shared aspects of the experience between degree apprentices and traditional undergraduate students.
3. The key factors determining success.

The fourth, and perhaps most important objective is to develop a set of empirically grounded recommendations and tools for universities wishing to maximise the success of engineering

degree apprentices. The PhD will make the following contributions to theory, policy, practice and knowledge:

- ***Theory:*** Empirically grounded theoretical frameworks and models will be developed during the study reflecting a unique contribution to theory in a range of different pedagogical fields of study including: transition into higher education; supporting students in STEM education; the student experience in engineering; the 'early first year' experience; peer support and learning; academic and work-based mentoring; learning and teaching in 'difficult' subjects; the development of 'transferable' employability skills and competencies.
- ***Policy:*** Evidence based recommendations for policies (based on the study) will have the potential to effectively improve both the experience and the outcomes for DAs.
- ***Practice:*** Evidence based recommendations for practices (based on the policies) will have the potential to effectively improve both the experience and the outcomes for DAs.
- ***Knowledge:*** Developing an understanding of the experience of Degree Apprentices in transitioning into the role of 'student engineer', and the factors which affect that experience.

METHODOLOGICAL APPROACH

Starting from the research question: "How can the University support Degree Apprentices during their transition on to the Engineering Degree Apprenticeship Programme?" this paper develops a framework for investigation which will inform a case study-based programme of research.

There has been a long tradition of deficit-based study of students in STEM subjects in Higher Education (Martin et al, 2020). Deficit thinking focuses "myopically" on what a student (or type of student) lacks (Garrison and Gardner, 2012). This correlates with a focus on the barriers that students encounter rather than on what might contribute to success (Garrison and Gardner, 2012; Martin et al, 2020). In recent years, however, there have been growing calls to research STEM students, their experience and success using a more positive, asset-based approach (Pawley, 2019; Martin and Garza, 2020). It is claimed that a social capital lens allows educators to develop specific actions to support and facilitate students in connecting with resources that increase their social capital, and hence, allow them to better achieve their educational and professional goals (Trenor, 2009; Merriam, 2009). This offers a potentially more fruitful approach to the research question.

Epistemologically and ontologically in this research, the researcher is interested in how the participants construct their personal understanding of their experiences rather than seeking an objective 'truth'. The study emphasises the interplay between the subject and the phenomenon, suggesting that experiences of the Degree Apprentices may be substantially common, but that the meaning made of those experiences by individual Degree Apprentices

will necessarily be individual as they construct their own truth via personal social interaction – this means a constructionist epistemology is seen as more appropriate.

In considering how meaning is constructed, Merriam (2009), recognises the importance of understanding and interpreting how people make sense of what goes on around them, something that is linked to Crotty's (1998) use of the term "Symbolic Interactionism" to describe the approach taken by researchers who view phenomena and the meanings which actors give to them through the eyes and the consciousness of the actors themselves.

The rationale for adopting symbolic interactionism as a theoretical perspective for this study is twofold:

1. The meaning which Degree Apprentices make of their situation guides their decisions and actions.
2. These Degree Apprentices' experiences and models of interpretation evolve in a social world incorporating experience gained principally from family, neighbourhood, and school and modified by their transition into the twin worlds of work and study.

Methodology and Research Method

There are well-established contrasts between research approaches which are described by Saunders et al (2015) in their research onion as 'deductive' and 'inductive'. In terms of this research, we can see that it falls into the inductive category as noted by Strauss and Corbin (1997):

"Some areas of study naturally lend themselves more to qualitative types of research; for instance, research that attempts to uncover the nature of a person's experiences with a phenomenon."

The relatively unexplored nature of the topic means that a flexible, exploratory and emergent approach will be required as the researcher's understanding evolves, and new questions emerge due to the richness of the data. This situates the research as necessarily inductive, starting with observations from the field and seeking to build a theory from this evidence.

The approach taken is Grounded Theory (Glaser and Strauss, 1968), an inductive approach which has freedom and flexibility (Charmaz, 2005); it focuses on collecting data through participant interviews to build rather than test theory through comparison of ideas from subsequent interviews.

Traditional Grounded Theory uses a structured analysis with a central focus on a 'hub' and additional 'categories' (Cresswell, 2013) (axial coding) shaping a model.

The principal mechanisms of Grounded Theory are comparison and integration, and a standard approach is (Charmaz, 2005; Punch, 2014):

- Collect data via interviews.
- Code the responses to provide the "scaffolding" (Charmaz, 2005) on which the study is built.
- As new responses are gathered conceptual categories (theoretical codes) emerge through comparative analysis of subsequent responses.
- The theoretical codes are then combined with existing literature to develop theories from the research.

The theories developed will form the basis for constructing proposed plans and policies to effect positive change in the experience of the apprentices.

Methodological tools

Semi-Structured Interviews

Interviews are a common element in grounded theory (Cresswell, 2013), and are a useful approach to gathering greater depth and breadth of data when compared to questionnaires. Silverman (2011) describes the interview as "collaboratively produced" and suggests that they promote a level of involvement and self-worth for the interviewee far beyond the passive involvement of a questionnaire. It is also possible to pick up on important cues from the nuances of communication in an interview: intonation, emphasis and hesitations can be perceived to add depth to the data, and to indicate areas for further enquiry. Since this study seeks to investigate the meanings assigned by Degree Apprentices to their experiences and the social capital which help supports them in being successful as DAs, this extra information has the potential to add to the richness of the research, giving more clarity to the participant voice.

The ethical issues which may arise with this type of research has been considered, and full ethical approval obtained through the University of Warwick before beginning the primary research.

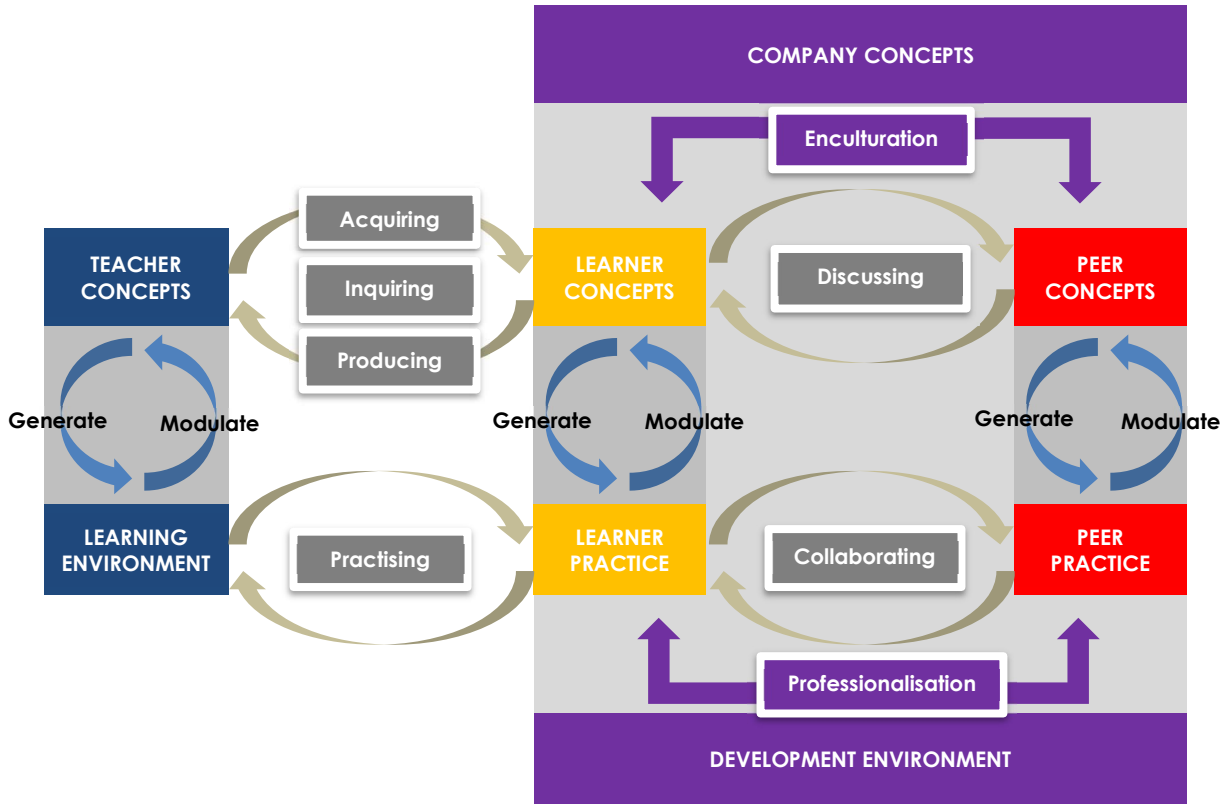
DISCUSSION: DEVELOPING THE CONCEPTUAL FRAMEWORKWORK

The conceptual framework brings together the research stance and epistemology of the researcher with the literature from the field and will inform the early stages of the research. The initial Research Framework for this piece of work (figure 3) builds on Laurillard's (2013) conversational framework to integrate the ideas around application and linking into a work context which is central to the notion of a Degree Apprenticeship. Laurillard's original model is at the centre of the diagram, showing the way students develop their concepts and practice (or schema) through repeated (social) learning loops involving their tutors and peers. The first loops are the students interacting with the designed learning environment and associated concept. The second is when they discuss or collaborate with peers (other students). Both loops impact the student's concepts and practices. This is sufficient for a student on a

traditional degree route (although Social Capital Theory would suggest that they will be influenced by upbringing, tastes, class, etc.) but fails to consider the additional contexts which are relevant to Degree Apprentices:

- ***Enculturation*** as an employee within the company (including organizational hierarchies, norms of behaviour, and valued skillsets)
- ***Professionalisation*** as a putative engineer in the profession (including professional ethos, norms of behaviour and valued skillsets).

Figure 3. Conceptual Research Framework: Modified Conversational Framework



This is consistent with the characterisation of Degree Apprentices developing the identities of employee (enculturation); professional (professionalisation); and student (as in Laurillard's original model) contemporaneously (Taylor-Smith et al, 2019) and allows for examination of the field and habitus associated with the areas.

CONCLUSIONS & RECOMMENDATIONS

A research framework has been developed which responds to the unique circumstances of Degree Apprentices and to the area of focus for the research question. This allows for the generation of unique insights into the experience of DAs in the UK. Next steps will involve developing appropriate sample fields and approaches, observational frameworks and developing guiding questions for the interviews.

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