Learning to learn: pathway to practice

Laurence Pattacini, Hannah Beard

University of Sheffield, UK

Abstract

University students need to adapt to the changing demand of professional practices. This concern has informed the development of graduate attributes and pedagogical concepts – such as long-term learning – which inform the curriculum. This paper draws on two research exercises conducted in collaboration with both students and alumni in the field of design, to provide a better understanding of the students' awareness of the transferable skills embedded in their university courses and to determine how relevant these skills might be in professional practice. The students' and alumni's voice is key to this research project and exemplified through specific quotes. Critically reflecting on the students' and alumni's comments about their journey from student to practitioner enables us to discuss the key skills and capabilities identified, in order to nurture resilience to changes in the workplace and proficiency in 'learning to learn': practical knowledge, collaboration, communication and adaptability.

Keywords: students experience; employability; transferable skills; practice

1. Introduction

Higher education (HE) is only one step in the lifelong learning journey and students need to be prepared to respond effectively to new professional practices. We must therefore put more emphasis on 'learning to learn' (HEA, 2015). There is also a related agenda, driven by professional bodies, to put more emphasis on transferable skills (Washer, 2007; Andrews and Higson, 2008). This is formalised in the university context with the development of the 'graduate attributes' (Barrie, 2007; Hager and Holland 2007). Transferable skills are complex in nature and imply a long-term iterative process of practising and perfecting them. University education can contribute to this process by promoting independence and autonomy in learning, encouraging creativity and adaptability (Davidson, 2017). However, concerns related to discrepancies between graduates' abilities and skills and the requirements of the work environment have been raised in previous publications (Tomlinson, 2012; Andrews and Higson, 2008). We must equip our graduates to demonstrate their capabilities to employers. This research provides evidence

through consultations with students and alumni in professional practice, of the process, perception, and demand for key transferable skills to prepare students to be more resilient in the professional world. Meaningful student involvement merits further exploration and this research provides an insight in their understanding of the link between their studies and employability (Fletcher,2017). This paper draws on a review of relevant literature related to transferable skills and learning to learn, as well as on two ethically approved qualitative research exercises, consisting of consultations through focus groups and structured interviews. The students' voice is key to the research process and exemplified through specific quotes.

The context of this study is a professionally accredited course in a design-related field which consists of three years of study, one year in practice and a final fifth year of study before graduation. In this context, it is imperative that the curriculum content ensures that students are well equipped to become effective practitioners and that it has employability at its heart. Employability is also a key strategy of the HE sector and has informed the development of pedagogical concepts, such as "*long-term learning*" (Baillie, Bowden and Meyer, 2013; HEA, 2015) and "*active, engaged, student-centred learning*", as it is better adapted to our contemporary, unpredictable, and changeable working conditions (Davidson, 2017). A professionally accredited vocational course is therefore an ideal context in which to consult students and alumni, to gain better understanding of the perception, experience and application of transferable skills in professional practice and the effectiveness of these skills in responding to changes in working environments. This qualitative research, in the form of consultations with students, provides insight into their needs, so as to inform strategies and innovation in HE.

2. Literature review

Current theoretical pedagogical frameworks, such as the 'Capability Theory' and 'Threshold Concept' – later merged into the 'Threshold Capability Integrated Theoretical Framework (TCITF) – explore effective approaches to equipping students with the skills required to respond to professional demands and changes inherent to the working environment (Meyer, Land and Baillie, 2010; Baillie, Bowden and Meyer, 2013). The TCITF aims to inform the design of curricula that will enable them "*to deal with previously unseen situations*" (Baillie, Bowden and Meyer, 2013, p.227) and it is underpinned by the three types of knowledge introduced in Aristotle's *Nicomachean Ethics.* The first knowledge, the *epistem,* is the scientific knowledge referring to theory and principles, or knowing why. The second is *techne*: the craft knowledge, a practical application, production and practice linked to the ability to know how to do things. The third is

phronesis or intelligence: the deliberation and decision-making required to facilitate and justify action (Aristotle, 1985; Baillie, Bowden and Meyer, 2013). These distinctions are relevant to the journey of becoming a professional designer. The Venn diagram below (Figure 1) considers the three types of knowledge mentioned above and lists the specific skills required to become a designer, encompassing theory, technique and craft. More generally, the working environment is changing rapidly because of technological developments, new communication and working practices. To remain employable, therefore, reskilling and upskilling are now essential (Sivalingam and Mansori, 2020). In the design field, issues related to climate change and the sustainability agenda imply new approaches. Facilitating and promoting more creative and original attitudes to decision-making are vital (Joynes, Rossignoli and Amonoo-Kuofi, 2019).
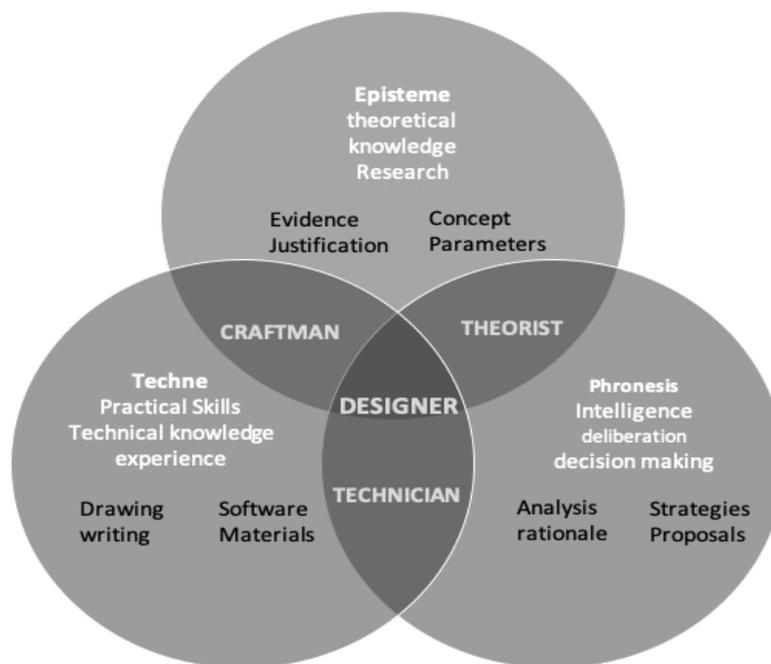

Figure 1. The three types of knowledge interpreted in the design context; the text in white refers to the three types of knowledge and associated skills introduced in Aristotle's '*Nicomachean Ethics'* (Artistotle, 1985); in black, are skills more specific to the design field and, in capital letters, are the roles linked to these skills (figure by author)

2.1 Learning to Learn

Contemporary HE strategies informing university education stress that students should be well equipped to learn new skills (HEA, 2015). The principles behind the graduate attributes imply that programmes should consider learning as a formative experience throughout the length of their

degree course. The students' journey is then mapped and recorded to capture the qualities and skills that they develop, independently of subject-specific knowledge. (Deeley, 2014; Ruge and McCormack, 2017). The benefits of this approach are well illustrated by various models linked to the concept of employability and lists of key graduate attributes referenced in the literature, as summarised in table 1. However, more evidence related to the visibility and comprehension of students' longitudinal development of skills and abilities – which Barnett and Coate (2005) summarise with their framework: "*knowing, acting, being*" – ought to be provided.

Concepts	DOTS model Watts (1977) as discussed in Watts (2006, pp.9-10)	Decision learning (decision-making skills.) Opportunity awareness (knowing what work opportunities exist and what their requirements are.) Transition learning (including job-search and self-presentation skills.) Self-awareness (in terms of interests, abilities, values etc.)
	USEM model Knight and York (2002, p.264)	Understanding Skills (subject-specific and generic) Efficacy, beliefs (self-theories) Metacognition (reflection)
	Career EDGE Pool and Sewell (2007, p.284)	Experience (work and life) Degree subject knowledge, understanding and skills Generic skills Emotional intelligence
	'Graduate Identity' Hinchliffe and Joly (2011, p.53)	Values Intellect Performance Engagement
Competencies, Capabilities, Attributes	Barnett (1997, p.2)	Independent thinking Communication Motivation Flexibilities

	Fallow and Steven (2000, pp.8-9)	Communication skills Information management skills. (retrieve, evaluate, analyse and utilise information) IT Skills People skills (group working, ethics and recognition of diversity) Personal skills (time management and recognition of personal responsibilities)
	Lees (2002, p.13)	Knowledge and understanding of the subject that has been chosen to study developing skills, both subject specific and generic Self-efficacy beliefs Strategic thinking or reflection
	Moon (2004. p.2)	Willingness to learn Self-motivation Self-evaluation Self-management
	Barnett and Coate (2005, p.41)	Adaptability Flexibility Self-reliance Learning how to learn
	Pool and Sewell (2007, pp.284-286)	Emotional intelligence Reflection and evaluation Self-efficacy/self-confidence/self-esteem
	Wolff and Booth (2017, p.51)	People skills (collaboration, teamwork, and cross-cultural competence) Problem-solving abilities (critical thinking, creativity, and adaptability) Professional strengths (communication, work ethic, and the habits of lifelong learning)

Table 1. Concepts, models and attributes relating to employability within the referenced literature.

In the context of design-related vocational courses, a programme-level approach is usually applied as a default, with particular emphasis on 'acting' (Barnett and Coat, 2005). This is reflected in a 'signature pedagogy', viz. reflective learning, implying self-reflection and critique (Shulman, 2005; Moon, 2004). Our learning and teaching approach to spatial design projects follows a cycle which has similarities with Kolb's seminal experiential learning cycle, developing initial site survey analysis through to strategic planning and design proposals (Kolb and Kolb, 2018; Demirbas and Demirkan, 2007). Figure 2 illustrates the links between Kolb's generic principles and the more specific activities related to training designers. Our students are also assessed through projects in real-life contexts, relating to existing physical sites and community groups, as well as drawing lessons from case studies (Kreber, 2001). Reviews, which then form part of the assessment process, relate to 'reflection in action' in the form of constructive discussions (Yanow and Tsoukas, 2009). This approach to the curriculum aims to reflect the dimensions of professional practice; "*the intellectual, the technical and the moral*" (Shulman, 2005, p.58)
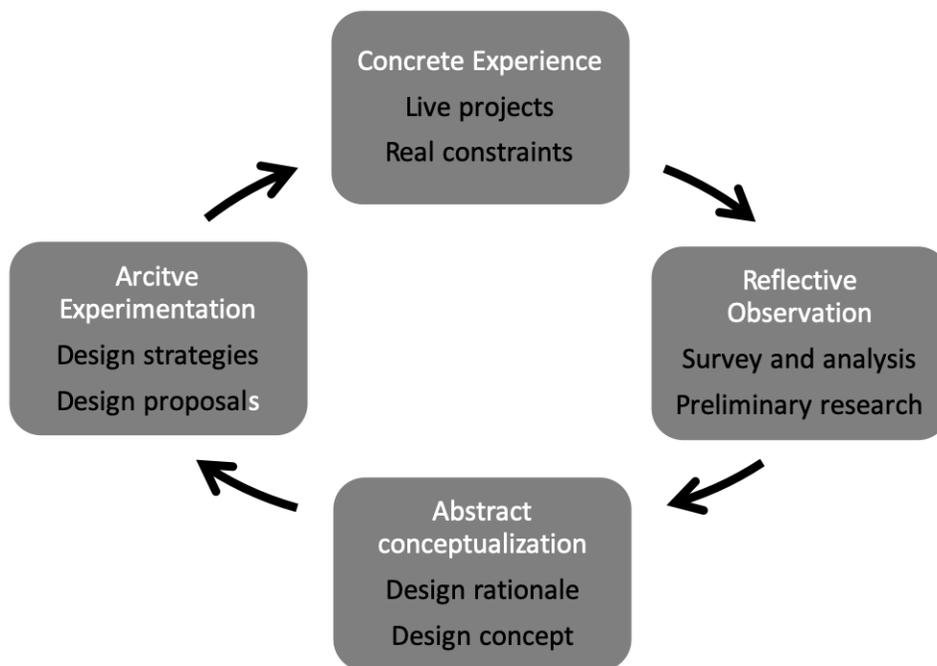

Figure 2. Kolb's experiential learning cycle – text in white – interpreted in the design field context – text in black (figure by author)

3. Methodology

3.1 Overview

The qualitative research consisted of two consultation exercises designed 1) to develop better understanding of the students' awareness of the transferable skills embedded in our professionally accredited course and 2) to determine how relevant these skills might be to professional practice. As the aim was to draw a more informed picture of the students' progress from university to professional practice, the perspectives both of fifth-year students with a year's experience as interns within professional practice and of alumni who were practising professionals were sought. All the participants, therefore, were being or had been trained on the same professionally accredited course, ensuring that direct links and references could be made between studies and professional practice requirements. The two research exercises were designed as qualitative inquiries directed towards informing learning and teaching practices; they consisted of focus groups and follow-up interviews structured by prompts that the research team agreed, tested and refined prior to the data collection (Bryman, 2004; Rakow, 2011; Erickson, 2011). Both the focus groups and follow-up interviews were audio-recorded and then critically reviewed to identify relevant quotes and recurrent themes, which have been used to structure the presentation and discussion part of this paper (Braun and Clarke, 2006). The method used to analyse the qualitative data draws on the principles related to interpretivism and critical review, with thematic analysis to identify recurring mentions of specific transferable skills acquired during the studies and applied in practice (Braun and Clarke, 2006; Cohen *et al.*, 2018).

Both research exercises were ethically approved and benefited from small learning and teaching grants at departmental and faculty level; these enabled the employment of students to facilitate the consultation process. Such an approach to the data collection, with students interviewing other students and alumni, enhanced the validity and credibility of the research by avoiding the inherent risk of bias on account of power dynamics (Råheim *et al.*, 2016). Training and mentoring by the lead academic of the students involved included testing their skills prior to the focus groups and interviews. The sample of students and alumni was limited, but it was proportionally representative of the overall student cohort joining the course at undergraduate level. Further details on both research exercises are provided below and in table 2. Similar to a longitudinal cohort study, the research does not rely on quantitative data, but on qualitative information consisting of students' testimonies at different stages of their learning experience (Ruspini, 2002).

3.2 Research exercise 1 (see details in table 2)

The first research exercise focused on acquiring a better understanding of the students' insight into long-term learning within the curriculum. The entire fifth-year student cohort was emailed, in order to recruit volunteers. The participants of the two focus groups (seven or eight participants per group, approximately two thirds of that year's cohort) were prompted to reflect, in relation to their year out in practice, on useful skills which they had learnt during their undergraduate studies. From the focus groups, a smaller number of students was invited for a half-hour, one-to-one, follow-up interview (eight students: more details in table 2). The participants were carefully selected to create a representative cohort, ensuring all genders and different cultural backgrounds were represented. All participants were fifth-year students, who had experience of working in professional practices for one year, prior to returning to university to complete their final year. Both the focus groups and the interviews were facilitated by a fifth-year student, marking the start of the authors' staff-student collaboration. Using qualitative studies practice, the recorded data were critically reviewed and analysed through the identification of quotes (Eldh, Arestedt and Berterö, 2020). The quotes provide evidence of the students' perspective of the relationship between university studies and professional practice, following their own experiences in the workplace. These preliminary findings provided adequate evidence to enable a faculty-wide research grant to be applied for, as part of an initiative encouraging 'Staff and Students Projects in Learning and Teaching' (SSPILT).

3.3 Research exercise 2 (see details in table 2)

The second research exercise responded to the outcome of exercise 1, which highlighted the students' lack of awareness of skills required for professional practice. Consequently, the second research exercise consisted of focus-group discussions which were prompted in order to aid reflection on useful skills learnt during the university studies in relation to participants' experience as professional designers. Five different professional practices were approached, in relation to existing contacts with alumni of the university-accredited course (more details in table 2). This research exercise extended the staff-student collaboration to include two additional final-year students, who joined the authors to facilitate the data collection. Three directors of the practices involved in the focus groups, who were also alumni from our design course, agreed to be interviewed to reflect on what they considered the most valuable skills. The recorded discussions were analysed, using thematic analysis, to explore further the pertinence and relevance of our

design-related vocational curriculum in relation to transferable and employability skills (Guest, MacQueen and Namey, 2012).

	Research exercise 1	**Research exercise 2**
Funding	Departmental initiative to support scholarly activities in learning and teaching	Faculty grant: SSPILT (Staff-and-students project in Learning and Teaching).
Research team	Co-authors: - One teacher - One fifth-year student with two years' professional experience	Co -authors: - One teacher - One alumnus / young professional - Two fifth-year students with one year's professional experience
Participants	Fifth-year students with one year's or two years' professional experience. Fifteen students in two focus groups, representing half of an average cohort of our fifth-year students. Eight students from the focus group participated in follow-up interviews; chosen to ensure diversity in gender and culture.	Alumni / young professionals: Five professional practices visited to facilitate focus groups with four to six participants. Alumni / employers: three directors were interviewed. A range of different types of professional practices were consulted, including multi-disciplinary firms and small-to-medium landscape architecture practices.
Aims	Engage in a dialogue to collect information related to students' perception of the skills they acquired during their undergraduate studies and how they applied these while in practice.	Explore and gather evidence to complement the discussion with the fifth-year students by consulting alumni / professionals on key transferable skills in relation to employability and long-term learning.

Objectives	Capture students' insight of long-term learning in relation to their undergraduate and professional experiences. Use students' voice to inform present and future research. Use students' voice to inform present and future research.	Capture alumni's / professionals' insight into long-term learning in relation to their studies. Use testimonies to identify key skills and improve the chances of employability.
Method	Two focus groups and eight follow-up interviews, audio-recorded and analysed to establish awareness or not and identify themes (Braun and Clarke, 2006) Focus group prompt: 'reflect on useful skills which you learn during undergrad, in relation to your experience in practice' Prompt questions for interviews: discuss in more detail about how skills acquired during undergrad influenced your year in practice (using specific examples) Identification of quotes to provide evidence of students' awareness of long-term learning.	Five focus groups, audio-recorded and analysed (four to seven participants). Focus group prompt: 'share your personal experience and exemplify how relevant the skills acquired during your studies were to informing your practice' Three interviews with alumni / employers Interview prompt: 'As an employer, what are the transferable skills you value the most?' Identification of key themes drawing from the literature, including the capability theoretical framework (Baillie *et al.*, 2013) Identify quotes to illustrate these themes.
Outcomes	Identification of quotes to provide evidence of students' awareness of long-term learning. Justification for grant application to undertake further collaborative research.	Identification of quotes to illustrate alumni's / professionals' insights on key skills required on the pathway to practice. Long-term outcome: an innovative informative resource for students, listing

		key transferable skills and their relevance to the profession.

Table 2. Summary of research exercises method and process

4. What did we learn?

4.1 Students' awareness of the link between study and practice

The first focus groups with final-year students highlighted a lack of awareness of the relationship between study and work in practice. This compartmentalisation seems to relate to context and perception. For example, many students mentioned the lack of creativity in professional practice, with their tasks consisting of gathering information, writing reports and/or generating visuals on computers. Many references with negative connotations were also made to the repetitiveness of tasks. Reliance on template and precedent projects also received negative criticism, when compared to tasks with originality and uniqueness that are encouraged within the design-based approach promoted at university. However, most participants also considered that work in professional practice was often simpler, and therefore less stressful, than work at university, as they did not have to juggle different tasks/projects with different supervisors.

"In practice it is not as stressful as Uni, we are more in control […] focused on one task; we have more responsibilities as a student."

In the follow-up, one-to-one interview with students, reference was made to skills which were acquired at university and utilised in professional practice, such as critical thinking, communication and the ability to adapt to different situations. Interestingly, these skills acknowledged refer to all three types of knowledge: theory, craft, and wisdom (Aristotle, 1985; Barnett and Coat, 2005). One of the interviewees concluded with the statement *"we have been well trained",* highlighting an understanding of the different types of skills acquired at university and an ability to deploy them effectively within a professional setting. Nonetheless, there were clear differences between students who worked in an international context (mainly in China) and the ones who worked in British practices, with those working in British practices most able to transfer and utilise directly the skillsets cultivated at university. These differing cultural experiences emphasise the difficulties in effectively equipping students with a working environment which is diverse and changeable (Gribble, 2014).

A general conclusion of the consultation with students was that our curriculum must include more direct references to employability skills. Greater collaboration with careers services is required to better equip our students to map out their employability skills and competencies throughout their studies and encourage them to develop further their self-evaluation skill (Moon, 2004).

4.2 Key transferable skills identified through the thematic analysis

4.2.1 Practical knowledge

When questioned, both alumni and fifth-year students after their year in practice felt that they were well prepared in relation to practical knowledge (techne and craft). Participants also felt that they had a basic knowledge in many subject areas, which enabled them to "*get* [their] *foot in the door*", but this needed to be complemented by the acquisition of confidence in decision-making (Phronesis). They felt well-equipped to engage with the design process, with an international fifth-year student mentioning having *"practised* [this] *throughout* [his] *time at University'*. The theme of practical knowledge can be associated with 'concrete experience' in Kolb's experiential learning and is translated in the design field to the use of live projects and real context as well as active experimentation through original ideas (figure 2). Some students felt they had *"good insight in real projects",* but the majority of the participants – and the employers in particular – felt that real-world experience belongs to practice and stressed the importance of involving professionals in university education.

"Visiting professionals bring in somebody who has a real-world experience is so valuable and it does help bring that perspective in to what is a research environment."

4.2.2 Collaboration

In addition to practical knowledge, collaboration was put forward as one of the most important skills required in the workplace, something in which students felt well-practised through numerous group-work exercises and assignments during their studies. However, regardless of students' group-work experience, many felt inadequately prepared for dealing with hierarchical relationships within a professional team. This illustrates that professional work environments are not always as friendly as ones within the university, with participants referring to professional hierarchical and divisive dynamics attributed to dominating 'bosses'. In this scenario, students felt ill-equipped to contribute effectively to discussions and to argue their ideas confidently. The expressed lack of confidence highlights the need to nurture students, so they become capable of dealing with unexpected or different circumstances (Baillie, Bowden and Meyer, 2013; Davidson,

2017). A student who worked abroad in an international office highlighted the benefit of group work in developing collaborative skills, but she stressed that she became aware of this only in her fifth year at master level.

"The idea at the end is not one person idea' . [...] knowing how to have a discussion and come up with a common idea."

The importance of collaboration in practice was also highlighted by the professionals / alumni interviewed, emphasising the importance of teamwork, which relates to the 'people skills' mentioned in the literature (Fallow and Steven, 2000; Wolff and Booth 2017)

"[...] presenting, discussing your ideas and working in a team. That is an important part of the job."

4.2.3 Communication

Communication was also a recurrent theme in the focus groups and interview discussions and is considered fundamental to professional success (Ellis, 2009). Most students felt they had been well trained to communicate their ideas with their co-workers and explained that they had had to do this so often during their studies that it "*did not bother"* them. One student more specifically referred to "*the clarity of presenting ideas"* as a "*useful skill for life"*, stressing how being assessed through oral presentation while at university provided the skills required to "*tell a coherent story"*. Another student, while working in practice, had weekly presentation sessions with the lead designer of the company and mentioned that this experience shared similarities with our tutorial sessions. However, the participants acknowledged a difference in timescales and referred to having in professional practice to produce graphics much faster for use as a communication tool, to convince their co-workers of the validity of their ideas.

"[in practice, there is] limited time to be convincing"

"[There is a] need to give a pitch and sell your ideas [to clients]"

One of the identified major differences – in relation to communication – between studies and professional practice was the conception that clients are not 'tutors', as they are mostly unfamiliar and do not have the same professional background. Communicating with clients therefore requires a focus on what is essential and the use of language which is "*easy to understand"*. Live projects within the course, where students had to present their ideas to real, existing community

groups, were mentioned as a good and useful practice in this respect. A professional/alumnus highlighted the usefulness of review sessions, which are key to the design field in developing communication skills.

"Critique sessions and presenting are really useful. One of the things we do a lot on the job is convincing clients and other professionals of your ideas and vision."

A fifth-year student also stated that the diversity of university projects which required liaison with several tutors with different approaches, opinions and knowledge also proved an asset in practice, when having to communicate with a variety of colleagues and a wide range of clients.

"tutors have different opinions […] similar situation when you go in practice where you have a couple of clients or different disciplines, they all have different opinions. When I go in practice, I am glad I have done that".

The same student added that the "*different focus every time (different modules) makes you adaptable"*. Interestingly, the diversity of opinions and perceived *"contradictory comments"* received by students from their tutors is a common negative theme in student feedback. As teachers and practitioners, we understand that this challenging scrutiny is an important learning process; however, it is difficult to convince students of this before they have had first-hand experience with a range of clients and colleagues in practice (Weaver, 2006; Weinstein, 2019).

4.2.4 Adaptability

Participants' reflections on the long-term learning benefits of their experience at the university fit well with the key attributes put forward in HE in relation to employability (Barrie 2007, HEA 2015). For example, most of the fifth-year students felt well equipped to cope with stress and multi-tasking, as they had to juggle different demands from different modules and tutors, which was similar to life in practice. Some students also congratulated themselves on their efficiency and time management, even though others considered this a problematic issue during their university studies (Adams and Blair, 2019).

"I was well equipped for short deadline."

"I was aware of how long it would take me because of the studies."

Adaptability and resilience are often referred to in the literature in relation to employability skills and attributes (see table 1). This is often linked to creativity, which might explain why, in a design-related field of study, students feel well prepared to adapt to varied work conditions. Innovation and originality are key attributes of being a designer, but they are now also considered to be key to professional and personal success (Joynes, Rossignoli, Amonoo-Kuofi, 2019). One of the alumni referred to the value of being actively experimental:

"Getting people used to getting it wrong, changing and learning."

Another, meanwhile, stressed the importance of learning to learn, which can be associated with continuous professional development in practice in order to become a successful professional. Moon (2004, p.2) associates willingness to learn with self-motivation, self-evaluation and self-management, which are also the qualities of an independent learner – a concept mentioned by one of our professionals/alumni as a description of a good practitioner:

"It's all about being an independent learner and having the motivation to carry on."

5. Limitations

As mentioned in the method section, owing to the nature of the university course size, the sample of students consulted, though representative, is small. It would therefore be useful to validate further and update the longitudinal cohort study to undertake a similar study over time, especially in the post-COVID context. Furthermore, all the alumni /employers who participated in this study are working in UK firms. As several of our students go on to work internationally, it would also be useful to broaden the field to involve alumni who are practising in firms outside the UK, especially within China, where the majority of our international students originate.

6. Conclusions and way forward

The consultations with the students highlighted the need to provide more evidence of the long-term benefits of university study and the potential of their student experience to contribute to their professional development. Employability is now a key consideration in HE (HEA, 2015) and the long list of concepts and models referring to employability attributes listed in table 1 illustrates its importance in informing education. There is an awareness of the importance of employability, but we need to demonstrate and illustrate more effectively the graduate attributes and transferable skills to raise awareness of the long-term benefits of studying at university. The various conversations with students, alumni/professionals and employers illustrate the transition from

student to professional and contribute evidence to the discussion in pedagogical literature focusing on promoting and valuing transferable skills in the learning and teaching experience in HE (Burke, Jones and Doherty, 2005; Andrews and Higson, 2008). The context of this research is specific to a vocational course in the design field, but it transpires from the conversations that the qualities and skills mentioned as important to becoming competent professionals go beyond the 'practical knowledge' specific to a profession. The 'people skills' referred to in the literature are summarised under the themes: collaboration and communication take a prominent place in being a good professional.

One of the professionals referred to being "*practical, pragmatic and flexible*" as the most successful skill in practice, which is a good summary both of some aspects mentioned in the discussions and also qualities and competencies referred to in the literature (Table 1). The pathway to practice illustrated through the experience of the students and alumni/professionals highlights the importance of developing skills which go beyond the first two of Aristotle's types of learning: Epistem / theory and Techne/craft (1987). The themes/transferable skills listed as findings in this paper fit well with the concept of developing 'deeper' learning experiences, a concept referred to in this paper as 'learning to learn' (Meyer *et al.*, 2010). Our professional participants highlighted the importance of the ability and confidence to think creatively and imaginatively about options and solutions corresponding to Aristotle's third type of knowledge: Phronesis/decision-making (1985). This is compatible with arguments developed in the literature, for example when Mc Dowell notes that "*Whilst knowledge is important, students need the cognitive abilities to solve problems, evaluate, criticise and create; they also need to act independently, be self-motivating and cope flexibly with new situations*" (McDowell in Gibson, 2002, p.466). To learn throughout a career and to respond to changes – referring to qualities under the theme identified as 'adaptability' – are key to professional success independently from the profession(s) the students will engage with.

This research can be used to help students understand long-term benefits of their studies as well as being better equipped to sell transferable competencies to raise their employability value. The insight, knowledge and experience shared by the alumni who have become professionals can provide tangible evidence of the usefulness of certain activities in the curriculum: for example, the relevance of group work to develop professional skills for successful collaborations or the value of presenting university work to develop higher communication skills. More pertinent informative resources should be developed so that students may relate to the reasoning behind graduate attributes, transferable skills and other employability-driven initiatives during their studies. The

outcome of this research may therefore contribute to the development of resources, which provide a more seamless transition from studies to practice.

Reference list

Aristotle (1985) *Nicomachean Ethics*. Translated by Terence Irwin. Cambridge: Hackett Publishing Company. ISBN: 915145650

Adams, R.V. and Blair, E. (2019) 'Impact of Time Management Behaviors on Undergraduate Engineering Students' Performance.' *Sage Open* 9(1). Available at: https://doi.org/10.1177/2158244018824506 (Accessed: 22 January 2020).

Andrews, J. and Higson, H. (2008) 'Graduate Employability, *Soft Skills* Versus *Hard*. Business Knowledge: A European Study.' *Higher Education in Europe*, 33(4), 411-422. Available at: https://doi.org/10.1080/03797720802522627 (Accessed: 03 February 2023).

Baillie, C., Bowden, J. A. and Meyer, J.H.F, (2013) 'Threshold capabilities: threshold concepts and knowledge capability linked through variation theory.' *Higher Education*, 65(2), 227-246. Available at: https://doi.org/10.1007/s10734-012-9540-5 (Accessed: 03 February 2023).

Barnett, R. (1997) *Higher education: A critical business*. Buckingham: Open University Press. ISBN: 0335197035

Barnett, R. and Coate, K. (2005) *Engaging the Curriculum in Higher Education*. Maidenhead: Open University Press/McGraw-Hill Education. ISBN: 0335212891

Barrie, S.C. (2007) 'A conceptual framework for the teaching and learning of generic graduate attributes.' *Studies in Higher Education*, 32(4), 439-458. Available at: https://doi.org/10.1080/03075070701476100 (Accessed: 03 February 2023).

Braun, V. and Clarke, V. (2006) 'Using thematic analysis in psychology.' *Qualitative Research in Psychology*, 3(2), 77-101. Available at: https://doi.org/10.1191/1478088706qp063oa (Accessed: 03 February 2023).

Bryman, A. (2004) *Social Research Methods.* Oxford: Oxford University Press. ISBN: 0199588058

Burke, V., Jones, I. and Doherty, M. (2005) 'Analysing student perceptions of transferable skills via undergraduate degree programmes.' *Active Learning in Higher Education*, 6(2), 132-144. Available at: https://doi.org/10.1177/1469787405054238 (Accessed: 03 February 2023).

Cohen, L., Manion. L. and Morrison, K. (2011) *Research methods in education* (8th ed.). London: Routledge. ISBN: 9781138209886

Davidson, C.N. (2017) 'Commentary: A newer education for our era.' *The Chronicle of Higher Education*. Available at: https://search.proquest.com/docview/1968452568?accountid=13828 (Accessed: 03 February 2023).

Deeley, S. (2014) 'Summative co-assessment, a deep learning approach to enhancing employability, skills and attributes.' *Active Learning in Higher Education.* 15(1), 39-51. Available at: https://doi.org/10.1177/1469787413514649 (Accessed: 03 February 2023).

Demirbas, O.O. and Demirkan, H. (2007) 'Learning styles of design students and the relationship of academic performance and gender in design education.' *Learning and Instruction* 17, 345-359. Available at: https://doi.org/10.1016/j.learninstruc.2007.02.007 (Accessed: 03 February 2023).

Eldh A.C., Årestedt, L. and Berterö, C. (2020) 'Quotations in Qualitative Studies: Reflections on Constituents, Custom, and Purpose.' *International Journal of Qualitative Methods*, 19(1). Available at: https://doi.org/10.1177/1609406920969268 (Accessed: 20 January 2022).

Ellis, R. (2009) Communication Skills, stepladders to Success for the Professional, 2nd ed.). Bristol: intellect. ISBN: 9781841502984

Erickson, F. (2011) 'Qualitative methods in research on teaching.' In: Lincoln Y. and Denzin N.K. (eds.) *The SAGE Handbook of Qualitative Research*. Thousand Oaks, CA: SAGE Publishing, 3-59. ISBN: 1412974178

Fallows, S. and Steven, C. (2000) *Integrating Key Skills in Higher Education*. London: Routledge. Available at: https://doi.org/10.4324/9781315042350 (Accessed: 22 January 2022).

Fletcher, A. (2017) *Student Voice Revolution: The Meaningful Student Involvement Handbook.* Olympia, WA: Common Action Publishing. ISBN: 0692954449

Gribble, C. (2014) *Exploring employability in different cultural contexts. Final report scoping study*. London: Society for Research into Higher Education. Available at: https://srhe.ac.uk/wp-content/uploads/2020/03/gribble-cate.pdf (Accessed: 02 July 2021).

Guest, G., MacQueen, K.M., Namey, E.E. (2012) *Applied Thematic Analysis*. London UK: SAGE Publishing. ISBN: 1412971675

Gibson, I.S. (2002) 'Assessment is engineering education: A European perspective.' *The International Journal of Engineering Education* 18(4), 65-471. Available at: https://www.ijee.ie/articles/Vol18-4/IJEE1327.pdf (Accessed: 03 February 2023).

Hager, P. and Holland, S. (eds.) (2006) *Graduate attributes, Learning and Employability*. Dordrecht: Springer. Available at: https://download.e-bookshelf.de/download/0000/0040/05/L-G-0000004005-0002368142.pdf (Accessed: 03 February 2023).

Higher Education Academy (HEA) (2015) *Framework for Embedding Employability in Higher Education*. York: Higher Education Academy. Available at: http://www.employability.ed.ac.uk/documents/HEA-Embedding_employability_in_HE.pdf (Accessed: 03 February 2023).

Higgins, R., Hartley, P. and Skelton, A. (2002) 'The Conscientious Consumer: Reconsidering the role of assessment feedback in student learning.' *Studies in Higher Education*, 27(1), 53-64. Available at: https://doi.org/10.1080/03075070120099368 (Accessed: 02 February 2023).

Hinchliffe, G.W. and Jolly, A. (2011) 'Graduate identity and employability.' *British Educational Research Journal*, 37(4), 563-584. Available at: https://doi.org/10.1080/01411926.2010.482200 (Accessed: 02 February 2023).

Joynes, C., Rossignoli, S. and Amonoo-Kuofi, E.F. (2019) *21st Century Skills: evidence of issues in definition, demand and delivery for development contexts.* Brighton: Institute of Development Studies. Available at: https://assets.publishing.service.gov.uk/media/5d71187ce5274a097c07b985/21st_century.pdf (Accessed: 03 February 2023).

Knight, P.T. and Yorke, M. (2002) 'Employability Through the Curriculum.' *Tertiary Education and Management* 8, 261-276. Available at: https://doi.org/10.1023/A:1021222629067 (Accessed: 03 February 2023).

Kreber, C. (2001) 'Learning Experientially through case studies? A conceptual analysis.' *Teaching in Higher Education*, 6(2), 217-228. Available at: https://doi.org/10.1080/13562510120045203 (Accessed: 03 February 2023).

Lees, D. (2002) *Graduate Employability-Literature Review.* York: LTSN Generic Centre. Available at: https://www.qualityresearchinternational.com/esecttools/esectpubs/leeslitreview.pdf (Accessed: 03 February 23).

Meyer, J.H.F., Land, R. and Baillie, C. (eds.) (2010) *Threshold concepts and transformational learning.* Rotterdam: Sense Publishers. ISBN: 978-94-6091-205-4

Moon, J. (2004) *Reflection and Employability*. York: LTSN Generic Centre. Available at: https://www.qualityresearchinternational.com/esecttools/esectpubs/Reflection%20and%20employability.pdf (Accessed: 03 February 2023).

Pool, L.D. and Sewell, P. (2007) 'The key to employability: Developing a practical model of graduate employability.' *Education and Training*, 49(4), 277-89. Available at: https://doi.org/10.1108/00400910710754435 (Accessed: 03 February 2023).

Rakow, L.F. (2011) 'Interviews and focus groups as critical and cultural methods**.**' *Journalism and mass communication quarterly*, 88(2), 416-428. Available at: https://doi.org/10.1177/107769901108800211 (Accessed: 03 February 2023).

Råheim, M., Magnussen, L.H., Sekse, R.J., Lunde, Å., Jacobsen, T. and Blystad, A. (2016) 'Researcher-researched relationship in qualitative research: Shifts in positions and researcher vulnerability.' *International journal of qualitative studies on health and well-being*, 11(1), 30996-30996. Available at: https://doi.org/10.3402/qhw.v11.30996 (Accessed: 03 February 2023).

Raybould, J. and Sheedy, V. (2005) 'Are graduates equipped with the right skills in the employability stakes?' *Industrial and Commercial Training*, 37(5), 259-263. Available at: https://doi.org/10.1108/00197850510609694 (Accessed: 03 February 2023).

Ruge, G. and McCormack, C. (2017) 'Building and construction students' skills development for employability - reframing assessment for learning in discipline-specific contexts.' *Architectural engineering and design management*, 13(5), 365-383. Available at: https://doi.org/10.1080/17452007.2017.1328351 (Accessed: 03 February 2023).

.

Ruspini, E. (2002) *An Introduction to Longitudinal Research*. London: Routledge.C:\Users\Rachel\AppData\Local\Microsoft\Windows\INetCache\Content.Outlook\2ME PWWKN\ Available at: https://doi.org/10.4324/9780203167229 (Accessed: 03 February 2023).

Shulman, L.S. (2005) 'Signature pedagogies in the professions.' *Daedalus,* 134(3), 52-9. Available at: https://www.amacad.org/publication/signature-pedagogies-professions (Accessed: 03 February 2023).

Sivalingam, A.D. and Mansori, S. (2020) 'How Organizations Should View Reskilling and Upskilling the Workforce.' Available at: http://www.sastraeducation.com/how-organizations-should-view-reskillng-and-upskilling-the-workforce-.html (Accessed: 15 January 2022).

Tomlinson, M. (2012) 'Graduate Employability: A Review of Conceptual and Empirical Themes.' *Higher Education Policy* 25, 407-431. Available at: https://doi.org/10.1057/hep.2011.26 (Accessed: 03 February 2023).

Washer, P. (2007) 'Revisiting Key Skills: A Practical Framework for Higher Education.' *Quality in Higher Education*, 13(1), 57-67. Available at: https://doi.org/10.1080/13538320701272755 (Accessed: 03 February 2023).

Watts, A.G. (2006) *Career Development Learning and Employability*. York: The Higher Education Academy. Available at: https://www.qualityresearchinternational.com/esecttools/esectpubs/watts%20career.pdf (Accessed: 03 February 2023).

Weaver, M.R. (2006) 'Do students value feedback? Student perceptions of tutors' written responses.' *Assessment and Evaluation in Higher Education*, 31(3), 379-394. Available at: https://doi.org/10.1080/02602930500353061 (Accessed: 03 February 2023).

Weinstein, Y., Sumeracki, M. and Caviglioli, O. (2019) *Understanding How We Learn: A Visual Guide*. Abdington: Routledge. ISBN: 9781138561724

Wolff, R. and Booth, M. (2017) 'Bridging the Gap: Creating a New Approach for Assuring 21st Century Employability Skills.' *Change: The Magazine of Higher Learning*, 49(6), 51-54. Available at: https://doi.org/10.1080/00091383.2017.1399040 (Accessed: 03 February 2023).

Yanow, D. and Tsoukas, H. (2009) 'What is Reflection-In-Action? A Phenomenological Account.' *Journal of management studies*, 46(8), 1339-1364. Available at: https://doi.org/10.1111/j.1467-6486.2009.00859.x (Accessed 03 February 2023).