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CHAPTER 3:

Preparing students for rapidly evolving futures: Using learning theory to inform pedagogical practice.

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Abstract

The chapter describes a framework used to guide university teaching staff as they attempt to respond to emerging trends in the capabilities they want to develop in the students they seek to serve. The framework was developed in New Zealand through a national project involving five universities responding to a need to prepare graduates for uncertain futures. It draws on a range of theoretical perspectives to identify four summarising shifts in practice to guide academics in their course design and teaching. The chapter begins by describing trends in what and who universities are teaching. A conceptual analysis of selected learning theories is offered and the implications for shifts in practice are captured. The framework aims to support teachers as they shift their mindsets from disciplinary knowledge and traditional-age students to generic capabilities development in a more mature and diverse student body. It encourages teachers to deliver aligned curricula that: enthuse learners; enable them to prepare by exploring their learning journey and; expand and then exhibit their capabilities. The academic development strategies adopted to promulgate the framework are described and evaluation outcomes shared. Finally, the chapter discusses the implications for higher education institutions' role in preparing graduates for their futures.

Keywords: Learning theory, higher education, pedagogy, mature learners, graduate capabilities.

Introduction

This chapter seeks to problematise the challenges universities face beginning by exploring shifts in both what and who universities seek to teach. The chapter progresses with an attempt to address the challenges identified. It concludes with overview of an academic development initiative which exposed university teaching staff to a modified approach to teaching and captured their implementation plans.

The overall aim of the research and thinking shared in this chapter was to address the following research question: What approaches to teaching would prepare students for lives and careers in a rapidly evolving environment? This over-arching question was approached through a series of sub-questions. Firstly, what are the implications of a rapidly evolving environment for what students need to learn and who universities will be teaching? Secondly, what pedagogical challenges might these changes bring about? Thirdly, how can theory and research inform the adaptation of teaching practices? Finally, can adaptations in practice be readily communicated to and applied by mainstream educators?

Changes in what and who universities seek to teach

The need to prepare students for their futures has been acknowledged for decades but what that is thought to entail is changing (Scott, 2016). Faced with an environment characterised by rapid change, our graduates are thought to need a number of future-ready employability and citizenship-related capabilities. There is a shift from an implicit belief that disciplinary knowledge, thinking and research will prepare graduates for their futures to an appreciation that graduates need something more if they are to be

connected, communicating citizens equipped to manage a sustainable but uncertain future (Gleason, 2018; Oliver & Jorre de St Jorre, 2018; Penprase, 2018).

It is thought that graduates need a daunting range of generic or capabilities, including being: flexible, collaborative, proactive, open to uncertainty, resilient, ethical, lifelong learners, able to self-manage, cope with and stimulate change and devise sustainable solutions (Bowles et al., 2019; Hirschi, 2018). What is more, they need to be able to apply and develop these capabilities in the future in situations that as yet cannot be imagined (Minocha et al., 2018). There is the notion that knowledge has a short shelf life and the skills to source, acquire master, create and forget knowledge are more important than its simple possession. It seems that higher education institutions (HEIs) need to provide transformational and high impact learning equipping students with the capacity to perform flexibly, adaptively and creatively in shifting landscapes to acquire and create new ways of knowing, doing and being.

Not only are there shifts in what universities seek to develop in their graduates, who they teach is expected to expand too. Universities originated as places where privileged youth undertook their final educational step before beginning their lives and careers. Even if aspects of university organization still reflect this genesis many of today's students are not privileged, particularly youthful or culminating their education (Connell, 2011; Kasworm, 2018). A more current vision of higher education is one where individuals may repeatedly return to learning, either to acquire formal qualifications or micro-credentials and either to update within their current profession or to convert to another possibly emerging field (Gleason, 2018; Palvia et al., 2018). These shifts mean that the student body continues to change. Students are increasingly likely to be older, credentialed, have

current or previous work experience, and combine study with life and work responsibilities.

Universities have accepted these changes at an institutional level, and their aspirations, graduate attributes, and strategic goals express a commitment to developing students' generic capabilities (Hammer et al., 2021). The proliferation of taught masters, conversion masters, micro-credentials and outreach attests to the concern with more mature lifelong learners. However, students are graduating without the generic capabilities employers require. This is a constant theme in the literature (Azevedo et al., 2012) and employers exhibit some inconsistencies in their views on graduates' shortcomings (Chhinzer & Russo, 2018; Cunningham & Villaseñor, 2014). Students also indicate that universities are not framing their efforts optimally (Jorre de St Jorre & Oliver, 2018) and have a range of expectations (Donald et al., 2019; Matthews et al., 2018; Wyllie, 2018). There appears to be a mismatch between universities' ambitions, which are lofty, and the mechanisms they have for developing generic capabilities, which seem modest. Authors identify challenges in operationalizing institutional aspirations including: identifying the desirable and achievable scope and standard of capabilities (Oliver, 2015), devising pan curricula mechanisms to support progressive development (Pham & Saito, 2019; Yorke & Knight, 2007), establishing how capabilities are evidenced and assessed (Hughes & Barrie, 2010; Oliver, 2015) and, finally and of most relevance to this chapter, how generic capabilities are taught (Chan et al., 2017).

Teaching challenges

Understanding of learning processes and the ways to teach have progressed in recent years, as have the learning technologies and media at teachers' disposal. Cognitivists and constructivists have influenced higher education

(HE) teaching practices (Biggs & Tang, 2011). They revealed that new understandings are constructed from previous conceptions and point to a process of active construction, noting the superiority of active learning over passive learning and the need to provide learners with opportunities to think, reason and develop internalised working theories (Prosser & Trigwell, 2013). Equally, researchers suggest that not only should learning be active, it should also be social (Davis et al., 2010) and relational (Ramsden, 2003), giving students time to voice their ideas and interact with others (Laurillard, 2013). Within the HE Sector, many academics are familiar with active and social learning and with the concept of constructive alignment and backward design (Biggs, 1996), where assessments must align with teaching and address explicitly defined learning outcomes.

The thinking summarised above and which informs teaching has been developed through research and practice primarily to inform the learning and teaching of conceptual understanding. There are grounds to ask whether these approaches will similarly afford the development of generic capabilities involving soft skills, attitudes and values. Indeed, it would appear naïve to assume that the pedagogies which serve to instil disciplinary knowledge and thinking are also fit for developing more generic, softer but more relevant skills, attitudes and values. Equally, it might be naïve to think that the pedagogies designed for full-time school leavers will be suitable for part-time, busy working professionals attending short or long courses and at introductory or highly specialised and advanced levels.

The challenge of developing generic capabilities

Chan et al. (2017) identify the main themes that challenge teachers attempting to develop generic capabilities. They are: lack of support from institutions, weak curriculum frameworks and professional development;

operational challenges in conceptualizing, teaching and assessing generic capabilities; and teachers and students varying perceptions of generic capabilities. It seems that the antecedents predictive of effective acquisition of conceptual knowledge are not similarly predictive of socially and attitudinally mediated capabilities (Chan, 2012). There is also the issue of confidence. Most academics would feel comfortable teaching concepts fundamental to their discipline but would be less sure about teaching and assessing generic communication, critical thinking, problem solving and collaborative skills (Sloan & Porter, 2009) let alone the relatively untouched notions of, for example, proactivity or inventiveness (Bunney et al., 2015; Tymon & Batistic, 2016). Not only this, although the superiority of active over passive learning is established, it seems that the techniques used to enhance interactivity, social interaction and experience in lectures may have little impact suggesting teachers need a more in-depth understanding of active learning even when it is knowledge rather than generic capabilities being taught (Baeten et al., 2010). If the university curriculum is broadened to include generic capabilities and the outcome of university study includes the ability to apply these capabilities flexibly, creatively, and responsibly within a future that does not yet exist, there is ample evidence for revisiting pedagogies.

The challenge of teaching mature post-experience learners

Mature students at university are recognised to face a range of educational challenges (Butcher et al., 2020). Early literature focuses largely on mature students who missed out on university when they left school (Kasworm, 2018). These students were identified as being more likely to lack confidence, skills and recent memories of younger students (Fragoso et al., 2013). The current trend in catering for post-experience learners means that some

mature students are returning to university rather than enrolling for the first time (Bash, 2003). They may be highly successful and experienced learners. The evidence is of diversity, with a range in levels of confidence and learning skills (Young, 2000) and to the extent that learning and technologies have advanced, returning learners' knowledge of the workings of universities is likely to be outdated (Connell, 2011).

The diversity of mature learners presents teachers with both challenges and opportunities. It means teaching to the middle ground runs the risk of leaving a substantial proportion of learners behind and not exposing another portion of the class to anything new. On the other hand, mature learners may be more engaged, independent and autonomous (Richardson, 1994, 2013). They are probably used to living and working independently and juggling several priorities (Marandet & Wainwright, 2010) and may bring their enriching experience and observations to class (Trueman & Hartley, 1996).

Researchers find university social and support systems are targeted naturally at a younger audience (Butcher, 2020) and are sometimes not appreciated by mature learners as being appropriate for them meaning attendance and a sense of belonging suffers (Erb & Drysdale, 2017; Kahu et al., 2020; Lubbe et al., 2020). Finally, mature students are more likely to be studying part-time, off-campus, and while working (Lowe & Gayle, 2007; Osam et al., 2017). This means they may be less able to embrace co-curricula opportunities and find attending scheduled classes difficult (Lindqvist et al., 2020; Mckendry et al., 2014). If university programmes are to cater well for more mature and diverse learners there is, again, ample reason to revisit the ways educators facilitate learning.

Using theory to inform teaching practice

Learning being ubiquitous is unlikely to ever be explainable within a single theory, but there are theories that may shed light on how pedagogies can be enhanced. In the sections below, the insights offered by a range of theoretical perspectives are briefly explored. Consideration is made of experiential learning theory, thinking on the transfer of learning, adult learning theory or andragogy and transformational learning. The section begins by covering approaches to active and social learning which have been applied to the development of generic capabilities.

Learning theory and developing generic capabilities

Notions of active, social and constructivist learning which inform many teachers' efforts to develop knowledge and cognition have also been applied to the teaching of generic and applied skills and attitudes and the teaching of mature adults (Pitsoe & Maila, 2012; Rutt et al., 2013; Virtanen & Tynjälä, 2018). These approaches alert teachers to the importance of learners: setting goals (Miller, 2018); feeling confident in their ability to succeed (Bandura, 1997); being motivated to learn (Chan & Yeung, 2019); engaging in reflection and receiving feedback (Tannenbaum & Cerasoli, 2013), being self-aware and engaging in metacognitive thinking (Tynjälä et al., 2016) and in being skilled learners (Chan, 2010). Learning with others seems to be more successful than learning alone (Chi et al., 2008; Johnson & Johnson, 2002). Dialogue is a recognised vehicle for learning and when it comes to creative learning, invention and knowledge creation, knowledge can emerge as a collective created and understood by a collaborative group.

Authors point to the need to attend to the characteristics of learners, the learning process and the product of learning (Chan & Yeung, 2019; Kember et al., 2020). It seems that without a learner-centred approach to generic

capability development, little will be gained (Green et al., 2009) and that active learner-centric approaches differentially benefit marginalised learners (Theobald et al., 2020).

Within applied disciplines at university, active and experiential approaches to teaching have gained traction (Kolb & Kolb, 2017). Experiential learning theory proposes an active learning cycle where learners work with a problem or skill to develop an idea, test it out in practice, reflect on outcomes, modify their working theory and then make further attempts (Kolb et al., 2001). Through a cycle of continuous trial and reflection, learners come to improve their performance. Experiential approaches highlight the importance of active experimentation in developing mental models, of the importance of errors, reflection, feedback and practice. It situates the learner as autonomous, active and theory building. They shift attention from conceptual learning to learning behaviours and skill development and are relevant here in that they examine learning when no predetermined solutions exist but when capabilities must be applied in practice to form opinions, solutions or skills. They also shift attention from teaching content to facilitating learning by creating opportunities for action and reflection.

If HE is to prepare students for their futures learning should sustain beyond assessment and graduation. However, variously termed learning portability, adaptability, generalizability, the transfer of learning has not been extensively problematized (Jackson, 2016; Roumell, 2019). Within the world of human resource development and professional learning it is a constant theme and something of a vexed issue (Baldwin et al., 2017; Ford et al., 2018; Grossman & Salas, 2011). Researchers contrast near and far transfer (Laker & Powell, 2011; Perkins & Salomon, 1992). Near transfer, when the learning context and the application context are similar, is more likely than is far transfer, where the learning context and the application context are

dissimilar (Laker & Powell, 2011). Noting that, if universities are preparing students for an unknown future in either the sense that they do not know where individuals will go following graduation or in the sense that the environment is changing so rapidly that it is impossible to anticipate what graduates will face, it is not possible to create the situations necessary for near transfer

It seems that teachers should be anticipating far transfer and here there is little emphasis on learning passively about the ideas of others. Instead, there is an emphasis on developing robust conceptions or schema in such a way that they inform future performance. The thinking is that in far transfer, it is knowledge of the underlying structure of concepts and strategies independently of context that is predictive of future performance (Alexander & Murphy, 1999). However, even when a relevant underlying structure is known transfer still cannot be assumed (Billing, 2007). The learning transfer perspective is valuable in that it shifts attention from the initial development of a capability to its future application and growth.

Learning theory and teaching mature learners

Much research into learning derives from studies of children and could be of dubious relevance to traditional-age students, let alone more mature cohorts. The notion of andragogy, or adult learning, was developed specifically to explain the learning of adults (Knowles, 1975; Loeng, 2018). The theory alerts readers to aspects of pedagogy that mature learners respond to. Though critiqued (Merriam, 2008; Roessger et al., 2020), this work exposes emotional aspects of learning and the importance of learners' motivations. Again, the emphasis is on active and interactive approaches, positioning learners as self-determining and the educator as a facilitative. Andragogists suggest that mature learners are independent, experienced,

ready to learn and are attuned to useful learning that can be applied (Karge et al., 2011; Knowles, 1975). These purported learner characteristics lead writers to suggest that adult learners thrive when: given choice and opportunities to direct their learning, they are actively involved in addressing authentic issues, where personal experiences can be brought to bear, and, they are treated with respect by teachers who enable rather than instruct (Wuestewald, 2016). Such notions are consistent with much of the research described above but are perhaps less consistent with mainstream practice in university.

Also, with an origin in the teaching of adults are theories of transformational learning. Hoggan (2016) suggests that transformational learning results in shifts in identity, a change in epistemological certainties and shifts in capacity and behaviour. These approaches seem highly relevant to the ambitious calls for educational systems that transform students. Transformational learning theory originates with Mezirow (1978, 1991), who suggested individuals have habits of mind which determine how they perceive the world, how they think and what they do. Transformational learning, according to Mezirow, necessarily entails perspective transformation, that is, becoming aware of one's own and others' habits of mind or filters and considering how appropriate or suitable they are (Mezirow, 2000). Mezirow asserts that the transformational learning process begins with a growing disorienting dilemma involving the realization that old beliefs are inadequate, which may result in feelings of resistance and a failure to transform or to a process of reflection, analysis and change (Mälkki, 2010). Reflection is thought to be a necessary component, with Kreber (2004), suggesting that reflection should begin with the premise, that is, thinking about the why before reflecting on the what or how.

Research supports an approach that brings the whole person to the learning, regarding the learner as an affective, intuitive, thinking, physical, spiritual self. For educators, this means engaging with students on who they are and how they feel and what they think. Educators stress the importance of trust-based relationships within the learning environment (Taylor, 2007) with equality, openness and mutual goals supporting learners in transformation (Eisen, 2001). Adult learning theories and theories of transformational learning shift educators' attention towards the needs and interests of learners. Approaches to adult learning suggest ways to shape the learning experience and environment. Transformational approaches highlight the ways deep-seated attitudes and values shape outlook and behaviours and the ways they can be developed.

Implications for teaching practices

In the sections that follow, the implications of the perspectives described above for generic capability development and teaching diverse mature learners are examined. The notion of curriculum alignment was posited as good practice in university teaching. In the sections below, these notions are enhanced and refined in the light of the research perspectives outlined above to arrive at a modified framework attuned to research on generic capability development and the needs of mature learners.

From sharing learning outcomes to commitment to learning

Current practice alerts us to the importance of developing clear learning objectives or learning outcomes. Students need to know what they are learning and teachers need to express learning outcomes which are then taught, observed and assessed (Biggs & Tang, 2010). However, developing

generic capabilities is identified as challenging, effortful, time-consuming and anxiety-provoking (Rutt et al., 2013; Virtanen & Tynjälä, 2018). Learners need to be motivated to develop (Chan et al., 2017). Transformational learning theory points to the risks of individuals failing to learn, explaining that when learning challenges established beliefs and attitudes and assumptions, learners can become defensive and retreat into old safer beliefs. Learning, they say, induces emotions that can trigger avoidance (Mezirow, 1991). The transfer theorists and advocates of experiential learning explain that learning builds on errors and error correction, but students may be reluctant to risk performance ‘failures’ (Darabi et al., 2018; Martin et al., 2013). If our students are to transform and acquire generic and flexible capabilities, then informing them of learning outcomes and explaining why they are important is insufficient to ensure the levels of effort and resilience necessary.

This line of thinking has important implications for teaching. It seems that motivation, attention and learning-related attitudes and beliefs can, to some extent, be enhanced through teaching and curriculum design (Williams & Williams, 2011). Designing curricula that are relevant, important and achievable is likely to lift engagement and so learning (Baldwin et al., 2017; Blume et al., 2010; Zepeda et al., 2020). It seems that unless learners believe that learning is possible, that is, they have self-efficacy, they are unlikely to invest effort in acquiring new capabilities (Bandura, 1997). Learners interested in a topic who have time to think about it are more likely to engage deeply and discover meanings and underlying schema. Equally, learners who see a course as relevant to their goals and identities will invest effort in learning and apply self-regulatory skills to their studies. These conditions can be stimulated by teachers who role model enthusiasm, explain the relevance of what is to be learnt, tell illustrative stories, build learner confidence and ensure, not just buy-in to pre-established course learning outcomes but ownership of personal learning outcomes. Students arrive at class with a

diverse set of attitudes and beliefs that shape their motivation and attitudes (Taylor & House, 2010). By finding out who they are teaching, teachers can be in a better position to build individual's self-efficacy, offer material and choices that students find appealing, create a safe place where students feel they belong and provide needed support during what might be a difficult and emotional journey (Fung, 2019).

From arranging content to preparing for learning

Teachers devote a great deal of attention to preparing content and to making their slides, handouts and lectures effective vehicles for sharing ideas. The approaches to developing generic capabilities above however placed little emphasis on this core activity of delivering a common suite of materials to a cohort of learners.

While students may have shared a common school-based curriculum for discipline knowledge influences determining their generic capability development are likely to vary widely. The work of the cognitivists highlighted the need to connect new learning with existing understanding. Thus, it is likely that the teacher's role should encompass explorations of topics and efforts to bring in relevant knowledge, attitudes and feelings and skills before any thought of content delivery can be contemplated. In a similar vein, educational content that addresses relevant goals or aspirations is known to enhance learning, but to form goals students must appreciate the connections between themselves and the topic to be taught and between the topic to be taught and the discipline and society (Fung, 2019). Workers point to the need to engage in pre-reflection covering why a capability is being mastered, how is it relevant to and its utility within the wider world and their lives. This is important since the ability to anticipate the future application of learning is predictive of transfer (Brown et al., 2013). Thus, it is

likely that teaching an increasingly diverse class has implications for goal setting and big picture thinking and for bringing past conceptions to play.

Learning was identified in the introduction to this chapter as one of the most crucial generic capabilities. If students are to be independent, creative, critical and self-regulating then it seems that these skills and attitudes need to be taught and practised (Richardson, 2013). Exploring a course through self-assessments and planning, exercises that expose faulty thinking and discussions that reveal contrasting attitudes, interpretations or emotional reactions serve to connect students to their learning challenge. These teaching strategies set students up to develop and apply the metacognitive strategies and self-knowledge they need to manage progress. Teachers may also need to develop their students' reflective strategies for exploring their own and others' beliefs and attitudes. Planning learning and thereby gaining an appreciation of the journey is likely to allow learners to exercise their self-regulation and metacognition in learning. Thinking, reasoning, dialogue and discussion are themselves skilled activities that may need to be taught as generic capabilities in their own right and as vehicles for learning.

Embedded within these preparatory activities must also be teaching threshold concepts, common vocabularies and essential techniques. These are the tools of capabilities development and the bedrock of disciplines. Some authors have lamented that, as teachers shift towards more experiential ways of teaching, somehow knowledge has been devalued (Green, 2010). However, students cannot apply generic capabilities without knowledge of content, context and process which, again, need to be explicitly taught (O'Connor, 2020). In a diverse class, foundational knowledge may vary widely, presenting teachers with particular challenges. However, unless students have grasped the fundamentals, they will be unable to progress beyond a superficial appreciation of a topic.

Thus, the approaches outlined in this document suggest a shift in emphasis away from exposing students to knowledge and towards preparing students for capability development through activities that enable them to form connections backwards to current conceptions, sideways to related topics and issues and forward to future aspirations. This, it seems, should be combined with the active development of the skills needed to talk about, reflect on, and build on foundational shared knowledge, vocabularies, concepts and techniques. Without a phase that 'tools' learners up for learning, generic capability development is likely to leave many people behind.

From learning about to learning to do and be

If HE institutions are to build generic capabilities, teaching cannot stop when students have grasped concepts, know why they are important and can write about them. Teaching must take students much further, assisting them as they learn to apply concepts flexibly and socially to create new solutions and navigate conceptual, behavioural and societal uncertainties.

To develop cognitive and practical skills or personal perspectives, research points to the importance of learners having time to think, discuss, reflect, rehearse, practice and challenge. Cognitivists refer to cognitive load showing that too much challenge impairs learning, leaving learners skimming the surface and struggling to cope (Hmelo-Silver et al., 2007; Szulewski et al., 2020). The social constructionists point to zones of proximal development showing how the support and carefully pitched challenge can lift performance (Musa & Abdullah, 2020; Wood et al., 1976). Other workers talk of desirable and undesirable difficulties (Bjork & Bjork, 2020). Whatever the terminology, authors are identifying that learning generic capabilities takes time, thought and practice. Billing (2007) similarly emphasises the mental

effort required for developing and applying schema and points to the need to develop high-quality learning materials and to manage content carefully if students are to learn rather than muddling through.

Active construction, negotiation and challenge through dialogue are identified as vehicles for building generic attitudinal capabilities and for achieving transformations in perspectives. Working in groups is seen to offer a range of opportunities that foster learning including accessing and evaluating a range of viewpoints, creating knowledge, getting and giving feedback, unearthing generic principles, testing ideas. The implication for teaching is the need to carefully design group activities so that students purposefully and fruitfully engage in social learning, working on targeted capabilities in pedagogically informed ways.

The work on transfer provides extensive insight into how students can be taught so they develop capabilities for application across contexts. It appears that learning must include multiple opportunities for working on targeted capabilities in varied ways (Marton, 2014). Too much variety in the early stages of learning risks learners not transferring concepts from one example to another. Too little variation later on risks learners not developing generalizable schema (Pang et al., 2015). Training on parts and whole of concepts or practices, drawing attention to the underlying structures and managing cognitive load is predictive of transfer. Relatedly, Taylor et al. (2005) report that using positive and negative behavioral models is superior to using either one. Other workers suggest variation in the difficulty of problems aides transfer (Brown et al., 2015), as does distributed rather than blocked practice (Dunlosky et al., 2013). Van Merrienboer (2002) found that introducing interference information and necessitating different causal reasoning for problems enhanced transfer. Such opportunities allow learners to develop more accurate schema by developing an understanding of the

nuances, boundaries and breadth and applicability of ideas. These are techniques that HE could readily adopt.

The implications are that teachers need to design multiple opportunities for practice, analysis and reflection. Individual or group activities that foster the identification of assumptions, conventions, or principles and provide experiences in varied application are critical in facilitators of transfer (Perkins & Salomon, 1992).

From assessment to performing flexibly

It is safe to surmise that future performance in life and careers involves the integrated use of multiple capabilities in concert and within social contexts. Transformational learning theorists note that performance provides students opportunities to self-authenticate and to develop and demonstrate their perspectives. Social constructionists argue that learning is demonstrated by participation in a community and developing a professional identity. These observations have implications not just for course assessment design but for the coordination of assessments across courses and modules.

Appropriate assessment of generic capabilities is unlikely to be about students having the opportunity to provide a 'right' answer or demonstrate a broad knowledge; it is more likely to be about opportunities for students to demonstrate abilities to devise multiple potential solutions and navigate new possibilities. Assessments of generic capabilities are likely to be about exhibiting mastery of both process and product and about demonstrating an authentic and capable identity. Finally, learning within the transformational and constructionist perspectives is not about meeting the expectations of expert others but about personal growth.

Such assessment demands challenge much common practice and are difficult to implement (Badcock et al., 2010). There are doubts about whether some generic capabilities can be assessed (Adriaensen et al., 2019). Workers point to institutions', accrediting bodies', teachers' and students' established systems and intolerance of risk and innovation (Coates, 2016) and the need to carefully define what it is teachers seek to measure (Shavelson et al., 2018). Other workers, however, emphasise the assessment imperative, noting that students may not be motivated to learn unless generic competencies form part of their assessment regime (Chan & Yeung, 2019).

A shift in pedagogical mindset

In summary, the text above suggests a particular shift in mindset if teachers are to move from teaching conceptual knowledge to traditional-age students to developing generic capabilities and catering for more diverse mature learners. For some teachers, this shift might seem radical, and for others, a minority, it is what they already do.



Figure 1: From curriculum alignment to alignment in capability development

The framework described above was developed as part of a national project which included delivering an academic development programme. Recognizing that academics are themselves mature learners and that the project team wished to develop generic attitudes and practices rather than convey specific knowledge and skills, the framework was used to inform the design of the professional development initiative.

Using an educational design approach (Easterday et al., 2016), a national programme of workshops was designed and delivered. Each workshop began with an exercise that enthused, built confidence and conveyed the utility of our session. Attendees were prepared for learning through exercises by bringing existing knowledge to bear on current challenges. Foundational concepts were 'discovered' by attendees through carefully designed exercises. An infographic was shared so the attendees had a common vocabulary and did not rely too much on their memories when they collaborated on difficult tasks. Concepts were applied in groups and individually and necessary shifts in mindsets were discussed, challenged and explored. Collectively, the potential applications of the framework in multiple contexts were worked through and critiqued. Each session culminated in participants having demonstrated to themselves and others that they could use the framework to address an issue pertinent to their teaching. Further information and the workshop run-sheets and materials are available on www.futurereadygrads.ac.nz.

Evaluations and debriefs were used to continuously refine the sessions and monitor the efficacy of the framework. The workshops were rated as relevant to participants' current teaching (96%) and participants confirmed that they were leaving the workshops motivated to try out new techniques (98%) and

would recommend the workshops to others (96%). The evaluation data, being at ceiling, although very reassuring, were not particularly useful in informing refinement. However, the reflections of the delivery team and observers were valuable and helped in adjusting content, refining timing and simplifying the workshop structure. Analyses of participants' self-reviews and plans suggested the model was understood. It was also evident that there was a wide disparity in the detail and sophistication of self-reviews and plans amongst attendees. The project has successfully developed a low floor, high ceiling design, that is, diverse participants, irrespective of level of expertise, could access the concepts, use the materials and apply them to their practice. Participants reported that workshops were useful for academics who were already developing generic capabilities and had a good understanding of pedagogy (88%) and accessible for those with little expertise (92%). On a note of caution, the positive outcomes of the workshops have to be viewed in the light of the recruitment method. All participants were volunteers and presumably interested in developing future-ready generic capabilities and open to changing their practices.

Discussion

This chapter serves to outline two important trends that impact on what and who HE institutions seek to teach. It draws on diverse theoretical perspectives to identify shifts in teaching practice that are necessitated by these trends and which are of established efficacy. Finally, the chapter briefly describes an effort to support teachers wishing to respond to these changes.

In conducting the research, the complexity and relative inaccessibility of the literature was apparent. It would seem unrealistic to expect most scholars from disciplines other than education or psychology to recognise, access and synthesise the works of researchers who publish in a diverse range of

journals, originate from differing disciplines, employ different units of analysis and adopt a range of philosophical and methodological approaches. Such an effort would take the time academics need for teaching and research within their specialist domains. There is a need for accessible and theoretically informed guidance, which brings the trends in educational demands into practitioner focus and suggests how to adapt teaching in response. However, the availability of guidance is not enough. As the consideration of learning transfer above makes clear, simply accessing informed guidance and learning about teaching by no means ensures that practices will be or can be changed. Teachers need to learn in particular ways, have time, access support and engage in repeated practice before successfully flexing their teaching.

In shifting to develop generic capabilities, universities are equipping students for futures in an environment where many of the jobs of today will have been supplanted by new forms of work, one's governments and employers may be currently unaware of. Thus, graduates need a range of advanced capabilities in order to discover, cope and flexibly contribute to society and the world of work in ways that cannot as yet be specified. Such an outlook raises multiple questions. While the theme of this chapter has been how generic capabilities can be taught, there are additional implications for university teachers. The increasingly short shelf-life of knowledge may have implications for teachers' identity which is predicated its privileged possession and the ways in which it can be extended through research. They may feel that this trend undermines or threatens their place in society. The threat may extend to students and teachers questioning the value of university education. What have universities to offer if it is not their knowledge and research? This author would take issue with such a position, arguing that the kind of thinking and behaviours graduates need cannot be delivered by anyone other than HE institutions. A shift to developing generic capabilities is not a rejection of

specialist knowledge or a shift towards vocational education or even to a form of professional education, it is an endeavour to develop minds that are prepared and equipped for whatever the future brings, be they pandemics, technological developments or extreme societal and environmental challenges. Such an effort though difficult, is surely an honourable one that can be embraced by higher education. What is required now is for teachers and universities to embrace this trend, bring research talent to bear and provision delivery.

In responding to changes in the student body and to better serving older, and more experienced learners, the chapter highlighted the need for educational relevance and practical application. This might be challenging for academics who have devoted their lives to research within the confines of a university. In preparing students for their immediate futures in employment, some institutions have established teaching/practitioner roles where teachers engage in industry and education. Such a practice is not new and has been used successfully for decades in medical education amongst other disciplines. However, although teachers with industry experience may know what to teach for today, they may not appreciate what to teach for tomorrow. Additionally, they may know less about how to teach than experienced academics. An alternative to bringing industry experts into the classroom might be to send students out into the place of work. Again, learning during internships and work placements may not be relevant tomorrow even if it is useful in the short term. Additionally, our many mature students and even younger individuals may be extremely familiar with the world of work, having held down full time or part-time jobs. Perhaps if governments want to anticipate future needs, then the universities and the intellectual talent within may be the most promising place to garner informed insights.

If universities are the place where advanced and future focused generic intellectual, attitudinal and behavioural capabilities are best developed then what research and strategic shifts would inform such a response? As is clear from this chapter, research is needed into how to teach and assess generic capabilities at university level. Current work is scant and reviewers note the piecemeal nature of the literature and the variability in research standards. Surprisingly, at present HEIs do not know exactly what generic capabilities students have when they enrol, what they have when they leave as many are unassessed, how students gain whatever they gain and how well these developed generic capabilities serve them in their futures (Evans et al, 2018). The lack of research may well reflect a lack of problematization and so a lack of prioritization at university level. Such a lack is likely to result in limited strategic and practical interventions and professional development offered to teachers that overlooks trends and nuances relating to what and who is being taught and how any learning is to be utilised.

Conclusions

This chapter began by outlining trends in what and who universities aspire to teach. The need to develop generic capabilities in an increasingly diverse and mature student body was described. Reviewing established teaching practices and pedagogical knowledge, the chapter exposed current thinking and introduced perspectives from the allied fields of experiential learning, transformational learning, transfer of learning and andragogy. Drawing on these varied perspectives it was suggested that teaching practices and pedagogical mindsets could be attuned to emerging trends. The chapter identified a need for an enhanced focus on motivating students and explicitly preparing them for learning. The need for carefully designed opportunities for varied practice, reflection and challenge were identified as leading to the development of generic capabilities. Such opportunities, it was argued,

should be crafted to expose students to the kind of uncertainties and need for knowledge creation that our rapidly evolving environment is likely to demand.

In accepting a role in preparing students for their futures universities are undertaking not only to teach students the capabilities they need but also to do so that students maintain or grow these capabilities and deploy them appropriately in their future and widely disparate lives. The framework developed and disseminated is designed to support teachers as they shift their mindsets from disciplinary knowledge and traditional-age students to generic capabilities development in a more mature and diverse student body. It encourages teachers to deliver aligned curricula that: enthuse learners, enable them to prepare by exploring their learning journey and then to expand and exhibit their capabilities.

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