Questions of outcomes: Generic skills and attributes and the transfer of learning

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Pressure from government and industry has seen Australian and New Zealand universities join an international trend of universities demonstrating their contribution to the knowledge economy and to their nation’s international competitiveness through projects such as the articulation of graduate attributes and generic skills outcomes. Critics identify the weak theoretical basis, poor conceptualisation of the desired attributes and skills, and the lack of empirical research justifying these projects. The criticisms are sufficient to undermine the claims implicit in institutional graduate profiles of generic skills and attributes. This paper makes links between generic skills and attributes for graduates and research on transfer of learning. In addition to discussing the literature, the paper provides insights from a study of a group of business students. The findings discussed in this paper related to one dimension of a wider study of student perceptions of transfer of learning of generic skills from their degree studies to their everyday lives. The data reported here is drawn from interviews with 30 students. The findings give support to possibility of the transfer of learning of generic skills, and also to calls to reconceptualise transfer of learning as preparation for future learning (PFL).

Keywords: transfer of learning, generic skills, graduate attributes

Background

In recent years Australian and New Zealand universities, like their counterparts in the United Kingdom, have been pressured to demonstrate their contribution to the knowledge economy, and to their nation’s ability to compete in the global economy (Hager, Holland & Beckett, 2002). One response is for universities to highlight the ‘employability’ of their graduates through articulating the skills and attributes that graduates will possess. Institutional projects identify the generic skills or attributes of their graduates, and implement procedures for mapping existing and new courses to them.

Such projects link to notions of ‘transferable’ skills/competencies, and in particular to those variously described as ‘essential’, ‘core’, ‘generic’, ‘key’, and ‘transferable’, such as problem solving, teamwork, communication, critical thinking, and lifelong learning or learning to learn (Hager et al., 2002; Misko, 1995). Concepts of skills, competences, and attributes, along with their various descriptors (for instance, ‘essential’) are contested, as is the question as to whether or not they transfer from the learning context to new and different contexts (Barrie, 2004; Jones, 2009).

Critics have argued that generic skills and graduate attributes are not underpinned by a sound theoretical or conceptual framework, nor is there solid evidence to give confidence that graduates are equipped with the set of graduate attributes described for their institution (Barrie, 2004). Research in higher education on generic and graduate attributes tends to either
focus on stakeholders, particularly employers’ and professional bodies’ perceptions of desirable attributes (Curtis & McKenzie, 2001) or to focus on the perceptions and/or teaching practices of academics (Jones, 2009). There is little research on students’ perceptions and experiences of the development and use of such attributes.

This paper sets aside the problematic nature of generic skills and graduate attributes, and instead draws on the transfer of learning literature and data from a naturalistic study of transfer of learning to contribute to the debate. It should be noted that generic skills and attributes were not the primary focus of the research but emerged as an area of interest during the study. The links between research and theorisation of transfer of learning with generic skills and attributes are emergent rather than established. They have potential to enrich the debates and operationalisation of graduate skills and attributes projects. McDonald (2008) similarly linked the study of transfer to such projects.

**Echoes back in time**

Thorndike’s century old theory of identical elements has been a persistent influence on understanding transfer (1913/1963, 1923). The history of transfer of learning research suggests that for much of the twentieth century, transfer of learning was regarded as difficult to achieve other than in circumstances where the learning context and task were identical, or at least similar to that of the transfer task and context (Detterman, 1991; Ford, & Weissbein, 1997; Leberman, McDonald & Doyle, 2006; Misko, 1995). Transfer has often been assumed, but has been notoriously difficult to prove. The theory of identical elements contributed to the discrediting of the doctrine of formal discipline, which had at its core the belief that study disciplined the mind, and that mental improvement from the study of subjects regarded as challenging such as Latin and Mathematics would be generalised to other domains. The present day confidence in the transferability of generic skills and attributes has echoes of the earlier, taken for granted, confidence in the educative properties of formal study. Prior to Thorndike’s work, it was commonly believed that capabilities in reasoning, observation and discrimination developed in one domain would transfer to other domains. For instance, Latin was seen as a demanding subject and it was believed to be more likely to develop a student’s mental faculties than subjects such as geography and art. Thorndike called this confidence into question, asking:

- Does the study of Latin or mathematics improve one’s general reasoning powers?
- Does laboratory work in science train the power of observation for all sorts of facts?
- Does matching coloured sticks educate the senses for all sorts of discriminations? (Thorndike, 1913/1963).

Thorndike (1923) examined thousands of results in other academic subjects for both students who had taken Latin and those who had not. His findings were that Latin did not lead to superior academic performance. He went on to conduct other studies and consolidate evidence for his theory of identical elements. What was ‘learned’ was what was applied, a view of ‘transfer’ that Bransford and Schwartz (1999) described as ‘direct application’. Direct application embraced simple and near transfer, but also embraced more complex forms of transfer, provided that the learner had been prepared for the transfer task and context. Direct application could occur along a continuum from semi-automatic responses to more mindful responses. The underpinning concepts of the theory of identical elements and direct application, while not explicit, are embedded in the bulwarks of transfer of training literature (e.g. Baldwin & Ford, 1988; Ford & Weissbein, 1997).
The vexed question of transfer to new and different settings has intrigued researchers seeking to capture the elusive evidence (Detterman, 1991). The Gestalts made progress in theorising general, in contrast to specific, transfer through emphasising the learner’s understanding of underlying principles (Leberman et al., 2006). However, there was little empirical evidence to support this, and much to refute (Detterman, 1993).

Bransford and Schwartz (1999) argued the need to rethink how transfer is measured, from measuring direct application in controlled conditions which they termed a ‘Sequestered Problem-solving Situation’ (SPS), to that of re-conceptualising transfer as ‘Preparation for Future Learning’ (PFL), where the desirable measures are those that focus on understanding learners’ abilities to learn new information and to make connections with their prior experience. “One determinant of future learning is the questions people ask about a topic, because these questions shape their learning goals” (Bransford & Schwartz, 1999, p. 69). In a PFL approach to transfer, the emphasis is on structuring the new context, for example, identifying people and material resources, thinking through what questions will assist in understanding the new context and determining how to draw on earlier learning experiences.

Experimental conditions have not been conducive to either producing evidence or understanding of general or complex transfer (Leberman, McDonald, & Doyle, 2006). Bransford & Schwartz (1999) called for a shift from an approach researching transfer under controlled conditions to one that assessed a learner’s ability to learn in real situations such as in organisations. Accompanying this was the recognition that the context in which people learn skills and knowledge, and how this learning is used, determines the likelihood of transfer. Content and skills acquired for writing academic papers and undertaking examinations are unlikely to transfer to new and different social and employment contexts. However learning activities that anticipate future use are likely to facilitate transfer.

Dispositions and dispositional knowledge

While not core concepts in the transfer literature, dispositions and dispositional knowledge have received some attention (for example, Billett, 1994; Fogarty et al., 1992; Haskell, 2001). The interest in dispositions in the current paper arises from two concepts of dispositions, The first is dispositions as attitudes or habits to be nurtured within a learning environment and capable of being transferred to new situations. For instance, the ‘spirit of transfer’ and attitudes such as confidence or the willingness to seek help are part of transferring learning from one situation to another. Haskell (2001) described the spirit of transfer as a disposition towards deep learning. His description of the spirit of transfer resonates with Bransford and Schwartz’s (1999) view of transfer as Preparation for Future Learning. The second is dispositional knowledge, which Billet describes as knowledge pertaining to appropriate values, attitudes and awareness of what is required in a given situation. Billett (1994) reports that workers’ descriptions of skilled work include “dispositional knowledge”. The workers in Billett’s study spoke of being punctual, cooperative, assertive, courteous, and having the work ethic (being prepared for and willing to work). Haskell (2001) argues that “significant and general transfer is primarily the consequence of personality and other dispositional characteristics such as attitude, motivation, and feeling” (p. 116).

Study of the learning and transfer experiences of business students

The current paper draws on one component of a study of the transfer of learning experiences of distance students from a business degree, a program that deliberately focuses on current
and future employment contexts. Here the focus is students’ perceptions of transfer of generic skills and attributes from the course to other contexts.

The wider study included a review of the literature, a postal survey with both quantitative and qualitative items, interviews with teaching staff, and interviews with students. Semi-structured interviews were held with 30 students, a voluntary subset of 92 respondents to a postal survey. The students were enrolled in one or more of five courses selected on the grounds that they were established and that they would not be the subject of any other research or in-depth evaluation during the semester of the study. The interviews were taped and transcribed. The interview schedule drew on a tentative framework and emerging understandings arising from the literature review and from the survey findings. The interviews were designed to explore transfer of learning from the perspective of a learner, and to develop an understanding of the intersection between learning and transfer.

Eighteen women and 12 men were interviewed. Most were part-time students, with only four being full-time students for all or part of the degree. At the time of the interview, seven were completing their final paper(s) for the degree, or had completed their study and their current paper was required for professional registration.

When interviewed, 60% of the participants were employed full time, 10% part time, and 13% were self-employed. Typically they worked in small- and medium-sized organisations in accounting, administration, management, or human resource roles. Accounting was the most common major (n=15), followed by Management (n=8).

This paper focuses on responses elicited by the following statement and open-ended question, developed to explore generic skills with the participants:

Currently there is a lot of interest in what are sometimes called essential, core, or generic skills. These are skills like critical thinking, problem-solving, communication, working with others, technology, and learning how to learn. To what extent do you think you have developed these skills through doing the degree?

Findings

The participants were asked to describe an instance when they had tried to adapt or apply what they had learned to a real work situation. All provided an example of direct application of learning that was domain specific. Such examples were consistent with the literature on identical or similar elements. Those in accounting roles were able to directly apply much of what they learned from accounting courses to their work. For example, one said:

Tax, financial accounting and auditing – all those sorts of things are totally relevant to my work – to my job ... I apply tax stuff that I’ve learned on the course all the time.

Participants were asked about the extent to which they had developed generic skills through doing the degree. Their responses tended to be in relation to specific courses and these comments encompassed both domain specific and generic skills. Typically the participant would isolate one or two of the skills listed to comment on:
I think that the accountancy subjects are probably almost course-specific ... So, particular subject matter in the accountancy courses, NO, but the general skills – such as conceptual thinking, problem-solving, I think that cuts across all the subjects (R; emphasis in original).

When asked about how the course influenced how they work, participants’ responses tended to be very general, such as:

A lot. There’s no way I could do that if I hadn’t done the degree. I would be stumbling through not doing very well at all ... If I want to know something, or if I want to learn something I know how to go about doing it. Simple things like – if I am going to the library for example – I know how to get the information I want rather than fumbling around maybe getting this and maybe getting that – it’s more – I guess when I do something it is in a more direct, focused way (S).

**Problem-solving**

Problem-solving is a commonly cited generic skill, it resonates with PFL approaches to transfer and is one which the degree seeks to foster. As one student sees it:

It’s just like an idea – sometimes the opportunity for the idea to be applied – so then it’s, “OK, what has to happen to make it a reality?” I try to do a lot of this myself if I can and I talk to other people about it. For example, at work at the moment we have an accounting software package but it is lacking a few bells and whistles. But at the same time our needs are unique. We can’t necessarily just take another program because it wouldn’t solve the problem. And so it’s a matter of going through and researching and investigating (K).

By the time B was interviewed she had graduated from the program. In her view, she entered the degree with well-developed generic skills, such as communication and technology skills, and these did not further develop through her studies. However, she thought her critical thinking, problem-solving skills and project-management skills had developed through the degree courses:

And I think it’s just knowing you’ve actually got to go through the right processes, the right channels and – sort of be open to other people’s viewpoints in the problem and in solving the problem ... the area that I’m talking about is more predominant in the Maori culture/Treaty of Waitangi sense, for me here at the moment, because we’re having to be far more responsive. And we deal with a lot of Maori clients, and we’ve got a couple of Maori colleagues who are forcing us to face the issues and who are questioning every decision we make. They’re saying, “Now, where have you included the Treaty of Waitangi conditions in this?”, and we’ve been really forced to face those problem-solving areas (B).

The courses focused on developing the skills, knowledge and understanding required for working in the business world. Not all participants had business contexts to which to transfer their learning. By choice and necessity, many applied and adapted what they had learned to non-business contexts. L, a beneficiary, describes how she applies her learning to her family life, using planning, goal-setting, problem-solving, and research skills to develop a strategic
plan for her family. L identifies educational options for a son interested in the sciences and considerations for another child:

And with my daughter, she’s got a disability and she goes to secondary school next year. So we’ve had to look at secondary school ... how they handle that sort of problem. Do they handle that sort of problem? Class sizes, things like that (L).

The participants also described learning or developing dispositions or personal attributes through their study such as confidence and open-mindedness.

**Confidence**

The interviews suggest that confidence played a significant role in the purposive transfer of learning. Participants were not questioned about confidence, and yet nearly all discussed it. Typically participants reported they had grown in self-confidence through their studies, and that confidence enhanced the likelihood of adapting learning to new situations. Confidence appeared to work as an enabler for the participant and provided a springboard for the transfer of other skills and knowledge. It was a catalyst for future learning, in other words, for PFL. Confidence arose from assurance about how to go about dealing with new situations or problems. This assurance had developed through repeated practice in refining problems, utilising resources to solve those problems, and in trying things out. These students used everyday resources such as colleagues, friends and family, reference and textbooks. Student A describes confidence as a personal attribute developed following a growth in knowledge and understanding. Having confidence means A is more likely to ask questions, a component of the PFL approach, but it also predicated on being more knowledgeable about a specific area.

I think just giving me more confidence in myself, understanding how people think, a lot of it, the communication skills. How the company runs its business – why we do things like we do ... I’m not afraid to go and ask ... I think, just more confident in either what they’re discussing, or – yes – in your own abilities, that you can do something. So it’s a self-esteem thing (A).

One of the participants, C, described her growth in confidence, and how this altered her relationship with clients. Her confidence grew partially from interviewing clients for her coursework, and partially because a recent course assisted her to utilise and integrate previous learning from other courses:

What it’s done is brought everything that I’ve learned so far together, and given me the confidence to use it ... the paper has brought it all together and I do feel like I can use it. Or the bits that I’ve forgotten, that I’ll delve a bit deeper and I know where to look now for information that I need (C).

Note that C referred to having the confidence to use what she has learned. She goes on to describe her changed demeanour with clients and how she deals with them rather than referring them on. How she describes learning and transfer is in keeping with PFL. So what made the difference? Where did the newly found confidence and the changed demeanour come from? C identified two significant factors: first, that the course helped her make sense of disjointed learning from different courses by bringing it together; and second, that the course forced her to actually interview clients:
I think that particular course has, as I said, brought it all together so that ... The other part of it is because I was having to interview clients throughout the course, for assignments. In other words, bite the bullet – that’s quite nerve-racking – it’s just that little bit of practice (C).

**Becoming more open minded**

A common theme was the attribution of the development of a more open disposition, and way of thinking, to the degree learning. One of those who had completed the degree, D, put it in these words: “I think it has made me much more open in my thinking … not making assumptions.” In a similar vein, R said:

I’m more accepting, more willing to hear other people, not as hard-nosed as I used to be. More – I feel that I am able to listen and try and think through what other people are doing, looking at things more critically now than when I first started the degree. I sort of always had this sort of line in the sand, where everything was like YES-NO ... Things as are not as clear-cut as that ... I do think things through more critically, more patiently probably than I used to (R).

Another participant, V, acknowledged that although he had always been open to new ideas he has become even more open since embarking on his studies:

I’m open to the way that ideas are presented ... The way people present ideas, the way people are, sometimes it’s very easy to immediately form a like or a dislike, or think they know what they’re talking about or they don’t know what they’re talking about ... I reserve my judgement for a long period of time, if you like. I listen to what they have to say before I start letting my judgement of them cloud my judgement of the ideas that they’re trying to put forward (V).

Participants generally reported developing a questioning stance, and that they were open not just to the views of others but also to change. One commented on learning not to just accept the status quo:

You are always going to want to keep improving – so I am always on the lookout for new and different ways of doing things. What I have learned from these courses is if you can think of different – think through these sort of things, think through problems – trying different processes (R).

**Habits: A way of entrenching generic skills and dispositions**

Typically when the learning involved generic skills, such as self-management skills, the repeated application or transfer of such learning resulted in the participant(s) acquiring habits. Such skills may be nurtured during one course, but over time they transfer to “performance” in other courses, and to work in general:

One of the most influential papers that I did, that affected how I work was one of the first papers I did, and it had a lot of time management skills in it ... it had a huge effect on how I worked and being able to plan my day. [...] And luckily, yes, it was one of the first courses I did, and I found it very beneficial, in planning out my day, my week (V).
Another participant, K, described how she developed her skills in finding information, analysis, and report writing through the degree. What had assisted her was the practice in doing the work, writing reports and the “critiquing” or feedback from tutors:

I think – I am more thorough in my analysis ... Certainly in all the prep work for the long-term financial strategy – that side of it – analysing our local environment – completing that sort of degree of research. That’s where I think that sort of study course gives you the strength rather than the actual coursework a lot of time. It’s about how you go about finding information [...] Also, because you are forever churning out reports [...] A structured report – clearly analysed that I can – leading back to conclusions. Just the overall format [...] when you are in a course – you are forever being critiqued in that field (K).

Concluding comments

The transfer of learning literature, with its evidence of the difficulties in transferring learning to new and different situations, has the potential to provide insights into the debates on generic graduate attributes and skills. This paper has explored the transfer of learning experiences of a group of business students, and considered these in the context of the debate about the development of generic attributes as espoused graduate outcomes. While it has become commonplace for universities to be incorporating generic attributes into their graduate profiles, there has been little research on how these attributes develop over a degree, and similarly there has been little research on how graduates utilise these attributes after graduation.

Reference was made to the research evidence that general and complex transfer is rare and difficult to achieve, and that what evidence there is for transfer relates to specific transfer within a common domain. The experiences of the participants in this study stand in marked contrast to that literature. Importantly, the accounts of the participants were in keeping with Bransford and Schwartz’s reconceptualisation of transfer as PFL (1999). PFL offers much to knowledge-rich situations such as universities and workplaces. A PFL approach gives recognition to the context and uses of initial learning, and how these impact on future use of learning.

The study reported here was a naturalistic study utilising self-reports to understand the authentic experience of learners in both the learning and transfer contexts. No attempt was made to control the learning or the transfer tasks. It should be emphasised that each of the participants brought to their studies a unique combination of prior learning and experiences, skills, attitudes and dispositions. The nature of distance learning, and the ability to use workplace situations for course projects presented participants with opportunities to acquire and develop skills and knowledge. The findings suggest that a vocationally orientated business degree is likely to foster transfer of learning from coursework to everyday work situations.

In order to deepen knowledge and understanding about generic skills and attributes it would be worthwhile exploring the transfer of learning experiences of students in a range of fields including the physical sciences, arts, education, and the social sciences.
References


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