

A conceptual analysis of transfer of learning in Health Sciences Education

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Abstract

All educators in vocational training aim to promote transfer of learning in their students. However, studies on transfer of learning or theory-practice gap in the health professions are criticized for being anecdotal and not viewed as a systemic process. The analysis was done according to Walker and Avant's (2005) eight steps. Databases, internet search engines, and scholarly articles from the 21st century were used to identify relevant sources. Transfer of learning occurs when inherent characteristics of students prompt them to demonstrate the competence (knowledge, skills, attitude, and behavior) they gained through well designed student-centered educational interventions in real (clinical) contexts with positive outcomes for the students, clients, and the service institution. Working towards transfer of learning, or bridging the theory-practice gap, without a common understanding of what it entails jeopardises future research, educational practice, and service delivery. The findings of this study imply that selection criteria should be applied in the selection of appropriate candidates for rendering health care. Education in health sciences should be designed to promote transfer of learning and service settings should be conducive for transfer of learning by lending personal, professional and systems support. Achieving these will ensure good practice development as well as promote and uphold efficient quality of care.

Keywords: Transfer, integration, learning, training, theory-practice gap.

How to cite this article:

Botma, Y., Van Rensburg, G.H., Heyns, T. & Coetzee, I.M. (2013). A concept analysis: Transfer of learning in Health Sciences Education. *African Journal for Physical, Health Education, Recreation and Dance*, September (Supplement 1), 32-43.

Introduction

Learning is described as both a process and an outcome that brings about an evident and continuing change in knowledge or behaviour. Real indicators of actual learning are only observable when performance resembles the learned tasks or actions and its transfer to new tasks and circumstances. Transfer thus refers to the ability to apply what has been learned to new tasks and situations.

The unifying concept in health education and indeed the goal of all educators is to enable students to transfer their learning from the classroom to the practice setting (Lauder, Sharkey & Booth, 2004). However, Landers (2000) argues that

the dichotomy between the theoretical input taught in the classroom and what is the actual practice or experience encountered in clinical practice setting remains a challenge. In fact, a study conducted by Maben, Latter and Clark (2006) confirms that there was no correlation between ‘saying’ (theory) and ‘doing’ (practice) in 84% of the observed cases. Concurring with these findings, Gallagher (2004) further points out that despite the fact that failure to transfer learning is principally undesired, it remains unchallenged. Scherer and Scherer (2007) also re-iterate that the failure to transfer learning, or the theory-practice gap, is so firmly established that it will always exist because of the different types of knowledge and learning that are involved.

Hamm (as cited in Gallagher, 2004: 267) warns that “we should be cautious, though, against letting certain metaphors such as theory-practice gap become mindless slogans and thought stoppers because of orthodoxy and dogmatism that builds around them”. Also, to Scherer and Scherer (2007) it seems nurse educators focus their attention on the environmental conditions in which students learn. Contrary to Scherer and Scherer’s view, Donovan and Darcy (2011) claim that practitioner literature focuses on outcomes and not on context. Burke and Hutchins (2008) note that reports on transfer of learning are limited, dated, often anecdotal in nature and lack practicality.

Despite the challenges identified, transfer of learning is a vital core competency required by students and should be facilitated by all educators (Lauder *et al.*, 2004). This highlights the need to develop a clear, comprehensive and common uptake (concept analysis) of transfer of learning to gain an in-depth understanding of the concept and related aspects which will help to enhance the validity of future educational research. We therefore present a theoretical analysis of the concept of transfer of learning and related concepts as it has appeared in scholarly articles since the beginning of the 21st century. This study reviews a comprehensive systemic knowledge of transfer of learning through identifying the structural components and its accompanying aspects, constructing a theoretical definition, developing a model case and additional cases, identifying empirical indicators, and constructing an operational definition.

This concept analysis was done in accordance with the eight steps as described by Walker and Avant (2005). It must be borne in mind that although the following eight steps are listed in a linear sequence, it is an iterative process:

- Select a concept.
- Determine the aims or purposes of analysis.
- Identify the uses of the concept that you can discover.
- Determine the defining attributes.
- Identify a model case.
- Identify borderline, related, contrary, invented, and illegitimate cases.

- Identify antecedents and consequences.
- Define empirical referents.

The use of the eight steps framework provided an operational definition that reflects its theoretical basis and by its very nature has construct validity (Walker & Avant, 2005).

Methodology

The literature search was not limited to nursing literature but included dictionaries as well as journal abstracts and articles. The latest editions of English language dictionaries, medical and legal dictionaries, were used to define ‘transfer’ and ‘learning’. Table 1 highlights the inclusion and exclusion criteria as well as the databases that were accessed. A search for relevant literature from the beginning of 2000 to 2012 was conducted by a skilled librarian and 100 titles and abstracts were scanned for relevance. Subsequently, the selected sources were retrieved and reviewed in full. Reference lists of already retrieved articles were read in order to locate possible relevant material. Google Scholar was used in addition to the strategies already mentioned.

Table 1: Literature sources

Selection criteria		Databases and no of initial articles
Inclusion	Exclusion	
Since beginning of 2000	Transfer of learning in patients	Academic Search Complete (30)
Peer reviewed	Application of high or middle order theories in practice	Africa-Wide Information (2)
Language English or Afrikaans		Business Source Complete (15)
Availability from library		CAB Abstracts (3)
		CINAHL with Full Text (25)
		Eric (2)
		MEDLINE with Full Text (6)
		Political Science Complete (1)
		PsycARTICLES (1)
		PsycINFO (12)
		SocINDEX with Full Text (1)
		SPORTDiscus with Full Text (2)
Results (27 out of 100 articles)		
Type of design and number of articles used		
Editorial (1)	Qualitative (7)	
Mixed methods (2)	Quantitative (14)	
Overview (3)		

Results

Walker and Avant (2005) recommend that the chosen concept be explored across disciplines; yet they also recognise that it may not be possible to describe it in depth. The concept of “transfer of learning” is not commonly used in nursing but appears frequently in human resource development. The authors therefore split

the concept into two root words, namely “transfer” and “learning”. The uses of each root word are firstly described.

Identify uses of the concept

Transfer

The Latin word *transfere* meaning “bear across” or “carry over” was first used in the late 14th century. ‘Transfer’ can thus be broken down into the prefix *trans-* (meaning “across”) and *ferre* (meaning “to carry”).

According to the Collins English Dictionary (2012) the word ‘transfer’ means:

- To move from one place to another.
- To change between vehicles.
- To legally make over property to another.
- To imprint something from one surface to another.
- To leave an institution and enrol at another.
- To change through metaphorical extension.

In the American Heritage Stedman’s Medical Dictionary (Stedman, 2004) ‘transfer’ is defined as “a condition in which learning in one situation influenced learning in another situation. It may be positive, as when learning one’s behaviour facilitates the learning of something else, or negative, as when one habit interferes with the acquisition of a later one”. As a medical definition ‘transfer’ is defined as the carryover or generalisation of learned responses from one type of situation to another (Merriam-Webster’s Dictionary, 2003).

Learning

The word ‘learning’ derives from the Middle English (before 900) word *lernen* which means “to learn”, “to read” or “to ponder” (Collins English Dictionary, 2012). Accordingly, the word ‘learning’ is used to indicate:

- Knowledge gained by systematic study, instructing, scholarship, or experience.
- Permanent change in behaviour due to experience, training or practice.
- Learn, ascertain, detect, discover, which implies that the student is active.

Braband (2008) states the actions of a learner reflect what has been learned and that knowledge is actively constructed. Through knowledge gained, behaviour is changed.

Transfer of learning

Bourdieu (as cited in Jervis & Jervis, 2005) stated that practice requires more theoretical competence than simply understanding theory. Furthermore, theory must be mastered in such a way that the knowledge is applied in practice and does not just remain a meta-discourse about practice. Table 2 presents the definitions of transfer of learning.

Table 2: Definitions of transfer of learning

Authors	Definition (bold – same as Table 1)
Lauder <i>et al.</i> , 2004: 39	“... is the ability to access and utilise ones intellectual resources in situations where these may be needed.”
Goldman & Schmalz, 2005: 5	“Transfer of learning/training is defined as the effective and continuous application, by trainees to their jobs, of the knowledge and skills gained in training.”
Holton, Bates, Bookter & Yamkovenko, 2007: 389	“... is the degree to which trainees apply to their jobs the knowledge, skills, behaviours, and attitudes they gained in training as well as the maintenance of the learned material over a period of time on the job.”
Hutchins, Burke & Berthelsen, 2010: 599	“... is applying knowledge and skills from training to the work setting.”
Davies, Wong & Laschinger, 2011: 635	“...is conceptualised as a cognitive and interpersonal process that guides how knowledge acquired in one situation applies in another situation.”

Defining attributes

Defining attributes should be limited to the fewest numbers that nevertheless still differentiate the concept from surrounding concepts. The concept should immediately come to mind when the defining characteristics are read (Walker & Avant, 2005). The tests for necessity and sufficiency as described by Moody (1990) were done. Colleagues were challenged to give examples of the concept but which did not include a particular attribute, in other words, the necessity of the attributes were tested. If it was possible to think of a contrary case that included all the attributes, a critical identifying concept would have been omitted; meaning that the criteria for sufficiency were not met.

Through this process it became clear that transfer of learning involves:

- Aptitude and career goals of students.
- Active engagement by students during the learning process and service delivery.
- Demonstration of knowledge, skills, behaviors, and attitudes (competence) in another context.

Surrogate terms and related concepts

Terms used to describe transfer of learning are theory-practice integration, theory-practice correlation, and metaphors that indicate closure or a narrowing of the gap between theory and practice; in other words, bridging the theory-practice gap. Related concepts have most, but not all, of the defining characteristics. Examples of related concepts are knowledge translation, transfer of knowledge, and transfer of teaching. Transfer of knowledge and knowledge translation refer to the implementation of research findings in practice of which evidence-based practice is an example. It differs from transfer of learning in the sense that the focus is on the research findings and not on the theory and skills acquired during structured learning. The transfer of teaching implies that the acquisition of information occurs through educator centered techniques (passive learning) versus student-centered techniques.

Model case

A third year undergraduate nursing student was gaining hands-on experience by working in the neurosurgical ward as part of her work placement. The student was caring for a patient presenting with raised intracranial pressure due to a traumatic brain injury following a motor vehicle accident. Her theoretical background included the successful completion of anatomy, physiology, pharmacology and an introductory module to family-centered care. The current nursing module included conditions associated with the neurovascular system. She actively participated in case studies related to raised intracranial pressure that were discussed during the theoretical contact sessions. The clinical facilitator accompanied the student in the neurosurgical ward and asked her to demonstrate the assessment of the patient's relevant critical signs and symptoms. The student was able to utilise the equipment correctly, focused on the relevant signs and symptoms, and was able to relate the findings to the pathophysiology of raised intracranial pressure. Following a discussion on relevant patient care, the student focused mainly on the patient and the clinical facilitator re-enforced family-centered care. Reflecting on the case the student indicated that she felt confident as she was able to successfully integrate theory and practice. The student acknowledged that one should incorporate the family or significant other in all patient care. She further indicated that she would consider working in this environment in the future.

Identify antecedents and consequences

According to Walker and Avant (2005), antecedents are those events or incidents that should precede the occurrence of the concept. Figure 1 shows the antecedents for and consequences of transfer of learning. Literature within the nursing domain focuses on the environmental conditions in which students learn

with very little attention paid to aspects related to the student's person (Scherer & Scherer, 2007). Various factors such as ability, personality, motivation, prior experience, efficacy beliefs, openness to experience, conscientiousness and extraversion should be considered because they all influence the degree to which theory is applied in practice (Holton *et al.*, 2007; Scully, 2011). In addition to these factors, Nikandrou, Brinia and Bereri (2009) found that career goals play an important role in transfer of learning.

Teaching design factors such as relevance of content, active participation, vivid and demonstrative examples, consideration for the students' working experience and views, as well as the learning atmosphere should be considered (Lauder *et al.*, 2004; Gegenfurtner *et al.*, 2009). Levin (2010) supports a constructivist approach to designing teaching and learning because the learner takes control of new information and through the process of internalisation transforms and creates new knowledge. However, the outcome, educational strategies, and assessment strategies should be aligned (Goldman & Schmalz, 2005). Maginnis and Croxon (2010) emphasise the parity between what is taught and what students experience in the workplace. Hatlevik (2012) strongly recommends that students must understand the coherence between theory and practice, that they must develop reflective skills, and that the theoretical components should be strengthened. Some authors argue that educators must seek strategies to promote dialogue between theory and practice and not focus singularly on the integration of theory and practice (Scherer & Scherer, 2007; Moss, Grealish & Lake, 2010).

Even if learning occurs in the classroom the work environment may either support or inhibit the application of theory in practice (Ruona, Leimbach, Holton III & Bates, 2002; Currie, Tolson & Booth, 2007; Liu & Smith, 2011). Maben *et al.* (2006) describe the covert blocking of transfer of learning as organizational and professional sabotage. Organizational ethos, pressure and constraints of the system influence individuals and their approach to practice. The sabotaging may be mitigated by role models who provide effective support and supervision, facilitate integration of theory in practice, and act as agents of socialization (Maben *et al.*, 2006; Warne & McAndrew, 2008; Scully, 2011). The educator, supervisors, students and peers are identified as key role players who may promote transfer of learning (Hutchins *et al.*, 2010; Davies *et al.*, 2011). Unreasonably high caseloads inhibit transfer of learning (Uppal, Oades, Crowe & Deane, 2010). In addition to support by people within the workplace the right equipment should be available to render optimal service.

Davies *et al.* (2011) describe the significant relationship between nursing environments that support professional nursing practice and patient outcomes. Transfer of learning contributes to professional efficacy and enhances quality of care. In fact, the staff experience work satisfaction which leads to long-term employment retention (Lawler, Curry, Donnenwirth, Mangrich & Times, 2012). Furthermore, transfer increases confidence levels leading to performance

improvement and consequently better organizational output and return on investment (Gegenfurtner *et al.*, 2009; Bhatti & Kaur, 2010). Besides directly transferring what they have learned, indirect transfer of aspects such as professionalism, punctuality, consistency, and teamwork occur (Nikandrou *et al.*, 2009).

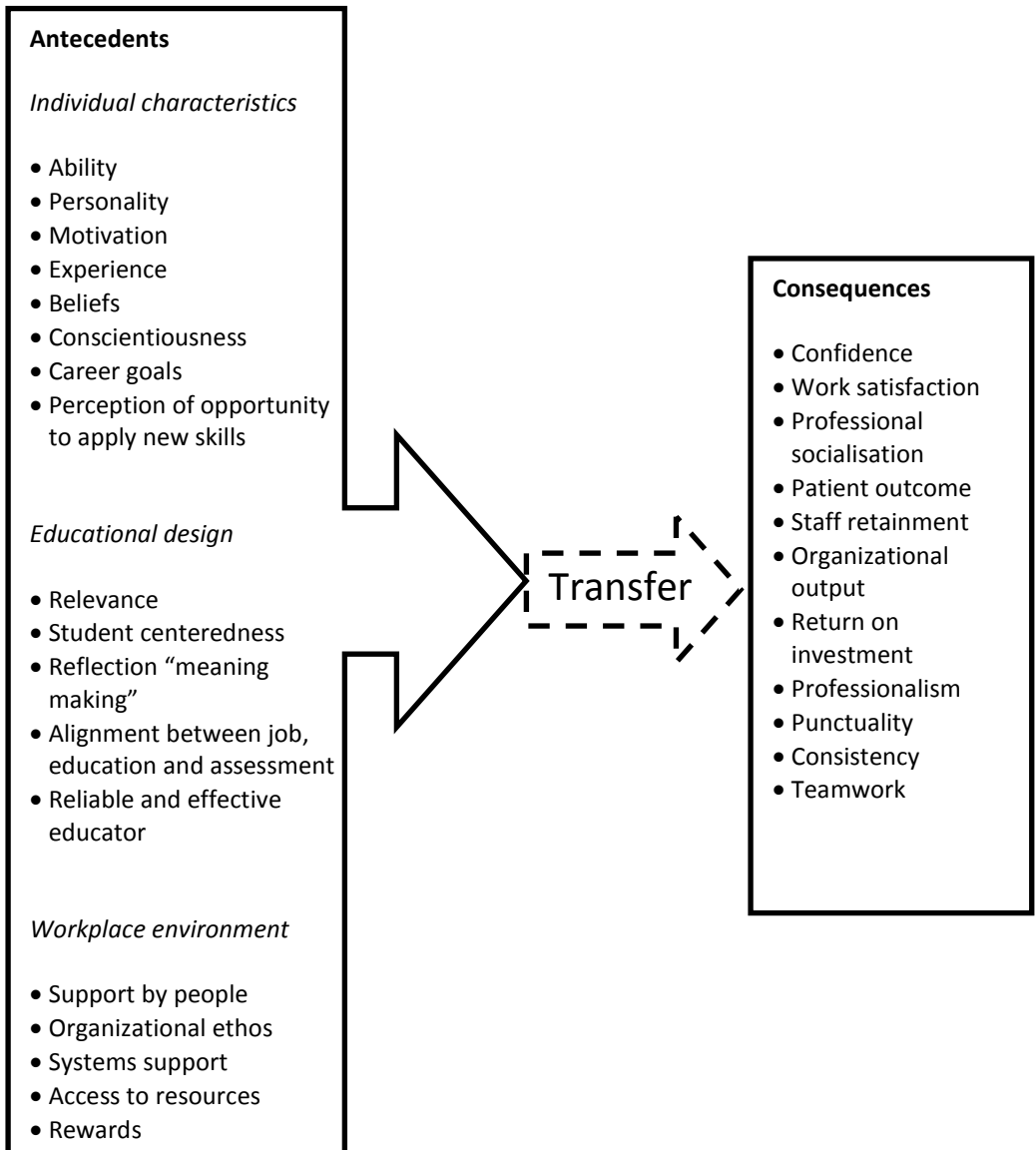


Figure 1: Antecedents and consequences of transfer of learning

Defining empirical referents

The final step in a concept analysis is to identify empirical referents for the defining attributes (Walker & Avant, 2005). Holton *et al.* (2007) developed the Learning Transfer System Inventory (TLSI) that measures 16 transfer climate dimensions. They claim that the questionnaire measures factors in the person, training, and organization which influence transfer of learning. The General Training Climate Scale (GTCS) measures managerial support, job support, and organisational support (Donovan & Darcy, 2011). The 68-item Transfer Potential Questionnaire (TPQ) consists of 11 factors that assess individual, organizational, and training design factors (Lawler, 2012). Training evaluation may be done with the Human Service Training Effectiveness Postcard (HSTEP) that aims to incorporate the four major levels of Kirkpatrick's model into a single assessment index (Lawler *et al.*, 2012). These instruments have all been tested for construct validity.

Discussion

After due consideration of the defining attributes and other aspects explained in this article the authors conclusively define transfer of learning as "...when students with the right aptitude and career goals are enabled through student centred teaching and learning strategies to demonstrate their competence in the workplace over an extended period of time." This definition can be applied to the model case. The student was motivated to become a professional nurse and demonstrated a positive aptitude as she enrolled for the programme and successfully completed all the modules. She actively engaged in classroom activities as well as in active patient care. She demonstrated competence and based her patient care on sound clinical judgement in an enabling environment. The enabling environment included appropriate functional equipment, a supportive clinical facilitator and the organizational ethos of striving towards excellence in patient care. All these factors which incorporate the **antecedents** as delineated in Figure 1, enabled the transfer of learning in the clinical setting. Consequently, the student had a positive learning experience which further motivated her to continue as a professional nurse in neurosurgical care.

Educating students for transfer of learning requires innovative strategies that will stimulate and develop critical thinking skills.

Conclusion

This concept analysis shows that transfer of learning requires an integration of theoretical and practical knowledge, and skills. The successful completion of a variety of modules enables students to render holistic care by furnishing them with skills and knowledge that would address all needs of a patient within

family-centered care. It highlights the importance of competence as an outcome of the learning process. By supporting students to understand the correlation between theory and practice, reflective and critical thinking skills are developed which in turn strengthen the understanding of theoretical knowledge without it merely remaining a meta-discourse about practice. Students develop confidence in applying what they have learned to the clinical practice. Coherence between theoretical and practical components of what is taught has therefore a substantial impact on students' practical skills. Therefore the 'application or carrying over competence' becomes imperative for transfer of learning.

Analysing the concept of *transfer of learning* is an attempt to operationalize the effectiveness of continuous application and integration of knowledge within the teaching-learning environment of the nursing profession. Emphasising the effective transfer of learning will thus contribute to professional efficacy and, ultimately improve the quality of care.

Acknowledgements

The authors declare that there has been no conflict of interest. This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors. The authors acknowledge the funding provided by the School of Nursing, University of the Free State that made collaboration among the authors possible.

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