

# Emerging Trends of Research on Transfer of Learning

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*The terms 'transfer of learning' and 'transfer of training' are usually found mutually exclusive in training and development literature. Transfer is a key concept in adult learning theories because most education and training aspires to transfer. The end goals of training and education are not achieved unless transfer occurs. Emerging trends of development in the area of research on transfer of learning from the training environment to the workplace environment have been drawn together and summarised in this review to introduce this important area of human performance support.*

*Transfer of training is defined as the extent of retention and application of the knowledge, skills and attitudes from the training environment to the workplace environment. In other words, transfer of training is the degree to which trainees effectively apply the learning from a training context to the job.*

*The increased attention to the transfer problem in recent years has resulted in the production and use of significant literature and research outcomes from the contexts of modern workplaces that prevail in the industrialised nations of western culture. However, the amount of actual research on strategies to facilitate transfer of formal employee training is still limited.*

*In congruence with the definition and context of transfer of training in government and non-government organisations, this review focused on related literature and previous studies geared towards the process and strategies of facilitating the application of knowledge, skills, and attitudes from training to job. Existing literature and previous research relating to factors influencing transfer of training were found subsequently classified in three main clusters (a) trainee characteristics, (b) training design and delivery characteristics, and (c) organisational or workplace environment characteristics.*

Transfer of training, transfer of learning, adult education, performance improvement, training effectiveness, transfer partnership, workplace

## INTRODUCTION TO THE ISSUE

Transfer of learning from training is the effective and continuing application, by trainees to their jobs, of the knowledge and skills gained in training (both on and off the job). Transfer may encompass both maintenance of behaviour, and its generalisation to new applications (Broad and Newstrom, 1992). This definition of transfer of training by Broad and Newstrom was found consistent with the purpose of this review.

Transfer of training generally relates to adult education, vocational or professional training or workplace education, and is defined as the degree to which trainees effectively apply knowledge,

skills, and attitudes gained in a training context to the job environment (Newstrom, 1984; Wexley and Latham, 1991).

Questions relating to transfer of learning from the training to the job generally include: What causes training success or failure? What characterises transfer of training? Is transfer of training different from transfer of learning? What are the factors that facilitate or inhibit the transfer process? Why do most training programs and courses fail to transfer? Who is responsible for maximising transfer of training to the job? What are the possible strategies effective for facilitating transfer of training in the context of formal training of employees?

Transfer takes place when our existing knowledge, abilities and skills affect the learning or performance of new skills or tasks. In other words, when learning in one context with one set of materials impacts on performance in another context or with different but related set of materials, then transfer of training has occurred.

In addition to effective instructional systems design, participative training delivery, and the trainees' motivation to try out new things; it is necessary "for transfer to have occurred, learned behaviour must be generalised to the job context and maintained over a period of time on the job" (Baldwin and Ford, 1988, p.64).

Researchers and authors have defined transfer of training as the effect of having learned one activity on an individual's execution of other activities. Activity refers to the application of knowledge, skills, and attitudes from the 'source' to the 'target' context. Outcome of transfer can be studied from three different angles, (a) the similarity of the source and the target situations (identical elements hypothesis), (b) the significance of general strategies for transfer, and (c) support of transfer by situated cognition (Tuijnman, 1996).

From these definitions, it becomes evident that behavioural observation is a form of behaviour assessment that entails careful observation of a person's exhibited behaviour in a particular situation. Methods for assessing changed work behaviours and the specific situations in which they occur reflect the extent of transfer of training. Such behaviour is a process that is influenced by ongoing learning, cognition and feeling; and is surfaced in terms of reactions to the perceived need for changed behaviour.

Changed work-behaviours as a result of training interventions indicate transfer. Transfer of training refers to the extent to which trainees apply the knowledge, skills, and attitudes gained from the training back to the workplace (Mandl et al. 1991, cited in Tuijnman, 1996).

Transfer of training (or lack of it) is a complex process and depends upon the intent or motivation of the learner (trainee characteristics), the workplace environment including supervisory support (organisational environment and culture), and the instructional design as well as delivery features (job relevance) of the training program. Trainees' commitment to use the training, perceived ability to apply, and opportunity to use the new knowledge and skills back at the workplace are all linked with the notion of 'transfer of training'.

Human resource development (HRD) is a critical factor for organisational success. Training is the most common form of HRD that helps organisations to enhance workforce effectiveness and productivity by means of specified learning geared towards performance improvement. However, most training outcomes fail to produce full and sustained transfer of new knowledge, skills, and attitudes to the job.

Transfer is a key concept in adult learning theories because most education and training aspires to transfer. The end goals of training and education are not achieved unless transfer occurs. Transfer does not just happen. It is a process that requires implementation of carefully planned strategies to

facilitate positive transfer. It is equally important to minimise the effects of factors that are recognised as barriers or as causes of barriers to transfer.

Transfer partnership requires a balanced distribution of concern for and adequate involvement of trainees, their managers or supervisors, and trainers at all stages of the process – before, during, and after the training program or course (Broad and Newstrom, 1992). Effectiveness of any training program or a course includes evaluation of the extent of transfer of the training outcome at different levels – reaction, learning, application on the job, and organisational results (Kirkpatrick, 1996).

The terms ‘transfer of learning’ and ‘transfer of training’ are usually found mutually exclusive in training and development literature. However, transfer of learning relates to generating knowledge and information through education, which refers to the capacity to generalise and learn by analogy. Active learning is an important criterion for transfer to occur. Active learning requires the learner to be involved in the learning process by making conscious effort to learn. The psychological processes of logical thinking and reasoning facilitate the process of recognising and solving problems in new contexts by applying the solution or analogy from the previously acquired knowledge and skill (Misko, 1999). This process is also called ‘case based reasoning’ in transfer of learning.

Performance improvement requires a supportive organisational environment-which consists of factors such as organisational climate, supervisor support, and co-worker support for transfer of training to occur and sustain in the form of useful knowledge, skills, and attitudes as measures of improved performance on the job (Rothwell and Sredl, 1992).

Transfer of training has also been classified in terms of ‘near transfer’ and ‘far transfer’. Near transfer of skills and knowledge refers to the replication of the previously acquired knowledge and skills in all identical situations based on Thorndike’s theory of ‘identical elements’. Thorndike published the results of his studies in 1901 and maintained that “training in one task was not likely to lead to improvement in the performance of another task unless there was a clear similarity between them”. This theory of transfer is based on the belief that previous learning facilitates new learning only to the extent that the new learning task contains elements identical to those in the previous task (Perkins and Salomon, 1996).

According to Misko (1995), near transfer of training often involves tasks that are procedural in nature. These tasks include steps of operation in sequence, and the sequence of steps is repeated every time the task is performed. This type of procedural training is relatively easy to learn and transfer rate of learning is usually high, but the learner is unlikely to adapt such skills and knowledge when confronted with new environment and changed conditions.

Far transfer of training refers to learning new skills or performing new tasks in situations that differ significantly from the situations of original learning. Training conditions, which focus on far transfer, require learners to adapt the acquired knowledge and skills as guidelines to perform or learn in changed situations or new environments (Misko, 1995). Thus far transfer goes beyond repetitive application of learned behaviour and involves cognition and analogy to adapt to new challenges. This kind of transformation of learning involves analogy and cognition. Transfer of learning from this type of training is difficult but more important than instances of near transfer from the perspectives of higher order learning and retention.

The dilemma is that when one acquires a near-transfer skill it seems to be at the expense of far-transfer generalisability of that skill. Indeed, most training in industrial setting focuses more on procedural and near transfer than on declarative and far transfer, though the importance of far transfer is acknowledged by almost all those responsible for training (Perkins and Salomon, in Tuijnman, 1996).

Existing definitions and conceptual frame-works illustrated by literature on transfer of learning or transfer of training do not differ fundamentally. Transfer of learning derives more from a knowledge base and generic competencies, whereas transfer of training is focused on specific competencies (perhaps with some generic extensions) in terms of explicit or implicit use of that knowledge, skills, and attitudes in the world of work. However, both these terms relate to learning, be it with children or adults, and originate from the domain of pedagogic psychology.

Putting together the themes of definitions and types of transfer, it becomes obvious that individuals have a tendency to change their behaviour as a result of their perception and subsequently as guided by extrinsic or intrinsic motivation. It also illustrates the fact that the evolution of research on transfer of training draws from theories of motivation, cognition, educational psychology, and learning to learn. Limited studies on transfer of training have focused on conditions, characteristics, nature of transfer, and related contextual phenomenon. Transfer of training can serve as a powerful measure of training effectiveness. However, the process of maximising transfer of training, by means of integrated strategies as characterised by those conditions and mechanisms, including the influence of organisational climate and supervisory behaviours, has not received the attention it deserves in the training literature.

### **EMERGING TRENDS OF RESEARCH**

Early research and experiments on transfer were influenced by the work of behaviourist psychologists (Thorndike, Pavlov, Skinner), and emphasised 'whether transfer did occur'. Contemporary research in transfer of training is generally aimed at determining 'why' transfer occurs- that is, discovering the exact variables that influence transfer (Ellis, 1965).

The debate between 'training' and 'education' still remained. Those distinctions were comparable with the differences between knowledge and skill, or competence and performance, or knowing and doing. Illustrating the difference between education and training one contemporary author argued that- for most people, demonstrating a causal relationship between education and performance problematic; On the other hand, there is a strong argument that there is indeed a causal relationship between training and performance (Georges, 1996). However, for the purpose of this review, the terms 'transfer of learning' and 'transfer of training' do not make any fundamental distinction.

According to Ellis (1965), the focus of the debate should be on issues and problems of transfer rather than on the terms. Transfer of learning problems have been categorised into four major areas:

- a) those that deal with research methodology and the more technical problems associated with the measurement of transfer,
- b) the specification of the major variables influencing transfer of learning and the way in which these variables influence transfer,
- c) the development of adequate conceptual models or theoretical structures for organising our knowledge about transfer, and
- d) the development of an educational technology that is capable of translating and applying our knowledge of transfer to the great variety of educational and training problems that exist.

Research studies of the past century in the field of education and training, including those in different areas of psychology, motivation, pedagogy, and adult learning, have greatly influenced the research tradition in transfer of training. Research traditions in the field of training and development, starting from the classic work of Thorndike in 1901 and coming through the century

to the year 2004, have made remarkable movements with encouraging achievements. The early behaviourists, including Skinner and Watson, developed and maintained 'the principle of identical elements' which illustrated that 'training in one task was not likely to lead to improvement in the performance of another task unless there was a clear similarity between them'. Based on this learning potential of adults, commercial and vocational curricula were first introduced in to schools in an effort to make school experience more similar to real work situations.

In 1910, Taylor introduced and popularised the 'principles of scientific management' (Taylor, 1911), which emphasised the effect of external stimuli on behaviour control of human beings. The whole thrust of behaviourism on training and development maintained that the environment controlled behaviour, with no input from the forces within the individual. This principle, in fact, disregarded any effect of intrinsic motivations, feelings, emotions or perceptions.

After 1930, the emergence of other theories of motivation on learning, training, and human performance (including the work of psychologists such as Piaget, Bruner, Maslow, Rogers, Herzberg, Lewin, and Vroom) challenged the behaviourists' mechanical account of human learning and performance.

As a result of this shift from the behaviourists' concern with 'observables' to the cognitivists' concern with the 'role of motivation and internal forces', individuals were identified as 'people who not only reflect but also evaluate and alter their own thinking' (Bandura, in Bigge and Shermis, 1992).

Transfer of training, as the resulting application of knowledge, skills and attitudes in contexts other than that of the original learning, started to be viewed as a result of change in individual's perception. This changing focus of research on transfer of training marked the introduction of 'humanism' recognising the influence of motivational and cognitive domains in many aspects of human learning, including behaviour modification, training, and performance.

In a more recent and comprehensive account of literature on training evaluation, Foxon (1989) presented a comparative description from the relevant Australian, British and American journals published during the years 1970 to 1986. Foxon identified critical themes of those publications in the journals and presented a summary. This summary is valuable for other researchers and could be helpful for the profession of training and development as it seeks to understand trends in the area of training evaluation. Transfer of training resembles characteristics of Level 3, on the job application, evaluation of training (Kirkpatrick, 1996).

Presenting a short description of those seventeen years of work on the evaluation of training and development programs, along with an annotated bibliography of evaluation literature, Foxon (1989) has given an account of trends and insights. Since 'transfer of training' relates closely with the evaluation of training in terms of application (or non-application) on the job, it is worthwhile to take note of some of the important observations and conclusions that have been derived from the study.

- a) The literature contains a confusing array of concepts, terminologies, techniques and models. Eighty per cent of the literature reviewed does not define or clarify the term evaluation.
- b) Many imply their definition when they outline the perceived purpose.
- c) Nearly one quarter of the articles neither present nor imply any specific purpose for evaluating training.
- d) The literature is cluttered with suggested evaluation techniques ranging from simple questionnaires to complex statistical procedures. Often the one technique is presented under several different names.

- e) More than 80 per cent of these articles lacked evidence of background research and many failed to offer practical applications.
- f) Kirkpatrick's four-stage model of evaluation is the one most widely known and used.
- g) There is an emerging awareness of the need to perform longitudinal evaluation.
- h) The review confirms that 'evaluation is regarded by most practitioners as desirable in principle, difficult in practice'.

It is not absolutely clear whether Foxon's (1989) findings and recommendations are validated by hard research or they are simply her impressions and observations from reading the literature. However, the analytical review and concluding remarks indicate an inadequacy of objective research in the field of training and development in general, and in the area of transfer of training in particular.

According to Baldwin and Ford (1988), work environment characteristics of training transfer consist of (a) supportive organisational climate, (b) pre-course discussion with boss (supervisor or manager), (c) opportunity to use knowledge and skills, and (d) post-training goal setting and feedback.

Hence, transfer of training is a process of facilitating efforts to make use of the learned behaviours leading to better results in the post-training context. Training cannot be isolated from the system it supports. In fact the organisational context matters (Quinones, et al. 1995; Rouillier and Goldstein, 1991) and matters in a significant way. To understand transfer of training, it is important to study how training providers and organisations analyse, design, develop, implement and evaluate training.

According to Tannenbaum and Yukl (1992), previous research and scientific literature available on transfer of training with focus on the influence of organisational context is limited. Giving an account of training research literature of the period from 1987 to 1991, Tannenbaum and Yukl (1992) clustered the work of training researchers' literature and previous studies into the following main categories.

- a) Training needs analysis: including organisational analysis, task analysis and person analysis.
- b) Design of training: including instructional foundations, performance improvement approaches, mental models, metacognition and learning skills.
- c) Training delivery methods: including simulations, games, high-technology methods and behaviour modelling.
- d) Trainee characteristics: including trainee abilities, skills, motivation, attitudes, expectations, self-efficacy and aptitude treatment interactions.
- e) Pre-training environment: including environmental cues, signals, trainee input and choice, and pre-training preparations.
- f) Post-training environment: including transfer environment, and post-training activities.
- g) Training evaluation: including evaluation design and analysis, and criterion issues.
- h) Training for specific populations: including management development training, needs assessment for managers, leadership training programs, mentoring, and team training.

In most cases, transfer of training could be the only criterion for the effectiveness of any training program. Level 3 and (and partly Level 4) evaluation of training reflect the extent of transfer success. The change of behaviour (Level 3) is the extent to which a change in behaviour has

occurred because the trainees attended the training program. These evaluations are performed formally, through testing, or informally through observation, to determine if a behaviour change has occurred by answering the question, 'Do people use their newly acquired skills, knowledge, or attitude on the job?' Level 4 is the highest possible level and it measures the training effectiveness by answering the question, 'What impact has the training achieved?' In other words, 'Is it working and yielding value for the organisation?' (Kirkpatrick, 1996).

If the knowledge, skills, and attitudes from a training environment are carried over to the workplace environment with a relatively smooth transition, then the training is rated as effective and successful. This is in fact the philosophy and meaning of transfer of training. However, this fact has been overshadowed by mix of work in other aspects of organisational development. Most of the researchers have looked upon transfer as a product rather than as a process.

Although the extent of transfer of training becomes apparent in the post-training environment, the process of transfer consists of strategies, which require attention, before, during, and after the training, for the training outcome to be effectively transferable. Every strategy needs to be recognised and enhanced as part of the process of transfer of training. A careful analysis of the organisational environment will identify potential transfer facilitators and inhibitors (Foxon, 1993). On the basis of this analysis, trainees can be provided with ways to deal with the inhibitors, even if the organisational environment cannot be modified to promote transfer (Tannenbaum and Yukl, 1992).

Broad and Newstrom (1992) identified three major role-players – Trainee(s), Managers and supervisors of the trainee(s), and Trainer(s) – in the process of transfer of training. Across three phases of time before, during, and after the training, they classified a number of actions and strategies that influence transfer of training. This triangular partnership includes initiations or actions by each partner at each level for effective transfer of training to occur. Subsequently, some researchers applied this 'role-time model' and transfer partnership in the field of transfer of learning in workplace literacy programs (Taylor, 2000), and found that the role-time model was a useful classification system to:

- a) understand the different dimensions of a transfer partnership,
- b) document the transfer of learning strategies, and
- c) identify the barriers influencing the transfer of learning.

It was validated from the study that the extent of transfer of knowledge and skills from training to workplace depends upon the development of effective partnership among these three main actors.

The concept of partnership remains crucial in the whole process of transfer management strategies: before, during, and after any organisational training program or course (Taylor, 2000). Salas and Cannon-Bowers (2001), in yet another comprehensive and recent account of development in training research of the past decade, recommended for future researchers, as they contended "research aimed at studying how organisations implement training and why even the best-designed training systems can fail is encouraged" (Salas and Cannon-Bowers 2001, p.491). That recommendation is consistent with the purpose of this study.

## SUMMARY

Existing literature and previous training research relating to transfer of training can broadly be grouped into three categories in terms of coverage and areas of interest. Accordingly, this review classified related literature and previous research on transfer of training into three main categories, that of, trainee characteristics, training design and delivery characteristics, and work-environment and supervisory support characteristics, detailed below.

- 1) **Organisational or workplace related factors:** which includes post-training transfer environment, supervisory behaviours, opportunity to practice, perceived level of supervisor support, elements of organisational climate and culture such as work-place environment - including incentives, feedback and reinforcement of desired behaviours.
- 2) **Training design and delivery related factors:** which includes theories and practices of human resource development (HRD) such as training needs analysis, organisational analysis, job/task relevance, design of training, methods and mode of training delivery, technology and instructional techniques.
- 3) **Trainee related factors:** which includes factors such as trainee's self-efficacy, ability and skills, goal-orientation, motivation, job attitudes, personality, interests, expectations, commitments, and readiness to learn and apply.

Training literature and previous studies on transfer of training provide evidence to support the claim that training works when it is theoretically driven, focused on required competencies, designed to provide trainees with realistic opportunities to practice and to receive feedback (Salas, and Cannon-Bowers, 2001). There has been an increasing trend of research and thinking in the area of transfer of training.

However, some important questions about transfer of training have not yet been critically examined to explain success or failure of training as interventions or strategies for human resource development. Some of these questions are, for example: What are the critical factors that facilitate or inhibit the process of transfer of knowledge, skills and attitudes from training to workplace? Which of those factors in the organisational environment can be manipulated to maximise transfer? What are the supervisory behaviours or patterns of behaviour that can facilitate the generalisation and maintenance of knowledge and skills from a training context to the work-environment? What could be the nature of partnership in transfer management in different contexts?

In spite of a century of continued effort and an encouraging trend of development in training research – starting from the early work of Thorndike and Woodworth (1901) and arriving at the present day human performance technology and self-directed learning, some of the critical aspects of transfer of training, including the influence of workplace and supervisor roles, have not yet been researched thoroughly. Researchers, who contributed to our knowledge and insight in this area of training and development, have often researched effects of factors in isolation, and in fact, in contexts of modern workplaces of the western culture. Transfer of training, as a domain of concern for human performance, was not researched before in the context of developing countries.

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