Käthe Schneider *Editor*

Transfer of Learning in Organizations

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Preface

Sector experts predict, in the latest trend studies, that the development of further training measures that are conducive to the transfer of learning will be a high priority for training management for companies in the future.[1] That learning in further training ought to be sustainable and transferable is a requirement that is not new and that has engaged the practice of further vocational training for many decades now. The consistent topicality of the subject matter is all the more illustrative of the challenge that is associated with the design of learning environments that are conducive to the transfer of learning in organizations.

The volume *Transfer of* Learning *in Organizations* covers the issue of ensuring and measuring the transfer of learning in organizations. The book is a collection of studies by academic researchers from the areas of Africa, Europe, and North America concerning this topic.

The motivation for this edition results from the need for research and development concerning learning concepts that are conducive to the transfer of learning. The volume has the function of shedding light on the actual situation in further training practice concerning the transfer of learning and of developing this further by means of research-based concepts and models. The bringing together of perspectives from educational science, psychology, and business administration should do justice to the complexity of the issue of guaranteeing and evaluating the transfer of learning in organizations.

At this point, it is of special importance for me to thank those, who have contributed to the publication of this book. First and foremost, I would like to thank the authors for their contribution to this volume. Likewise, I wish to warmly thank Nadine Börner, who is studying for a Bachelor's degree in Psychology, for editorial support. Finally, I especially wish to thank Springer Science+Business Media for including the volume in its publishing program and for its excellent cooperation.

Käthe Schneider

[1] Diesner, I., & Seufert, S. (2013). *Trendstudie 2012—Herausforderungen für das Bildungsmanagement in Unternehmen*. St. Gallen: scil, Universität St. Gallen.

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Contributors

Karima Bouzguenda is an assistant professor in management at the School of Economics and Management, University of Sfax, Tunisia. She is currently the head of department of management. She holds BBA and MBA degrees from Radford University, USA. Her main research interests: Glass ceiling and women's advancement to top management, HRM evolution in emergent countries, integration HRM and TQM. She is a member of CRANET (Cranfield Network on global human resource management) since 2005.

Anna Ciraso-Calí is a pedagogue and researcher at the Universidad Autónoma de Barcelona, Spain. She collaborated in researches on evaluation of learning transfer, VET, and teacher training. In 2012 and 2013, she is member of an inter-university R+D+I project on participatory evaluation of community actions. In the professional field, she has experience as professional educator in non-formal education.

Paul Donovan is Director of Teaching and Learning at the School of Business, National University of Ireland, Maynooth, Ireland. His research interests include the topics of learning transfer, workplace learning and technology in learning. He has published several journal articles and is the co-author or editor of 7 books.

Franco Fraccaroli is professor of work and organizational psychology at Trento University, Italy. His research interests include aging and late career in organizations, work stress and psychosocial risks in the workplace, and transfer of training. He is a fellow of SIOP (Society for Industrial and Organizational Psychology) and a member of several editorial boards for international scientific journals. He served as President of European Association of Work and Organizational Psychology.

Maurizio Gentile is tenured professor of Instructional Psychology at Salesian University Institute of Venice, IUSVE, Italy. He teaches Distance and multimedia learning at Libera Università Maria Ss. Assunta, LUMSA, in Rome, Italy. He is the Editor in chief of the international journal "Ricercazione". He works, as private consultant, with IPRASE and the Department of Knowledge in the Province of Trento, Italy.

Constantine Kontoghiorghes is a faculty member at the Cyprus University of Technology, Cyprus. He has published extensively in numerous journals and twice received the "Cutting Edge Research" award from the Academy of Human Resource Development in the United States. His research interests include training transfer, talent management, strategic HRM, and the design of high performance organizations.

Doo Hun H. Lim is an Associate Professor of Adult and Higher Education at the University of Oklahoma, USA. His research interests have been in the areas of performance improvement systems and technology, cross-cultural research on work ethic issues, and learning and motivation issues within virtual learning environments.

Brent Nowell is a Training Manager and Consultant to oil and natural gas companies. His research interests have been in the area of training transfer: transfer of distance learning, transfer of training as a result of instructional design, transfer of training within learning organizations, and the transfer process.

Maria Pältz is a research scientist of Adult Education, University of Jena, Germany. Her main research activities cover the fields of personality development, especially for managers, coaching, and the transfer of learning in companies. She is writing her dissertation about volitional competences in leadership and implications for coaching practice.

Dr. Pilar Pineda-Herrero, professor of Economics of Education and Training in Organizations at the Universidad Autónoma de Barcelona, Spain. Her research areas are evaluation of training results, transfer, efficacy of VET, and education and work. She has directed several researches on evaluation of training policies and learning transfer. She is the author of five books and more than 20 papers on education and work.

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Jean-François Roussel After working as a management consultant, Jean-François Roussel is now a professor responsible for a Master's program in training management at Sherbrooke University in Canada. In addition to continuing its activities in the workplace, Mr. Roussel collaborates with various universities in

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Käthe Schneider is Professor of Adult Education, University of Jena, Germany. Her research interests cover the topics of promoting adult self-development, 'Bildung' of adults, leadership development, learning transfer and workplace learning. She has published several journal articles and book chapters and is the co-author or editor of 8 books.

Helmut Stauche has been a scientific co-worker at the Chair of Adult Education, University of Jena, Germany, until his retirement. His working focus was the empirical part of research in various projects as well as new Internet-based teaching and learning methods at the university. He has published several articles and book chapters.

Chapter 1
Introduction

Käthe Schneider

This volume offers new insights about learning transfer in organizations and their implications for both research and practice.

Learning transfer, as a phenomenon of workplace learning and of further training in organizations, includes the application of what was learned to the work context. Learners are both individuals and organizational units or organizations. In this volume, a complex perspective is adopted with regard to the phenomenon of learning transfer in organizations and the explaining factors.

The study of the actual state in practice provides the foundation for improvements in the design and evaluation of further training measures that are conducive to the transfer of learning. The further development of theoretical models of learning transfer in further vocational training has the function of gaining a deeper understanding of the transfer of learning. Concepts that are conducive for ensuring the transfer of learning in organizations and that are based on improved explanatory models are developed. Further training measures are evaluated on different levels on the basis of relevant criteria. This volume pursues these four functions.

In accordance with the transfer process model developed by Baldwin and Ford (1988), the factors that affect learning transfer (*learner*, *training* and *working environment*) are portrayed in this volume. In this context, training also includes accompanying measures in addition to the range of further training programs in the narrower sense.

In the article, *Transfer of Learning in German Companies*, Käthe Schneider, Maria Pältz, and Helmut Stauche examine the actual situation with respect to the ensuring and evaluation of learning transfer in German companies. In an online survey of 107 listed and individually or family-owned German companies with at least 1,000 employees, the methods for fostering and evaluating the transfer of learning are collated. The study does not just offer a German national cross section on this topic, but also provides insights into the methods used to ensure and evaluate learning transfer.

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In the article entitled *Enablers and Inhibitors of Learning Transfer from Theory to Practice*, Karima Bouzguenda examines the evaluation of learning transfer in 110 Tunisian companies based on a theoretical analysis and by means of a survey. With the help of a focus group, the author analyzes the employees' perception of training and learning transfer. The theoretical analysis provides the model of a learning transfer cycle. On the empirical level, the results of the survey and the case study document a gap between theory and practice in Tunisian companies.

Jean-François Roussel refers to the learner in the essay entitled *Learning Transfer in Organizations: An Adaptive Perspective Centered on the Learner and the Development of Self-Regulation* and shows that the memory processes involved in the maintenance and reproduction of acquired knowledge are not adequate for the transfer of learning, taking the requirements of learners in organizations into account. Competencies of self-regulation and meta-cognitive skills are also necessary for the transfer of learning. Roussel develops an empirically supported didactic concept for the promotion of these competencies and skills.

Constantine Kontoghiorghes adopts *A Systemic Perspective of Training Transfer* on the design of environments that are conducive to the transfer of learning; Kontoghiorghes, who also examines the *working environment* in particular, notes the lack of studies and models linking training transfer to organizational culture. Because of the influence of organizational culture on employee behavior and performance, the cultural dimension of an organization must be incorporated into a framework of training transfer models and research designs. The author develops a holistic framework.

Doo Hun H. Lim and Brent Nowell regard training from a complex point of view and in the article entitled *Integration for Training Transfer: Learning, Knowledge, Organizational Culture, and Technology*, they bring individuals' learning and performance improvement of workplace organizations together, while developing an approach for both individual and organizational levels. This approach for an effective training transfer process includes training transfer management, knowledge management systems, and organizational learning practices utilizing technological systems and tools.

In their article, *Training Transfer in Teachers Training Program: A Longitudinal Case Study*, Francesco Pisanu, Franco Fraccaroli, and Maurizio Gentile study individual and organizational factors that facilitated the transfer of an in-service *training* for teachers in Italy. The authors use the *Learning Transfer System Inventory* and a nonparticipant structured observation as methods of investigation. The set of factors that influence learning transfer in this action research project is centered on the learner and the training. Organizational issues seem to exert less influence on learning transfer, and this may be related to the fact that the project did not include specific interventions related to the organization.

In the chapter, *Evaluation of Training Transfer Factors: The FET Model*, Pilar Pineda-Herrero, Carla Quesada-Pallarès, and Anna Ciraso-Calí develop a theoretical model, *the FET model,* which is an instrument to measure training transfer indirectly and to predict it. The FET model is based on the three transfer dimensions of *trainee*, *training*, and *organization*, and on the training results. The authors tested

this model on a random sample of 1,142 trainees in the context of Spanish companies. The results show that the model has construct validity, and that the instrument made it possible to reliably assess factors in learning transfer.

Paul Donovan describes the development of the evaluation of learning transfer from the beginning to the present in the chapter entitled *The Measurement of Transfer Using Return on Investment*. On the basis of a systematization and critical assessment of existing approaches the author describes Kirkpatrick's four-level model and Phillips' return on investment (ROI) approach. The contributions and criticisms of both approaches are discussed, and the implications of using ROI approaches for evaluating training interventions are considered.

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Chapter 2
Transfer of Learning in German Companies

Käthe Schneider, Maria Pältz and Helmut Stauche

2.1 Introduction

The long-term success of a company significantly depends on whether employees effectively and sustainably learn and transfer new information in the form of effective work performance, profitable for the company. Employees' continuing education is therefore a central component of securing the company's future. On average, large German companies spend over € 1,000 a year per employee for continuing in-house education (Lenske and Werner 2009). Similarly large expenditures are also made by US American companies with 1,200 USD per employee (Industry Report 2007). However, the largest percentage of expenditures goes into management training with 5.9 billion USD in the year 2007, which represents 10 % of the total budget for ongoing corporate education of all US companies (Industry Report 2007).

Despite the high expenditures for ongoing corporate education, only about 10 % of German companies take measures to transfer what has been learned to the work situation and thereby ensure sustainable preservation (Käpplinger 2009). Accordingly, it will be investigated which measures, if any, are used by German companies to transfer learning and to what extent they can be assessed, based on theoretical and practical aspects.

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2.2 Research Status

The theoretical starting point of the study, *continued education and transfer of learning security* is the evaluation model for continuing education measures by Donald Kirkpatrick (1967). This model comprises four levels to evaluate training, ranging from satisfaction measurement after continuing education activity to success monitoring via corporate figures. Kirkpatrick called these levels *reaction*, *learning, behavior,* and *results* (Kirkpatrick 1967). *Reaction* means the reaction of a participant after continuing education, which is oftentimes statements of satisfaction. *Learning* is the level of cognitive increase of knowledge. This evaluation level can be illustrated with knowledge tests. *Behavior* on the other hand relates to direct behavior, which was potentially changed in training. The highest level, *results*, reflects the effect of the training on a company level and is verified, for example, by measurement of key figures, and also through nonmeasurable changes such as subjective statements. These are, for example, work satisfaction, the quality of teamwork, and the relationships between employees in general (McGovern et al. 2001). Studies show that transfer of learning is insufficiently evaluated by companies (Käpplinger 2009).

In continuing education practice, the participants' learning satisfaction and the increase of knowledge are primarily evaluated, its effect on an organizational level is, however, moderate (Alliger and Janak 1989). *Behavior* has a high predictive power for the usefulness of continuing education activity for the entire company (Alliger and Janak 1989). The findings for transfer security point in a similar direction: 10.1 % of 410 representative German companies adopted measures for transfer security in 2009 (Käpplinger 2009). These results are astonishing because studies show that without the purposeful use of transfer of learning support measures, 10–15 % of what is learned in continuing education is implemented in professional performance (Baldwin and Ford 1988).

Promising transfer processes can be enabled with the help of substantiated transfer of learning management that comprises all company internal "measures for planning, optimization and control of transfer of learning" (Solga 2011, p. 343). Transfer of learning management includes processes before starting continuing education as well as upon conclusion (Leifer and Newstrom 1980).

In their transfer process model, Baldwin and Ford (1988) structured factors (training inputs) that influence the transfer of learning and are relevant for goal-oriented transfer of learning management. Baldwin and Ford (1988) differentiate these into the categories: *learner* (motivation, abilities and his personality), *training design* (learning principles, content of continuing education and procedure planning) as well as *working environment* (support mechanisms and application possibilities of the learned). However, the aforementioned categories are not directly or indirectly linked with the successful transfer of learning. The *training inputs* should primarily lead to a learning and retention process. Learning and retention are described as *training outputs*. Processes of knowledge-generalization and maintenance of behavior can only be initiated with this learning result, which then incorporate as transfer conditions. However, so claim the authors, the characteristics of

the learner and the work environment are directly linked to the transfer conditions, while the training design is only relevant to the transfer via the intermediate step of the learning process (Baldwin and Ford 1988).

Further studies illustrate the broadness of the training inputs based on the factors *learner*, *training design,* and *work environment*: In the learners' area of function, the job involvement (Noe and Schmitt 1986) and the transfer motivation (Axtell et al. 1997), for example, are identified as influencing factors. The contribution of the training design was outlined by Ehrenberg (1983). He named the securing of integrated, conceptual learning approaches in differentiation to pure transfer of knowledge without reference to the appropriate use of simulations and the promotion of knowledge-transfer by the learner himself, meaning the learner as the teacher (Ehrenberg 1983). Trost (1985), however, pointed to follow-up events, which are conducted 4–6 weeks after an initial continuing education and by which the previously learned is further developed. In the area of work environment, for which a large number of scientific studies are available, influences of the organizational culture, especially the learning culture (Tracey et al. 1995) and influences stemming from the support of an executive officer (Holton 2005; Leitl and Zempel-Dohmen 2006) can be found.

In Karg's dissertation (2006), the influencing factors based on the Baldwin and Ford model were confirmed empirically. Approximately 120 seminar participants of a pharmaceutical-chemical company were interviewed. The purpose of the seminar was the attainment of self- or social competencies. Satisfaction with the seminar and the influencing factors for the transfer of learning was determined in two stages via quantitative and qualitative methods. The transfer itself was not captured directly, "but only the participants' theories about the transfer and its influencing factors" (Karg 2006, p. 108). The study confirmed the influence of the factors *learner*, *training design* and *working environment* on the desired learning result, the improvement of social and personal competencies. The following factors were identified through factor analysis: participant's interest, which includes personal goals, involvement of superiors in the participant's learning process by communicative monitoring amongst others, support from the participant's personal environment, especially experiencing feedback from trainers and colleagues, application orientation, and the company's general learning culture, which is determined by a supportive environment of the learning group and the openness to acquisition of new competencies of its employees. Heteronomy in the learning process was identified to be a transfer-hindering factor (Karg 2006).

In a further study with the project titled "Personnel development for small and medium-sized enterprises," with a sample size of 80 seminar participants and ten superiors, transfer barriers were formulated as well (Kurtz and Janikowski 2008). Included in the transfer-hindering factors are lack of objective definition, clarity and control, absence of knowledge about necessary processes of change, the perceived lack of control of employees, and their fears in the transfer process, as well as company or learning culture related factors such as lack of feedback, mistake-intolerance, and absence of role models in executive officers (Kurtz and Janikowski 2008).

However, the determined influencing factors of the transfer have to be viewed in light of two core problems of transfer research, the static nature of the research design in relation to the dynamic nature of the transfer process, as well as the deficient mass of criterion (Baldwin and Ford 1988).

From a practical perspective, Heinsen and Vollmer (2007) offer an overview of the transfer of learning security methods named in literature, which are separated into methods used before, during, and after a continuing education activity. In addition, the authors supply data with regard to proliferation of transfer-safe methods in companies, which are compared to methods used in adult education. It is shown that during continuing education, transfer-securing measures are more often taken in companies than in facilities of continuing education, but no major differences can be determined overall (Heinsen and Vollmer 2007). Since the study is based on a sample size of nine facilities, four in adult education and five in economy, the empirical significance is minimal.

In order to mirror the actual situation as precisely as possible, this study, with the help of a larger sampling pool, will examine which transfer securing measures are used by German companies.

> If one looks at in-house continuing education as a significant success factor of globally competing companies, then with consideration of the legitimation of this sometimes cost-intensive investment, it is necessary to determine the actual, achieved success resulting from continuing education and make it measurable. (Jahn and Hofstetter 2008, p. 13)

Accordingly, it will also be established which methods are used by large German companies to evaluate the transfer of learning.

2.3 Study

The objective of this study is to analyze the current condition of transfer-securing and evaluation of continuing education in German companies. Besides researching the current situation, it is the objective of this study to determine if there is a need for consulting and continued education to secure and evaluate the continuing education transfer in the current continuing education practice of these companies.

2.3.1 Sampling

All DAX30-, MDAX-, SDAX-, and TecDAX companies, as well as the top 500 revenue generating family businesses with at least 1,000 employees were contacted for the study[1]. The differences in education-controlling quality between large companies and small and medium-sized enterprises, especially microenterprises (Käpplinger 2009) are the primary reasons why only companies with more than 1,000

[1] This list was published by the Family Business Foundation 2009 (TOP 500).

employees were examined. Large companies clearly employ education control more often than microcompanies (Käpplinger 2009), so it can be assumed that isolating the companies by size, amongst others, will result in more substantive results than if small companies would have been included in the examination.

107 companies participated in the survey, which equals a response rate of 16.9 %. The questionnaires were sent to the relevant persons of the human resource departments. The online surveys were conducted from January to March 2011. Anonymity was ensured by generating a personal code.

2.3.2 Method

The questionnaire consists of four areas: general questions, questions about transfer of learning security, about evaluating the learning result and the transfer of learning, as well as collecting corporate figures.

The general questions are intended to elicit basic attitudes regarding the topic and prepare the interviewee for the topic. The tied, quasimetric answers were captured with five-level Likert scales, each ranging from very low to very high, and should provide information as to what significance the respondents give to the usefulness of:

- continuing education of employees in their companies,
- internal continuing education evaluation in their companies,
- transfer of learning security and,
- evaluation of transfer of learning.

In the second part about transfer of learning security, the response format is divided into yes/no questions and open questions. It was asked if the companies employ methods for transfer securing. Following the formative process, these questions were divided into *before*, *during*, and *after* an activity (Heinsen and Vollmer 2007). In the second step, in case of a yes answer, open questions were used to determine the methods employed. As it is intended to determine unconventional methods as well, and as there is a danger of spontaneous recollection or answering according to social desirability with closed answer options (Duller 2007), the open answer more realistically reflects continuing education in German companies.

The questionnaire is designed to capture the entire evaluation of the transfer process, which is why the same tripartite questioning structure—before, during, and after an activity—is used as it is in the previous part. It will be determined if the required employee competence is defined prior to continuing education activity, meaning a target competence is defined, and if yes, how. In addition, it was asked if the employees' competence, which is to be fostered in continuing education, is to be measured before the continuing education (current-state measurement), if this competence is again measured after continuing education, and if the employees' transfer of learning performance is evaluated after continuing education. Subsequently, it was inquired about the methods used in case of an affirmative answer.

The corporate figures make for the fourth and last part of the questionnaire. The number of employees, the number of employees participating in annual continuing education, the expenditures for continuing education in the years 2008 and 2009, as well as the annual turnovers in the years 2008 and 2009 were surveyed. Furthermore, it was distinguishing between family operated and on listed companies, respectively. This data was collected to determine potential differences in the use or quality of methods between companies of differing key-figure classes.

All aforementioned companies were contacted by phone in order to locate the relevant person for the questionnaire, to establish initial contact, and obtain their e-mail address. A total of 632 out of a possible 660 companies received an e-mail with a link to the online survey. The difference is due to either participation-refusal by superiors, companies in bankruptcy proceedings, or too few employees for the listed companies, meaning an independent human resource development department does not exist.

2.3.3 Results

2.3.3.1 Usefulness with Regard to Continuing Education, Transfer Securing, and Evaluation

The characteristic value of the answers to the general questions regarding perceived usefulness of continuing education, transfer securing, and evaluation of continuing education could be indicated on a five-tier rating scale from very low (0) to very high (4). The usefulness of continuing education for the companies' employees is estimated to be high to very high ($M=3.36$, SD$=0.571$), none of the respondents view the usefulness of continuing education as very low or low. On an average the usefulness of transfer of learning security is equally highly rated ($M=3.21$, SD$=0.765$). In contrast, evaluating is viewed as less important: It was inquired about the use of evaluation of continuing education in general ($M=2.88$, SD$=0.918$) and about the transfer of learning security, whereby the latter shows the lowest value ($M=2.74$, SD$=0.862$). However, the larger variance value for evaluation indicates a less consistent view.

2.3.3.2 Transfer of Learning Security Before, During, and After Continuing Education

Regarding the questions as to whether methods for transfer securing are used before, during, or after a company's continuing education activity, 51.9% ($n=55$) of respondents indicated to initiate measures before, 56.1% ($n=60$) during, and 72.9% ($n=78$) upon conclusion (Fig. 2.1). Therefore, the transfer is primarily secured after continuing education, only 38.3% of respondents take the entire process chain for transfer securing into account.

Fig. 2.1 Number of companies that take measures for transfer securing before, during, and after continuing education or at all three points in time. (Source: Authors)

With the objective of a frequency analysis of the given open answers, they were subjected to a process of abstraction. The given open answers were coded in order to determine the frequency of each corresponding method category. The most common answers were introduced first and then the less often mentioned, but relevant methods were discussed subsequently.

The question about the methods for transfer securing before continuing education activity was answered by 45 persons ($n_{total}=107$) with a total of 65 mentions. The two most commonly used methods by respondents are the *incomplete demand analysis* (15 mentions) and the *expectations query* ($n=13$). The demand analysis was categorized as *incomplete* because the named methods only cover a part of a complete demand analysis, namely, the demand query and the determination of demand through employee conversations. In a complete demand analysis, additional workplace analysis is performed or requirement profiles of the corresponding job are compared to the employee's competence. Such a demand analysis is closely tied to objective controlling, the determination and operationalization of learning objectives (Tredop 2008). In contrast, demand queries are carried out purely subjectively from the employee's perspective, although the personal assessment of the employee regarding his/her learning needs are not to be underestimated. *Expectations query* means the determination of expectations and ideas about continuing education on the part of the participant. *Learning objective agreement* ($n=7$) and *learning objective determination* ($n=6$) are similarly often mentioned, but differ in the quality for transfer securing. A joint agreement between employee and executive officer or a representative of the human resource department regarding the learning objective, which represents a voluntary individual agreement between the two parties, is more effective and sustainable for the learner than a learning objective defined by an executive officer or the human resource department. Five persons mention the *dispatch conversation*, the *conversation between employee and executive officer*, and the *examination of the learning subject* before beginning continuing education. The

dispatch conversation is between employee and executive officer and is next to the joint definition of goals, such as a learning objective agreement. It also contains an exchange about expectations of continuing education and opportunities for implementation of the learned into everyday operations. The *examination of the learning subject before continuing education* gives the learners the opportunity to examine the issues of the continuing education beforehand, possibly have a breakthrough and awaken curiosity. The *conversation between employee and executive officer* is not specific enough to subject this category to an analysis.

The question about methods for transfer securing during continuing education activity was answered by 47 persons with a total of 79 mentions. By far the most frequently mentioned method ($n=23$) is *case handling during the activity*. Practical cases are worked on and discussed here. Some distance behind, with nine mentions, follow the methods of *learning objective control* and the *action plan*, the *learning tandems* (eight mentions) and the *tests* (seven mentions). Learning objective control means verification of further suitability of the learning objective by the executive officer, human resource department, teaching personnel, or student and not the verification of learning objective achievement, which is performed with tests. In contrast to learning objective control, the action plan is a planning device applied by the learner himself, by which he sets his learning targets during the entire learning process and independently checks for possibilities to achieve the latter. A learning tandem means joint processing of the learning subject by two learners. Only six persons indicated employing *case handling in real world settings*, meaning a behavior-based exercise which is not tested in seminar proceedings, but in the workplace. Likewise, six persons indicated to be using methods that promote self-reflection, a participant-oriented method in which, for example, a learning journal is used to reflect upon the learning process, *conversations with the executive officer*, which was mentioned five times, must also be viewed as a transfer-promoting process because the interest on part of the executive officer in continuing education can lead to a higher degree of willingness to perform and therefore, improved learning motivation for the employee.

Even though 72 persons indicate, in closed questioning, to be using methods for transfer securing after a continuing education activity, only 42 persons substantiate actual measures in the open question with a total of 61 answers. This difference between yes answers and corresponding open answers is the largest for this category. The discrepancy makes it likely that transfer securing is generally seen as a means which is effective after continuing education, without being able to sustainably perform such securing. This leads to the conclusion that these many yes answers could result from a socially desired response behavior. Most mentions ($n=18$) are given to the method *description of the learned and its application*. What is meant is a reflexive postprocessing of the learning subject, which also includes a test for use of what was learned. *Coaching/supervision* is named by twelve persons, *learning objective evaluation* by eight. The learning objective evaluation is again a verification of the further suitability of the learning objective by executive officer, human resource department, teaching personnel, or students. Depending on the result of this verification, this can be followed recursively by a new learning objective

with renewed continuing education. Seven persons mentioned the *follow-up events*, meaning a subsequent meeting where the learned material can be further delved into. The *feedback conversation* is indicated by five persons, it is not obvious from the mentions, however, who is holding the conversation and who or what is receiving the feedback.

Besides the most commonly mentioned answers there are also methods which have only very few mentions, but distinguish themselves by their quality. Methods for securing the transfer of learning, which can be used before continuing education, are *coaching* ($n=1$), targeted *selection of the trainer* ($n=1$), the *selection of participants* according to the corresponding need ($n=2$), as well as a *transfer objective agreement* beforehand ($n=2$). *Coaching/mentoring* is mentioned by three persons, during a continuing education activity. An additional method is *learning-result oriented adaptation of measures* (3 mentions) meaning a procedural coordination of content and the structure of the continuing education applied to the determined learning objective. Depending on the results of an interim evaluation, which is integrated, individual differences between the learners can be taken into account, and in the sense of formative evaluation (Scriven 1996) find their way directly into the configuration of the still active continuing education activity. After continuing education, four companies mention the subsequent support by the trainers, e.g., by availability for advice through telephone. *Learning tandems* are also mentioned by four companies. *Tests* are performed in two companies, one person mentioned the *action plan*. As already described, this is a device for objective-determination and verification applied by the learner himself, which is used over the entire course of the learning process.

2.3.3.3 Evaluation of the Transfer Process

More than half of the companies ($n=62$; 58.5 %) have a value for the competence that the employee has to meet (competence target). The current competence of the employee is also measured in advance by 30.2 % ($n=32$) of the companies (actual competence). Approximately one-third of the respondents ($n=38$; 35.3 %) test the acquired competence upon conclusion of continuing education (Fig. 2.2).

While most respondents define the learning objective of continuing education, there are far fewer who have knowledge of the extent of continuing education participants already possessing the desired competencies before the event, and to what extent the learning objectives were actually really achieved through the activity. The employees' transfer of learning performance after continuing education is evaluated by 37 companies (34.9 %).

The open-ended question about methods for measuring actual competence before a continuing education activity was only answered by 23 persons with a total of 33 mentions. The most prominent mention was the *external assessment by executive officer or others* ($n=11$). This can be done by questionnaire or in personal conversation. In eight cases *tests* were taken, and seven companies indicated measuring the actual competence with the help of *self-assessment by the participant*.

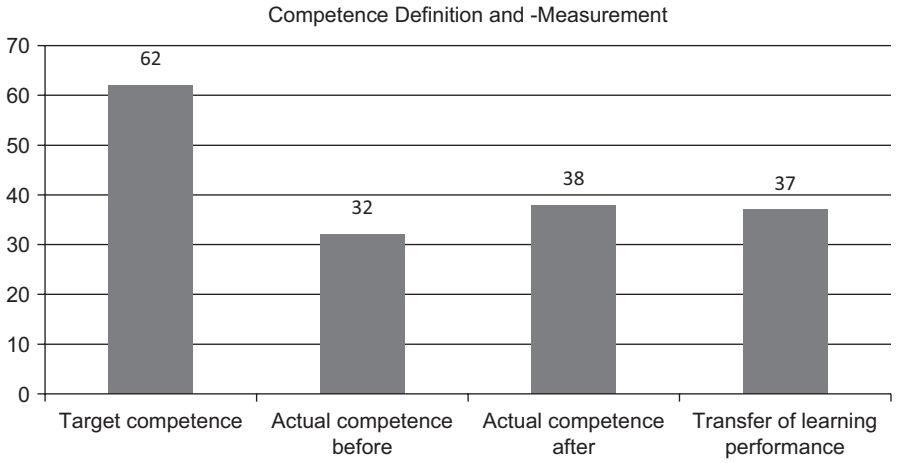

Fig. 2.2 Number of companies which define the competencies of the employees before continuing education and measure them before and after continuing education. (Source: Authors)

A total of 14 companies indicated using *third-party assessment by the executive officer or with the help of other persons* as a method to measure actual competence. Ten respondents named *tests* and nine the *self-assessment by the participant*. It is obvious that the methods for measuring the competences before and after continuing education are hardly distinguishable.

As a method for evaluation of the employees' transfer of learning performance after continuing education activity, 19 out of 29 respondents named *third-party assessment by the executive officer or other persons*. 13 companies indicated to be using *questionnaires* for the evaluation of the transfer of learning. *Self-assessment* was mentioned as a method in eight cases.

Methods with only few mentions, but which are of importance to the transfer evaluation, are the *key figure measurement* as well as a *development* or *assessment center* for the measurement of the employees' actual competence. The *key figure measurement* was specified as a sales number measurement by one respondent only. Other possible key figures are, amongst others, cost reduction in production or a decrease in customer complaints. The *development* or *assessment center* is a monitoring device, by which the employee is assessed in the execution of certain tasks, traditionally in roll play for measuring social competence or in strategic-analytical exercises to determine his intelligence and mental performance. This tool serves as a foundation for personnel decisions, such as recruitment, mission planning, and/or the pursuit of individual employee development. One company mentioned the *360°-feedback*. In addition, an indication is given in the *potential analysis* and the *qualification matrix*. All methods are highly objective-measuring methods which are uniquely significant, but time consuming and costly. To measure the employees' competence upon completion of continuing education, less goal-oriented methods are used as well. Three companies indicated use of the *questionnaires.* Since competences are not only aspects of knowledge but also abilities and skills, not all lev-

Table 2.1 Correlative connections between assessments of usefulness. (Source: Authors)

Usefulness of …	… evaluation of internal continuing education	. … transfer of learning security	…. evaluation of transfer of learning security
… continuing education	0.474**	0.397**	0.363**
… evaluation of internal continuing education		0.351**	0.479**
… transfer of learning security			0.678**

** All listed correlation measures according to Spearman-Rho are two-sided, significant on the 1 % level

els can be surveyed with questionnaires, which illustrate attitudes and assessments more than anything else. The *development/assessment center* (*DC/AC*) and the *key figure measurement* received a mention as well. It is notable that there is no difference to the first competence measurement. It turns out that only one company uses the key figure measurement before as well as after continuing education. The *DC/AC* is not used by any company before and after continuing education. In absence of at least two sets of data records from several measurement points, no findings regarding efficacy of a measure can be derived. This means that only one company is conducting a stringent evaluation of continuing education measures.

In the evaluation of the transfer performance, *tests* are mentioned by four persons, the *interview* by two companies and the *observation* and the *key figure measurement* by one each.

The scarcity of used methods can probably be ascribed to cost-intensity and time consumption. It would be interesting to find out in the future if the choice of these methods leads to a higher success rate regarding transfer of learning, or if at least subjectively a higher use for the company or the participant is to be expected.

2.3.3.4 Operative-Statistical Differences in Averages and Correlations

In the following section, statistical correlations between selected results are shown and interpreted between each other as well as between results and operating figures in the subsequent section. With the variables for the assessment of usefulness of continuing education, evaluation of continuing transfer of learning security, and evaluation of transfer of learning security, the intercorrelations were calculated by use of Spearman-Rho.[2] The strongest connection is between the two-variable usefulness of transfer of learning security and usefulness of evaluation of transfer of learning security ($r_s = 0.678$, $p < 0.01$). The weakest connection is seen between the variables usefulness of transfer of learning security and usefulness of evaluation of internal continuing education ($r_s = 0.351$, $p < 0.01$). It can still be described as moderate, however (Table 2.1).

[2] This correlation calculation is justifiable for quasimetric variables.

For the mean-value comparisons of the metrically-scaled corporate figures (number of employees, number of employees that participate in continuing education annually, expenditures for continuing education in the years 2008 and 2009, as well as annual turnover in 2008 and 2009) with the dichotomous question if the company is part of a family-managed business or not, no significant disparities between yes and no answers were determined.

It can be noted that for the sampling at hand, no differences in corporate figures between family-run and listed companies can be determined. This could be an indicator of the success of family businesses, since only family business with high revenue turnover and more than 1,000 employees (Stiftung Familienunternehmen 2009) were surveyed in the sampling and therefore they approach the key figures of publicly traded companies.

With the mean-value comparisons of usefulness-indications for transfer of learning securing methods through *t*-test, significant differences could be determined in some cases. Companies which indicate using methods for transfer of learning security before, during, or after a continuing education estimate the usefulness of the former significantly higher ($M_{before}=3.36$, $M_{during}=3.37$, $M_{after}=3.32$) than companies not using methods for transfer securing ($M_{before}=3.06$, $M_{during}=3.02$, $M_{after}=2.93$) ($t_{before}=-2.272$, $p<0.05$, $t_{during}=-2.367$, $p<0.05$, $t_{after}=-2.141$, $p<0.05$). In order to determine if the positive attitude of the usefulness also leads to the actual application of transfer of learning measures, a chi-square test was attached. No significant results are available for the methods before and during continuing education activity. This means that the statement regarding transfer of learning security being useful does not automatically lead to the application of methods to transfer of learning security. According to the theory of planned behavior, this result is plausible insofar as the attitude is a predictor for intention, but not for behavior, which is predicted rather by intention. Also, from a cost-effective theoretical perspective it can be determined that most likely, with given usefulness, behavior is not shown due to high, subjectively perceived cost. It is interesting, however, that companies who valued the usefulness of transfer of learning security commonly use methods after continuing education significantly more often ($t=-2.141$, $p=0.038$). This result underlines the assumption that transfer of learning security is traditionally viewed as a method that comes into play after continuing education, especially since in the sample the highest number of companies are those who practice securing after continuing education.

In the mean-value comparison of the question about usefulness of transfer of learning security evaluation, the results were ambivalent. The questioned company representatives, who measure the employees actual competence in the content to be learned before beginning continuing education, assess the usefulness of the evaluation of transfer of learning security significantly higher ($M=3.0$) than companies who do not perform this measurement ($M=2.64$) ($t=-2.039$, $p=0.046$). Also significantly higher value ($t=-2.525$, $p=0.013$) the usefulness of the evaluation of transfer of learning security by companies who indicated to actually evaluate the transfer of learning performance ($M=3.03$ in comparison to $M=2.59$) is assessed. With the measurement of competence of employees after a continuing education

Table 2.2 *t*-tests for participation and expenditures in annual continuing education. (Source: Authors)

t-test	Participants	Investment in 2008 (€)		Investment in 2009 (€)	
	M_{before}	M_{during}	M_{before}	M_{during}	M_{during}
Companies use transfer securing methods	1,621.18	1,805.74	1,580,320.00	1,736,130.43	1,423,455.03
Companies do not use transfer securing methods	2,890.61	501.10	333,439.18	286,906.48	199,721.03
T	−2.250	3.819	2.335	2.548	2.814
P	0.029*	0.000**	0.028*	0.018*	0.009**

* two-sided significant on the 5 % level
** two-sided significant on the 1 % level

(secondary current-state measurement), no significant differences could be determined with regard to usefulness of transfer of learning security evaluation. A tendency of the mean-value differences in favor of companies who perform the secondary current-state measurement is however identifiable ($M=2.87$ compared to $M=2.67$) ($t=-1.161$, $p=0.248$). The direction was not the same for the differentiation in companies who determine the employees' target competence before continuing education. The usefulness of transfer of learning security evaluation of companies who define no target-competence ($M=2.77$ in comparison to $M=2.37$) tends to be estimated even higher, even when this difference is not significant ($t=0.281$, $p=0.780$).

Therefore, it can be noted that the measurement of the actual competence is exclusively connected to usefulness of the evaluation of transfer of learning security. Even though the first measurement of the current-state value is the sample's most often used evaluation method, it leads to no significant mean-value difference without other usefulness assessments.

2.3.3.5 Transfer of Learning Security in Correlation to Corporate Figures

In companies who use transfer-securing methods before and during a continuing education activity, significantly more employees participate in annual continuing education than in companies who use no transfer securing measures before or during continuing education. Furthermore, these companies invested, significantly, more in continuing education in the year 2008 than companies without transfer securing. Additionally, companies who use transfer-securing measures during continuing education made more expenditures for continuing education in the year 2009 than companies without transfer securing (Table 2.2).

No significant differences can be determined with regard to investment in continuing education and companies who use methods for transfer securing after con-

tinuing education, however. That the methods for transfer securing after continuing education, again bear no significant results, is supported by the already mentioned assumption that, due to traditional ideas, transfer securing primarily consists of measures which are taken after continuing education, no differences are evident, because it is used by 72.9 % of respondents. Additionally, this result shows that the traditional view is held across all company sizes, since there are no significant oppositions here.

It was also established that the questioned companies who define the employees' target-competence before continuing education have also had significantly higher investments in continuing education in the year 2009 (M=€ 1,084,783.5) compared to companies who do not define target-competence (M=€ 265,454.07) (t=−2.284, p=0.030). Those differences are not identifiable for either the initial current-state and secondary current-state measurement, or for the transfer of learning security evaluation.

The assessment of continuing educations' usefulness, continuing education evaluation, transfer of learning security, and evaluation of transfer of learning security were correlated with the corporate figures via Spearman-Rho. Significant moderate correlations exist for the transfer of learning security usefulness and employees' annual participation in continuing education (r_s=0.245, p=0.025), for the annual turnover of 2008 (r_s=0.276, p=0.041) as well as the annual turnover of 2009 (r_s=0.311, p=0.012). An even more significant, but lesser correlation exists to the number of employees (r_s=0.190, p=0.05). Correlation tendencies are evident with usefulness of continuing education evaluation and the companies' annual turnover in 2009 (r_s=0.231, p=0.064), as well as between usefulness of the transfer of learning evaluation and employee participation in one continuing education per year (r_s=0.212, p=0.053).

A simple variance-analysis was performed in order to connect the four possible combinations of employee numbers and annual turnover with the estimation of usefulness (questions 1 to 4). The grouping variable has the values few employees–low sales, many employees–low sales, few employees–high sales, and many employees–high sales. Due to the high standard deviation, the dichotomization of number of employees and turnover could not be performed by arithmetic means, but was used in a way so that equally populated groups resulted.

It is shown that amongst the four above questions, only the answer to question 3, the usefulness of transfer of learning security, is significantly different between the groups (F=4.191, p<0.01). Post-hoc tests have shown that this difference is caused by companies with high annual turnover and that the number of employees has no influence on it: companies with high annual sales attribute a significantly higher meaning to the usefulness of transfer of learning security (Table 2.3).

It was already confirmed earlier that the usefulness of transfer of learning security is in direct correlation to the application of securing measures after continuing education. Therefore, a comparison can be made to Käpplinger's study (2009). Even though the usefulness of continuing education measures was not assessed in his study, the use of education-controlling devices in comparison with the company size directly was. A comparison to Käpplinger is possible via the determined

Table 2.3 Correlation between estimations of usefulness and corporate figures. (Source: Authors)

Groups for ANOVA		*N*	Minimum	Maximum	Mean	Standard deviation
Few employees–low sales	Usefulness of continuing education	26	2	4	3.42	0.578
	Usefulness of evaluation of internal continuing education	26	1	4	2.85	0.834
	Usefulness of transfer of learning security	26	1	4	3.04	0.824
	Usefulness of transfer of learning security evaluation	26	1	4	2.65	0.846
Many employees–low sales	Usefulness of continuing education	8	3	4	3.25	0.463
	Usefulness of evaluation of internal continuing education	8	1	3	2.38	0.916
	Usefulness of transfer of learning security	8	2	4	3.25	0.707
	Usefulness of transfer of learning security evaluation	8	2	4	2.75	0.707
Few employees–large sales	Usefulness of continuing education	7	3	4	3.71	0.488
	Usefulness of evaluation of internal continuing education	7	3	4	3.43	0.535
	Usefulness of transfer of learning security	7	3	4	3.57	0.535
	Usefulness of transfer of learning security evaluation	7	2	4	3.14	0.690
Many employees–large sales	Usefulness of continuing education	24	2	4	3.42	0.584
	Usefulness of evaluation of internal continuing education	24	0	4	3.04	1.122
	Usefulness of transfer of learning security	24	2	4	3.71	0.550
	Usefulness of transfer of learning security evaluation	24	1	4	2.92	0.881

opposing interrelation of usefulness and actual implementation. The result, which correlates the usefulness of transfer of learning security with the company's annual turnover, represents a contradiction to Käpplinger's study. Although it shows that there are differences in the use of education-controlling devices between large and small companies, he refers to the number of employees in order to do so

(Käpplinger 2009) instead of the sales turnover class. It must be stated that Käpplinger chooses a different classification – he declares companies with at least 500 employees as large firms (Käpplinger 2009) – so that no exact comparison can be made. Inspite of this, it can be said that companies with higher turnover attribute higher significance to the usefulness of transfer of learning security and at the same time take measures for transfer securing after continuing education.

2.4 Summary and Future Outlook

The presented study gives a good overview of the practice of transfer of learning security in German companies. The objective was to research the methods which are used in companies to secure and evaluate the transfer of learning. In conjunction, additional preferences regarding continuing education, transfer of learning, and evaluation were surveyed.

In conclusion, it can be assessed that methods for transfer securing are merely a peripheral matter for the examined German companies, regardless of the companies' size. There is a specific need for transfer securing before and during an activity, since about half of the examined companies are not securing these process elements according to the survey results. The entire process chain is only taken into account by a third of the questioned companies. With regard to the named methods for transfer securing, it also becomes clear that these are either insufficient or that some of the most commonly mentioned methods are ineffective. They are insofar insufficient, for example, as processing and integration of learning phases are not finding systemic consideration in transfer securing during the activity. Casework, the method with most mentions for transfer securing during the learning process, represents only a few basic moments of the learning phases. Generally, use of an action form cannot meet the complexity of the learning process. Additionally, some of the most commonly used methods can be considered insufficient, as for example, the description of what was learned and its application to transfer securing after an activity. This method for the transfer of abilities into the learning context, for example, is not expedient.

The reason for the absence of application of transfer securing methods maybe primarily found in incurred cost and time commitment, since it can be stated, amongst other things, that companies with higher sales turnovers are giving the usefulness of transfer of learning securing measures a higher degree of significance, and as a result use it more often. The number of company employees was not indicative of increased usefulness perception and application in the surveyed sampling.

Furthermore, the results regarding the commonly used methods prove that knowledge about transfer-securing measures is deficient. Since the applied methods are only partially promising, targeted consulting and custom-made continuing education of the companies with regard to transfer of learning is necessary. This desideratum is also supported by the fact that most companies only start using securing measures after continuing education, and it appears that the knowledge about

comprehensive securing starting before an activity is missing. The evaluation of continuing education is in part only subjectively surveyed as well, or is not consistently objective, for example, it is ascertained through key figures or individualized measurement methods, which can interact with a comparatively low use of transfer evaluation. Insufficient practical application of continuing education evaluation is shown in the deficit that the competence to be acquired by the participants is not inherently determined by the respondents. The lenient capture of current-state competence, before and after continuing education, constitutes an additional shortcoming, resulting in deficient knowledge of continuing education effectiveness in companies. From the point of view that a successful measurement of competencies is difficult due to its complicated architecture, it can be assumed that only a minority of questioned companies can make profound statements regarding the effectiveness of continuing education measures. With high definable costs of continuing education measures, the learning effect remains undetermined.

With the help of transfer securing methods determined in the questionnaire, new examinations can now be performed with a stronger focus on the qualitative use of the different methods, in order to find more precise statements about the success of a measure and develop tailor-made continuing education programs. Besides the quality of continuing education strategies for transfer securing, implementation must be taken into account as well. Accordingly, it is necessary to identify transfer-securing methods of high standards on the one hand, and sustainably implement these into the company's practice on the other. To this end, consulting offers should be developed to a greater extent, particularly to do justice to individual business practice.

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Chapter 3
Enablers and Inhibitors of Learning Transfer from Theory to Practice

Karima Bouzguenda

3.1 Introduction

The issue of evaluating learning effectiveness has shown a growing interest during the last 2 decades. In fact, with the evolution of human resource management (HRM) being more oriented toward strategy and development, many organizations have undertaken training activities in order to be more adapted and reactive to technological progress as well as to internal and external changes. Simultaneously, professionals and consultants have geared their efforts to provide firms with relevant knowledge and expertise in developing training policies and initiatives favorable to organizational performance.

The interest to this field of study is founded on two main arguments. The first is the result of a personal encounter as a professor dealing with learners and potential transferors of knowledge. We realize that learning transfer is the real question in assessing the effectiveness of higher education institutions measured by the degree to which students are and will be capable to utilize what they learn.

The second argument involves the ever-enlarging scope of learning transfer in the business world associated with, not only the evolution in training investment since the 1980s, but also the rapid technological changes and breakthrough in information technologies (IT).

The issue of learning transfer may be, thus, considered a worldwide phenomenon particularly in emergent economies relying on human potential as a basis for sustainable competitive advantage. Nonetheless, dealing with learning transfer seems to be complex since it is intertwined in a large system covering a wide array of factors that may be either favorable or unfavorable in assuring learning effectiveness.

In this chapter, the focus is on analyzing learning transfer from a systemic approach in order to, on one hand, better apprehend the phenomenon and, on the other hand, provide a framework for practice.

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To do so, the first section demonstrates the importance of training in the whole system of HRM by focusing on the relevance of the evaluation of learning both for organizations and individuals. In the second section, paradigmatic and practical aspects of learning transfer are discussed. In the third section, a modest contribution to theory is presented, which consists of a learning transfer cycle. The last section addresses the issue from an empirical perspective based on two studies conducted in the Tunisian context: a survey conducted to assess the current state of training practices in some firms and a case study on a large public company in the chemical industry. The findings confirm the relevance of learning transfer as it becomes critical for Tunisian organizations seeking quality certification while going through a revolutionary phase. The chapter concludes with some considerations and implications of research on learning transfer both from theoretical and empirical perspectives.

3.2 Relevance of the Issue of Learning Transfer in Organizations

Talking about learning transfer in the twenty-first century is explained by at least two main reasons. On one hand, the questions related to learning transfer are not yet fully resolved. When it comes to assess the extent to which learning is transferred, recurrent performance problems are noticed. As a matter of fact, training remains a source not only of dysfunction but also of hidden cost and hidden performance (Savall and Zardet 1995). On the other hand, the phenomenon of learning transfer touches all aspects of life: socialization, education, work, community, and associative intervention. It further concerns all people and all generations across the world. It is by far a lifelong issue.

The emphasis on learning transfer has been expressed since the 1940s, a fact that witnesses not only the relevance of the issue but also the complexity of the phenomenon under investigation (Royer 1978; Singley and Anderson 1981; Baldwin and Ford 1988; Holton 1996; Simons 1999).

Empirically, the issue of learning effectiveness extends to a bigger phenomenon of HRM evaluation. The assessment of HRM-added value is a field of study characterized by not only some controversies but also some divergence between theory and practice.

3.2.1 From HRM Evaluation to Training Evaluation

The evolution of HRM has resulted in the proliferation of approaches and instruments to be used in the assessment of human resource function's (HRF's) contribution to organizational effectiveness. In fact, the contribution of HRM to organizational performance has been debated on the theoretical level, yet has not been totally seized on the practical level. The relationship between HRM and performance remains "fuzzy" and even "unknown" (Le Louarn and Wils 2001).

Two main approaches of HRM's evaluation are distinguished: One-dimensional and multidimensional.

- One-dimensional approach: The evaluation of HRM effectiveness is realized based on one type of practice at a time. For instance, in this chapter, the main focus is on training. The objective is to measure and analyze the contribution of the selected practice on performance.
- Multidimensional approach: This approach proceeds with HRM's evaluation by referring to more than one type of practice. The aim is to assess the interdependence between the different components of HRM system as well as to raise the complex issue of HRM's contribution to organizational performance (Citeau 2002).

As a consequence, since one-dimensional approach allows a better understanding of one of HRM practices at a time, the purpose of this chapter is to give a closer look to training evaluation as it is neatly related to developmental issues and thus to organizational competitiveness.

3.2.2 Scope of Training Evaluation

The term evaluation refers to the systematic data collection needed to make decisions related to major HRM practices such as compensation, promotion, and career management, in short, valuing HR development. In line with this idea, evaluation should be a source for advising, orienting, and improving behaviors at work and not a judgment for sanction and coercion. As a result, the capacities, the state of mind, and the value system of evaluators have a great impact on training effectiveness.

Several reasons may incite HR managers to take training evaluation seriously:

- Many managers doubt that training expenditures are profitable;
- Amounts invested in training are sometimes considerable;
- Assessment of training outcomes may help taking strategic decisions in HRM;
- Several types and approaches of evaluation would determine training effectiveness.

Training evaluation is a process driven by three main questions: what to measure? How to measure? What are the outcomes? These questions reflect critical issues in training evaluation and are centered on the need for assessing training effectiveness.

3.2.3 From Training Effectiveness to Learning Transfer

Literature review reveals that measuring training outcomes is both complex and multidimensional. The content of measurement is double fold: efficiency and effectiveness. Efficiency deals with the results achieved with respect to resources deployed in training programs. Effectiveness refers to the degree to which training

Table 3.1 Main indicators of training effectiveness

Indicator of training effectiveness	References
Degree of achievement of objectives	Kraiger et al. (1995)
Conception and realization of training system	Dunberry and Péchard (2007)
Cost of training programs	Le Louarn and Wils (2001); Gérard (2003)
Impact on behaviors; reactions	Kirkpatrick (1957, 1979); Dunberry and Péchard (2007)
Motivation for learning and transfer	Kirkpatrick (1959, 1979); Baldwin and Ford (1986); Tannenbaum and Yukl (1992); Wexley and Latham (1991)

objectives are realized. From a systemic perspective, effectiveness touches all components of training system in terms of design, conception, programs, instruments, and resources.

The relevance of training evaluation has led to several indicators of effectiveness, a fact that has made action more difficult presenting some stakes for the organization and the individual. Table 3.1 summarizes frequently utilized indicators of effectiveness. Two main ideas may be drawn:

- Training evaluation deals with practically all aspects: managerial, institutional, material, financial, spatial, methodological, temporal etc.
- The bottom line in training effectiveness is to assess the outcomes on behavior at work. It is, thus, positively correlated with the extent to which learners transfer what they learn to perform jobs in terms of better technical, managerial, and behavioral competencies.

Several approaches have been developed in order to measure training effectiveness. An overview of these approaches shows that the issue of evaluation is complicated and should be apprehended in its global framework. It also suggests that the question of learning transfer remains relevant and crucial as theoretical underpinning, not only varies, but also is evolving.

We may refer to Le Louarn and Wils' study on measuring effectiveness by distinguishing among four levels (2001):

- Level I—Pedagogical effectiveness: At this level, the emphasis is on positive reactions based on perceptions of trainees through questionnaires or interviews.
- Level II—Behaviors: At this level, measurement is geared toward real learning from training which requires robust tools to assess transfer in real situations on the job.
- Level III—Output: The aim is to measure the incidence of training on performance including changes in attitudes and behaviors of trainees.
- Level IV—Organizational outcomes: Two types of indicators may be used: direct indicators, which are tangible such as increasing productivity, turnover, and profitability, and indirect indicators, which refer to intangible improvements such as quality, clients' satisfaction, and wastes.

We may deduce that the effectiveness of the whole system of training depends on a key term "transfer," which is viewed as the cornerstone of training effectiveness. We suggest that learning transfer is to be inscribed in the theoretical scheme of the organization's functioning.

3.3 Theoretical Groundwork on Learning Transfer

Recent developments on strategic management focus on HR as an internal potential for organizational competitiveness. Such orientation is developed as a response to the alternative approach relying on external positioning of the firm compared to its competitors. It is founded on both paradigmatic and practical aspects.

3.3.1 Paradigmatic Aspects of Learning Transfer

The issue of learning transfer has evolved with the evolution in the way the phenomenon is viewed and analyzed. In fact, a significant change in paradigms has been noticed as to how to vision the relationship between organizations and their environment yielding to the emergence of three main views: resource-based, competency-based, and knowledge-based views.

Resource-based view has, since a long time, defended the thesis according to which resources and internal capabilities constitute a strategic asset generating sources of sustainable competitive advantage (Barney 1991). According to this view, competitive advantage is realized only if organizational resources are valuable and organizational capabilities are enhanced. These resources and capabilities may be material or immaterial (corporate culture, know-how, organizational routines and processes) and are concerned with the means to create value for the organization and to develop strategic capital.

Competency-based view links competency development with strategic capabilities to yield to distinctive competencies which should be rare, nonsubstitutable, and difficult to imitate and transfer (Hamel and Prahalad 1994). More recently, knowledge-based view is advocated dealing with the necessity for making knowledge a cornerstone for action. As such, knowledge becomes an object of management whereby a process is intentionally developed for knowledge acquisition, diffusion, and sharing (Nonaka and Takeuchi 1995).

An overview of these approaches allows drawing some observations:

- Organizational performance is directly linked to resources, capabilities, competencies, and knowledge. It is a matter of logic.
- Learning and transfer constitute the common denominators among these various views. It is a question of common sense.
- Organizations are still searching for effective tools and techniques to achieve a certain level of learning transfer. It is a subject of science.

In line with these views, transfer and "difficulty to imitate" may be apprehended as organizational capabilities and thus bases for competitiveness. As a result, managers who develop key mechanisms for transferring resources, capabilities, and knowledge to their shareholders would have more chances to be viable.

Furthermore, what is obvious is the role of human resources in "transferring" these mechanisms into reality through motivation, involvement, and mobilization. Indeed, the paradigmatic shift in the conception of organizations advocates a similar shift in the conception of HRM. The latter has progressed from a simple view of personnel management to HRM, and settled on strategic human resource management (Ulrich 1998). It follows that the conception of learning transfer has to undergo an analogous evolution for it to be effective.

3.3.2 Learning Transfer Conceptions

Transfer or learning transfer is the degree to which an individual utilizes previous experience and knowledge in a new context and for learning new skills. Transfer has been apprehended from several perspectives mainly managerial, sociological, psychological, and communicational. As such, literature review on learning transfer covers a wide range of disciplines.

Two main conceptions may be drawn.

- Learning transfer in terms of objectives: In this conception, transfer occurs when a trainee succeeds in exhibiting "performing" behavior in a new situation based on prior experience. As such, transfer is considered to be achieved and training is judged effective. This conception is prevailing in educational setting in which students are evaluated in order to assess whether they succeed to solve problems based on transmitted knowledge.
- Learning transfer in terms of means: In this perspective, transfer determines practices' effectiveness and aims at a more relevant and global objective for HRF as well as for the organization as a whole. Such conception is more adequate in a work-related environment in which transfer occurs when "faulty" behaviors are transformed into "performing" behaviors or "learned" behaviors are transposed to the workplace.

It is relevant to note that the existence of these two conceptions does not imply that they are mutually exclusive, but rather complementary, since the first concerns the outcomes at the HRF's level whereas the second focuses on the outcomes at the aggregate level.

3.3.3 Practical Aspects of Learning Transfer

Literature in this field of study shows a significant enlargement in the way such phenomenon is approached. Such enlargement, which has yield to a comprehensive

grasp of the issue of learning transfer, is marked by several features on the practical level. Such features involve taking some choices related to the meaning of the concept, the operationalization of the phenomenon, the assessment of the impact on performance, and the methodology to be used.

As for the specification of the concept, transfer is apprehended from a dichotomous perspective according to which we may distinguish among the following pairs of terms: positive/negative, near/far, and general/specific (Royer 1978; Simons 1999; Knowles et al. 2011).

Positive Versus Negative Transfer The distinction between these two types is based on the output or results of learning. Transfer is considered positive if performance increases and behaviors change favorably toward work. It is, nonetheless, negative if the "supposed" learned skills are not utilized and performance is not improved. In other words, considering transfer to occur or not to occur is related to learners' behaviors on the job or off the job by focalizing on productivity.

Near Versus Far Transfer The discriminating factor between these two terms is the degree of similarity between the learning context and the context where learned skills and knowledge should be applied. Transfer is considered to occur not only in similar situations immediately after training but also in "different" and "new" situations and contexts. The distinction between near and far transfer allows assessing the degree of "appropriateness" and generalization of what is learned.

General Versus Specific Transfer General transfer is likely to occur if the individual becomes capable of applying what is learned to more complex situations, whereas specific transfer limits training effectiveness to similar and particular contexts.

Therefore, it is important to specify the meaning of transfer as a central theme in the conception and execution of training activities since it constitutes the starting point for action.

Or, in practice, these dimensions are to be considered if the need for learning transfer is assessed. By combining them, transfer becomes a complex phenomenon that needs to be operationalized.

Modeling the Phenomenon of Transfer The aim is on the representation of key components of transfer system (Baldwin and Ford 1988; Holton 1996; Leimbach and Maringka 2009; Knowles et al. 2011). Given the multidimensionality of the concept, several configurations of the phenomenon are developed in order to search for best practices in the domain of learning transfer. Based on existing literature, we advance that learning transfer is determined by three categories of factors as shown in Table 3.2.

These factors interact in a particular pattern that would determine the impact on individual and organizational performance (Kirkpatrick 1959; Le Louan and Wils 2001; Liao and Wu 2009).

Nonetheless, it is argued that learning effectiveness is to be inscribed into macrolevel parameters such as structural, cultural, strategic, managerial, and operational aspects (Simons 1999; Merriam and Leahy 2005; Knowles et al. 2011). It is

Table 3.2 Factors influencing learning transfer

Training-related factors	Individual/personal factors	Environmental factors
Training design	Trainees' characteristics (motivation, involvement, readiness, capacities)	Work environment
Training evaluation approach	Trainers' characteristics (competencies, techniques, pedagogy)	Organizational structure
Training budget		Organizational culture
		Strategic orientation
		Role of management
		Role of HRM

important, thus, that managers should not fall in the universalism trap and, on the contrary, conceive models that favor and enhance organizational performance. The contingency approach has yielded to firm-specific practices leading to transfer-led organization.

Methodological Issues At this level, the focus is on adapting transfer techniques to organizational needs and specificities. Indeed, the assessment of measures to utilize, instruments to develop, degree of formalization to specify, and evaluation criteria to reinforce become the most relevant issues in training and learning literature (Leimbach and Maringka 2009; Holton 2005). Based on the methodological view of learning transfer, two main observations may be highlighted:

On one hand, learning transfer deals in essence with the process of articulating between prior skills and knowledge acquired in the past with the present and the future. In other words, transfer aims at shaping and reshaping actors' behaviors at work in such a way that performance is improved continuously. It follows that learning transfer determines, to a certain extent, the effectiveness of training activities and thus the developmental potential in the organization. That is why, the issue constitutes a common preoccupation for all shareholders.

On the other hand, learning transfer is about the capitalization of skills and knowledge in order to be prepared to act according to contingencies.

It essentially addresses the question, what are the factors intervening in the application of new learning to new situations in order to remain productive?

3.3.4 Enablers and Inhibitors of Learning Transfer: An Organizational Design Perspective

Organizational design involves the process of integrating people, technology, and information, in such a way that organizational effectiveness is enhanced. In fact, organizational design deals with the architecture put forward to guide action. It is thus related to sense making and sense giving in making choices and engaging people in their realization (Weick 1995).

Literature on organizational design is abundant and fruitful (Miles and Snow 1978; Nadler et al. 1992; Galbraith 1995; James 2003). Indeed, the issues related to organizational design have surfaced since the 1990s as a response to several dysfunctions related to the way organizations are designed. These issues were also associated with the trends toward reengineering (Hammer and Champy 1993) and business process reengineering (BPR) upon which organizations are called to revise their architecture in order to assure a certain degree of flexibility favorable to change and sustainable performance.

In order to illustrate the importance of organizational design on learning transfer, we refer to Galbraith's (1995) star model of designing organizations in which the author demonstrated the interactions among its main components, mainly strategy, structure, business processes and lateral links, reward systems, and HRM.

- Strategy: It defines the organizational architecture in terms of its vision, the adequate mode of governance, and the base for comparative advantage. It is the pole that determines the organization's intention for the other poles.
- Structure: It is the projection of the organizational intention in terms of designing policies related to the division of roles and responsibilities, the specification of information and communication's flows, and the negotiation of power dynamics.
- Business Processes and Lateral Links: These deal with the decisions associated with information flow across the structure both in the horizontal and vertical directions. They serve as a lubricant to enable the projected organizational structure and by the same token determine people's intervention.
- Human Resource Management: The model suggests that HRM policies and practices should be designed in such a way that employees' behavior is likely to comply with organizational strategy, structure, and processes. At this level, the focus is on the combination between technical and human aspects that would shape reward systems and by the same token lead to performance.
- Reward Systems: Based on the premise that rewards constitute the main object of social relations, Galbraith argues that the effectiveness of organizational design is neatly related to the nature of rewards policy adopted in terms of the formulas used to fix salaries, bonuses, advantages etc. Such pole of the star model may be considered crucial to assure and maintain the whole system's functioning.

The relevance of the star model stems from the fact that learning transfer is inscribed in HRM component, related to rewards systems, imbedded in business processes and lateral links, conditioned by structure, and valued by business strategy.

According to such reasoning, it is argued that organization's architecture may either enable or otherwise inhibit the development of, what Heraty and Morley (2003) call "organization-led learning" to which the authors refer to,

> the range of learning, training, development and educational processes that an organization, either deliberately or unintentionally, puts in place to encourage and stimulate learning at work (p. 65).

The authors identified six factors that would facilitate learning, namely

> experiential learning, teamwork, learning as a work incentive, learning alliances and networks, formal learning events and the certification of learning (p. 66).

Establishing the link between learning transfer and organizational architecture is realized through the search for two types of coherence:

- External coherence between HRM and other components of organizational design.
- Internal coherence among all HRM practices.

We argue that learning transfer may constitute the integrator factor in designing organizations. If the organization intends to develop a learning culture, the latter has to be highlighted in its vision and shared among all members. Furthermore, transfer may concern routines, processes, values, and behaviors positively in such a way that learning becomes a way of life both at and off work. It appears, thus, that learning transfer has become a managerial issue and an organizational capability that would generate a competitive advantage.

However, managing learning transfer is the preoccupation of not only the ones responsible for training or HRD, but also of all actors. Indeed the involvement of all members concerned by learning process would save organizations many problems related to learning effectiveness and transfer.

As a matter of fact, recent organizational configurations emphasize flexibility, collaboration, and empowerment as potential factors for success. As a consequence, if organizational design does not favor positive learning transfer, it would likely be a major failure in terms of negative or null transfer. In this case, inhibitors to learning transfer go beyond the boundaries of HRF to extend to organizational architecture.

3.4 Contribution to Theory: Learning Transfer and Organizational Theory

From a developmental approach, learning may be considered as a project of change both for individuals and organizations. At the organizational level, learning is a mean to improve functioning and performance on the job. At the individual level, learning is supposed to make positive change in behaviors at work. It follows that learning, as a solution, is intended to bring about positive outcomes. That is why we refer to positive transfer. As such, efforts are normally, rather theoretically, geared toward generating positive outcomes of learning by focusing on enablers favoring positive transfer.

However, when it comes to practice, theory is usually tested in real conditions leading to the existence of a gap. The latter is explained by several factors related to managing change and by the same token suggesting a broader manner in apprehending phenomena. Such turnaround reminds us of the process of scientific revolution recognized by Kuhn (1983) upon which a given paradigm is applied to reality until it is undermined by facts, calling for the emergence of a new one.

Based on this reasoning, the existence of some inhibitors does not necessarily lead to negative outcomes. It allows for a comprehensive vision of learning transfer in order to optimize results. This should be seen as a characteristic of research in social sciences whose subjects are individuals and behaviors. As a consequence, the issues of learning transfer should be inscribed in the field of organizational theory and more particularly in the manner people are managed. Hence, transfer outcomes in terms of success or failure are attributed to the way organizations are designed and the manner HR are managed.

Based on the groundwork developed, we argue that the major issues related to learning transfer are linked to both paradigmatic and practical aspects. Paradigmatic aspects involve parameters such as managerial vision, organization's conception, HRM's nature, and HRD's role, whereas practical aspects deal with operational factors for realizing learning transfer outputs namely training-related, individual, and environmental factors.

More specifically, these aspects intervene, both directly and indirectly, in the process of learning transfer leading to a looping pattern. Such reasoning may be illustrated in the following cycle inspired from Deming's (1986) continuous improvement rationale (Plan, Do, Check, and Act-PDCA).

The cycle, illustrated in Fig. 3.1, is based on a double loop upon which learning transfer is viewed as a dynamic process and sustained by continuous improvement. It recommends that learning transfer's outcome is to favor organizational learning and the development of a learning culture. The learning transfer cycle is articulated around four steps.

Assessment of Prior Knowledge and Skills The objective in this step is to demonstrate that existing knowledge and skills are not sufficient for performance. Such insufficiency may be due to several factors:

- Technological breakthrough leading to obsolescence of existing competencies;
- A change in strategic orientation of the firm by focusing on more innovative ways of doing things;
- Problems of adaptation of employees to work requirements.

It is thus important to engage some methods to determine the existence of a real gap, such as human resource planning, strategic diagnosis (SWOT analysis), ergonomic analysis, work environment assessment, quality of life at work checklist, and productivity fluctuations reporting.

Essentially, at the end of this first step, it is crucial to prove that the nature of existing knowledge and skills explains, to a certain extent, performance problems at the workplace. Such problems may be resolved through training and learning.

Training as a Solution The objective is to conceive training and learning programs in order to alleviate observed deficiencies. In fact, organizations are supposed to have some alternatives to fill in the gaps of competencies:

- Recruiting new employees with relevant knowledge and skills
- Outsourcing, that has proved to be effective in terms of quality and cost
- Developing internal competencies through training.

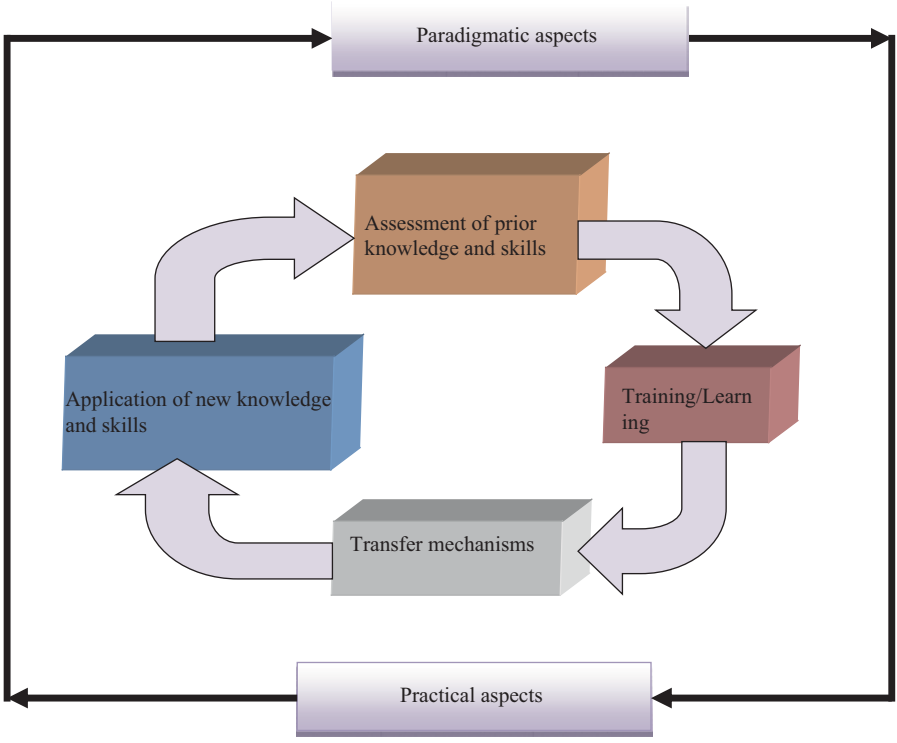

Fig. 3.1 Learning transfer cycle

Consequently, recourse to the third alternative should be the result of reasoning and strategic intention based on organizational capabilities and resources as well as on employees' readiness and preparation.

It is worth to note that academics and professionals have provided a wide range of tools for designing effective learning plans and training programs. Moreover, the focus on training evaluation has been emphasized and several approaches have been developed as discussed in the previous section of this chapter.

However, the issue that remains is related to how to keep up with the dilemma of the emergence of new knowledge and skills as soon as prior knowledge is integrated at work. The question that arises is how to make not only learning an integral part of work but also transfer a characteristic of learning. Therefore, it becomes imperative at this step to involve employees, since whatever is the chosen alternative, employees' adherence is a key factor for transfer's success.

Development of Transfer Mechanisms This step corresponds to the third phase of Deming's wheel, which is check. It involves checking that transfer of what is learned is likely to occur with an acceptable degree of satisfaction. As we have previously argued, transfer is not an automatic and linear outcome of learning experi-

ence. The development of some mechanisms to measure occurrence or not requires, thus, a closer attention at this level.

Therefore, the whole process of learning should be built to enable transfer and at the same time to alleviate its inhibitors. Once again, trainees' perception and involvement are to be considered in checking relevant outcomes of learning. Based on active learning approach, three mechanisms of transfer may be considered: self-appraisal, peer evaluation, and coaching.

- Self-appraisal: Trainee is able to assess if he or she has gained additional knowledge and skills following a learning experience. The valence of such learning for the trainee should be highlighted in the appraisal process.
- Peer evaluation: Collective learning has proved to be an effective way to improve capabilities and competencies through team work and team building.
- Coaching: The trainee may be assisted by a coach to manage any psychological barrier to effective learning and transfer.

On the organizational level, managerial philosophy and leadership may reinforce or otherwise undermine learning transfer. Literature review has led us to two additional mechanisms that managers may rely on to increase the chances of transfer at the workplace: management by objectives (MBO) and balanced scorecard.

- MBO: It was Drucker (1954) who first wrote about "knowledge worker." As a philosophy of management and a technique of motivation, MBO may guarantee trainees' adherence to learning and transfer by involving them in the whole process from setting objectives, designing learning programs to evaluating learning effectiveness. Such process is evidently supported by the principle of equilibrium between contribution and retribution as advocated by Barnard (1938).
- Balanced scorecard: It constitutes of an innovative technique to encourage trainees to be their own managers of learning programs and transfer landmarks.

Application of New Knowledge and Skills This step deals not only with action but also with the validity of learning. The question addressed is what incites trainees to really apply acquired knowledge and skills. In fact, the question reflects the risk taken in every learning endeavor related to whether learning transfer would really occur or not. That is the real issue.

Given the relevance of such outcomes, it becomes crucial to empirically assess the factors that may either enable or inhibit learning transfer in order to optimize the process.

3.5 Empirical Evidence of Learning Transfer in the Tunisian Context

The relevance of studying learning transfer in the Tunisian context may be explained by several arguments based on statistics made available by government agencies.

First, the employment rate for graduates both form universities and training centers reaches 40%. What is noticed is that while job seekers complain about not finding adequate jobs, employers complain about not finding the right persons for the jobs offered. The result is a low level of placement and professional insertion of graduates (Ministry of employment and continued education 2013). Second, Tunisia has been investing in education, which is free and compulsory, since its independence. The government allocates about one-fifth of its budget on higher education. Moreover, many reforms have taken place to enhance educational effectiveness (Ministry of higher education 2013). Third, training budgets range between 1% and 4% of payrolls. Nonetheless, firms have shown a low level of development related to new ideas, products, processes, and performance (Agency of industrial promotion API 2013). In fact, firms are encouraged to invest in training activities and may be reimbursed by the government. Since 1995, the upgrading program financed by the European Community (EC) is aimed at assisting Tunisian firms to improve their competitiveness at the international level through training actions. In 2000, the EC has gone further by instituting the modernization program in order to provide assistance and coaching to firms lagging behind.

Based on these facts, we argue that the focus on training practices mirrors, not only the developmental potential of firms, but also the degree to which training is taken seriously by both HR responsible and employees.

It is important to note that the question of learning transfer is not, to our knowledge, addressed in previous research on Tunisian firms. To this effect, empirical research deals with two studies aimed at exploring and investigating training practices pattern. In the first study, the focus is on the current state of training practices in some Tunisian firms. The second study is qualitative and concerns the analysis of the factors affecting learning transfer based on the technique of focus group.

3.5.1 State of Affairs of Training Practices in some Tunisian Firms

Research on HRM has known a steady evolution since 1998 with the adherence of the school of Economics and Management to Cranfield Network on global human management resources (CRANET). Three national surveys were conducted resulting in consistent data on HRM activities in Tunisian organizations. These surveys were conducted in 1999 and 2004 by Zghal, and in 2010 by Bouzguenda. The school joined the Cranfield network, comprising as of today 44 countries all around the world, in order to assess the relative position of HRM compared with European countries and to provide a framework to enhance HRM's effectiveness and contribution to organizational efficiency.

The 2010 survey, we conducted, involves 102 firms representing all sectors of activities across the country; 90% of them are engaged in the upgrading program and 10% are certified ISO 9001:2000 and 2008. The survey is based on a standardized questionnaire used by all members of the network dealing with all HRM practices.

Table 3.3 Levels of training evaluation. (Bouzguenda and Chalghaf 2010)

Evaluation levels[a]	Proportion of respondents ($N=102$; %)
Performance change at work	59.4
Employees' reactions on the job	59.4
Change in organizational performance	48.4

[a]Multiple responses are allowed

Table 3.4 Techniques used to evaluate training effectiveness. (Bouzguenda and Chalghaf 2010)

Evaluation technique[a]	Proportion ($N=102$)
Meeting the objectives set out in the training and development plan	29.4%
Reaction evaluation immediately after training	27.5
Measured job performance before and some months after training	21.6
Return on investment (ROI)	19.6
Measured job performance before and immediately after training	17.6
Total number of days training undertaken per employee per year	15.7
Informal feedback from line managers	15.7
Informal feedback from employees	15.7

[a]Multiple responses are allowed

It is relevant to present the current trends of training practices particularly those related to training evaluation in order to apprehend the general orientation in this domain.

Training Evaluation Approach and Learning Transfer Findings of 2010 CRANET survey reveal that firms are engaged in a process of training evaluation as an integral part of training practices. The results show that evaluation is realized at three main levels as illustrated in Table 3.3.

It appears that surveyed firms are highly concerned with training output in terms of better performance and reactions. Nonetheless, these results are conditioned by the extent to which learning transfer occurs. In other terms, it is expected that employees are capable of utilizing new skills and knowledge in new context and situations. This is to confirm that transfer constitutes the main issue of organizational development.

Techniques of Training Evaluation It is significant, thus to analyze the techniques used to evaluate training effectiveness in order to assess to what extent they favor transfer. Table 3.4 summarizes the main aspects of assessing learning effectiveness.

Based on the Table 3.4, we may infer a certain country-specific scheme in the conception of training programs as well as the extent to which learning transfer is measured and managed. In fact, transfer is likely to occur if certain conditions are met:

- Adequacy of training planning and results
- Short and long-term improved reactions on the job
- Efficiency-cost wise in terms of ROI
- Informal positive feedback from managers and employees.

In order to further deepen this line of reasoning, we present the experience of a well-established company in the domains of training and learning.

3.5.2 Focus Group on the Issue of Learning Transfer

Our intervention in the studied company has started since 2004 through a series of studies on managerial issues and problems that the company faced especially with the decision of the implementation of a total quality project (Bouzguenda and Chalghaf 2006, 2007, 2010, 2012). Hence, we decided to conduct a focus group aimed at understanding the perception of the employees on training and learning transfer.

The focus group is a qualitative method to collect data on a specific topic based on a discussion. It aims at generating ideas and solutions instead of asking respondents to answer questionnaires. It allows investigating attitudes, perception, and respondents' preferences in analyzing a phenomenon. The focus group is composed of 20 employees representing all categories of staff having participated in training programs during the last year including clericals and manuals.

The studied company was created by the French colonist in 1881 and was nationalized at the beginning of the 1960s. Today, it counts among the top public companies with its contribution to Gross National Product (GNP) by an average of 5%. It employs more than 7,000 persons mostly semi-qualified. It is dispersed in five regions of the country. It exports 15% of its production and the rest is sold to another public company for reproduction and exportation.

As a public organism, the company is bureaucratically structured with emphasis on rules, centralization, formality, and subordination. It has gone through major transformations in its strategy, practices, and managerial style.

As for HRM, the company established a division responsible for managing people. It has also instituted a separate department for training and continuous education. The department's policy is centered on learning and competency development. It reserves on average 4% of payrolls on training.

Scope of Training The Training department manages two types of training:

- Training for qualifications aimed at providing skills for career management and responsibilities.
- Training for perfection devoted to adapt employees' skills in order to improve productivity.

Moreover, the company relies on internal training and apprenticeship especially for clericals and manual labor. As for high-graded staff, external training is preferred through specialized centers as well as institutions of higher education.

About one-third of the total staff is trained annually in diverse domains especially with the company's decision to implement a quality management system since the late 1990s. The specificity of training policy lies in its links with compensation and career management practices. The company has established a sort of contract with employees according to which, training activities are reinforced positively with salary increases and promotions.

Based on this state of affairs, it is relevant to assess the degree of learning effectiveness as well to understand the factors having an effect on training outcomes, mainly transfer.

Training Effectiveness Approach Available documentation shows that training process is formalized in procedures, formulas, and documents from identification of training needs, program planning, to evaluation. It is to note that formalization and documentation is required for quality certification.

The evaluation of training effectiveness is realized through questionnaires administered at two instances.

- Evaluation immediately after training: Trainees are asked to rate training program on different aspects on a scale of 4 points with regard to duration, trainers, documentation, coffee breaks, classroom, and the degree of exchange among participants.
- Evaluation after 3 months: Superiors are invited to grade participants pertaining to the impact of training on the following features: the way of doing things, daily work, productivity improvement, competencies' improvement, and the degree of autonomy at work.

The evaluation's results are used to make decisions for promotions, bonuses, and other advantages' allotment.

Based on the data collected from secondary sources as well as literature review, we developed an interview guide to conduct the focus group dealing with the concepts of training, learning transfer, effectiveness of learning techniques and methods, involvement in learning, and learning conditions. The discussion was recorded and transcripted. The findings give a snapshot on learning effectiveness and suggest several tracks for improvement.

Initiatives of Learning Transfer Two perceptions of learning are distinguished based on participants position in the company.

- Employees' perception: They view training as an opportunity to improve their salaries and obtain promotions. Learning transfer is not so salient because they could always find ways to get work done.
- Process pilots' perception: Training is one of the norm requirement. It is a mean to get certified. Transfer does not automatically occur because trainees are not as motivated as they should be.

We may infer that training is perceived in a restrictive manner as it relates to material gains more than the essence of learning as it relates to productivity and performance. The same trend is detected in another study we conducted on the effectiveness of e-learning in the national post office (Louati et al. 2010). Even though the starting point of training is generally related to a performance problem, in other words individual's contribution to organizational performance, participants fail to realize this link and displace it to other outcomes.

Types of Transfer By asking participants about the impact of learning on their work and behaviors, several ideas have emerged from the discussion.

In the case of near transfer, the impact of training is easily perceptible if the situation resembles to what has been learnt. When the context becomes different or complex, the link with relevant knowledge and skills to be transferred becomes difficult to be established. Thus, similarity between learning situation and actual situation is considered essential for transfer to occur. By the same token, if dissimilarity causes some tension and frustration, participants feel comfortable to rely on their peers to handle situations.

Furthermore, participants brought up the problem of interference and the need to "unlearn" old ways in order to transfer new knowledge and skills. On the contrary, process pilots believe that the problem of near transfer is explained by the fact that trainees lack concentration during the learning process and do not take it seriously as it ought to be.

As for the case of far transfer, employees think that may be over time, they would integrate learning in the way they work and behave. As a matter of fact, superiors are supposed to grade their collaborators after 3 months from training in terms of productivity and competencies improvement. After all, employees are expected to do better in order to get highly graded and thus obtain material gains.

They have the tendency toward focusing on the process of transfer from the input and context side more than from the outputs' side. We may thus conclude that the orientation of the studied company verses into a logic of "intent of transfer" according to the terms of Quesada-Pallares (2012).

This is to confirm our central theme related to the coexistence between enablers and inhibitors in learning transfer analysis. Such coexistence is to be considered normal and an integral part of the learning system. It is important to recognize that learning transfer is a "learnable" theme and an organizational resource and capability.

Therefore, the analysis is oriented toward the assessment of the factors that have contributed to the current state of the issue. Participants' reply on such query confirms the idea related to the coexistence of enablers and inhibitors of learning transfer.

Factors Determining Learning Transfer Three categories of factors that would have an impact on learning outcomes are discerned from the participants of the focus group namely work-environment, individual, and training-design factors. The divergence between two perceptions is, once again, noted as illustrated in Table 3.5.

It seems that there are two opposed conceptions: On one side, managers think according to Mc Gregor's X theory, which suggests that employees are lazy, reject work, and avoid responsibility for learning. On the other side, employees tend to act according to theory Y, which advocates that they are attached to work, feel responsible, and are engaged to their company if conditions are favorable[1] (Bouzguenda and Chalghaf 2012).

As a result, we notice a fundamental divergence in the perceptions of the meaning of learning and its importance. Such divergence explains, to a certain degree, the

[1] The same conclusion was inferred in a previous study on the same company pertaining to the role of management by objectives and the success of total quality management.

Table 3.5 Determinants of learning transfer

	Employees' perception	Process pilots' perception
Work environment factors		
Supervisor support	−	+
Organizational culture and climate	−/+	−
Individual factors		
Motivation	+	−
Self efficacy	−/+	
Job involvement	+	−/+
Training-design factors		
Training needs analysis	−	+
Selection and sequencing of the content	−/+	+

existence of "intent of transfer" or "implicit transfer." As a matter of fact, employees report their reliance on socialization for learning transfer more than on formalized learning.

Concluding Remarks of Focus Group The study reveals some prominent findings on the crucial phenomenon of learning transfer. It allows a better understanding of the real factors governing such phenomenon. Such situation may be further explained at two levels: organizational and individual.

- At the organizational level, the importance of training design is noted as it is required by the norms of ISO. As a result, managers report being engaged to respect requirements in terms of budget, process, documentation, and evaluation. The system is "theoretically" conceived to succeed including learning transfer. As a matter of fact, the company renewed its certification in 2012.
- At the individual level, the picture becomes a little fuzzy and ambiguous related to the importance of training and learning for organizational development. Employees' involvement and motivation is unfortunately limited to their own development added to the fact that the company has a powerful union.

Therefore, what is missing is the lack of an organizational design that would not only establish but also sustain learning and transfer mechanisms independently from actors.

Based on Galbraith's star model, organizational architecture of the studied company does not concern business processes, lateral links, and structure.

We may conclude that the analysis of learning transfer in the Tunisian context reveals that the phenomenon is embedded in social processes more than in organizational processes. Certainly the implications are of concern especially in the current era of post revolution.

Advanced Issues of Learning Transfer in Post Revolution Era Even though empirical research was conducted in the period prior to the revolution in 2011, it provides some explanation for the current situation of most Tunisian firms. Such a situation is characterized by social problems, organizational dysfunctions, financial

instability, and a lack of strategic vision that would guide action. Everything is on hold and everyone is worried.

In this context, the issue of transfer is of major concern since all that we have been learning is undermined and is falling apart. Consequently, the need for a new perspective is urgent more than ever. The gap between theory and practice discussed in this chapter needs to tighten in order to overcome highlighted difficulties and barriers. Accordingly, managers are called to review their ways to get things done from the bottom–up. All is related to organizational architecture favorable to learning transfer by mobilizing its major components: technology, people, and information. Research on the creation of mechanisms of knowledge management and communities of practices may constitute a relevant theoretical background to proceed with major transformations reaching the core of the problems and not just their cosmetic aspects.

3.6 Conclusion

The debate on learning transfer has begun since the 1940s and is not yet closed. This means that the issue is of significant relevance and is manifested in all aspects of our lives. For this reason, we consider the subject as a solution to many managerial problems; hence, it is inscribed in the whole strategy of the firm.

With this respect, the focalization on internal capacities of the organization by deploying available means may constitute a rationale for orienting training activities favorable to positive transfer. Such orientation would result in developmental opportunities for both individuals and organizations.

Organizations have to be designed in such a way that factors enabling learning transfer are reinforced, whereas those inhibiting it are to be considered and managed. For instance, if learners' motivation constitutes a key success factor for training effectiveness, managers have to value learning and adapt rewards system to fit employees' needs and expectations and at the same time organization's needs in terms of performance and effectiveness. Learning transfer may be viewed as a bridge for reconciling the interests of various shareholders.

Our contribution to the theory lies in the detection of the link between organizational theory and learning transfer and training effectiveness. A learning transfer cycle based on a continuous improvement rationale is proposed upon which learning effectiveness depends on the development of a culture favorable to "continuous transfer."

Empirical research demonstrates the salience of the issue of learning transfer in the Tunisian context. Results reveal some controversies and paradoxes in managing this issue. We may notice that reality is rich of facts and that the true problem is how to make full usage of human potential. The main conclusion that may be advanced is related to the predominance of informal practices in some emergent contexts characterized by formal rules.

After all, the crisis has extended the boundaries of financial accounts to reach human capital. It follows that the risk becomes higher and challenging, and a new mode of governance is, to this effect, required now more than ever.

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Chapter 4
Learning Transfer in Organizations: An Adaptive Perspective Centered on the Learner and the Development of Self-Regulation

Jean-François Roussel

4.1 Introduction: A Major Issue That Calls for a New Perspective

Organizational training managers and trainers have focused their efforts on making it so that training is now considered an investment which facilitates human resource development, rather than merely a necessary expense, or even a legal obligation. Moreover, these managers and trainers are being asked increasingly often by their leaders about the impact produced by the training. In this regard, the role of learning transfer is crucial. Indeed, how can one aim to improve learners' performance after training without utilizing learning transfer?

According to Saks and Haccoun (2004), learning transfer in a corporate context represents a major problem for training managers, trainers, and executives alike. Even though this problem has been known for more than two decades, these authors assert that between 60 and 90 % of learning from training is not transferred to the workplace. Similarly, Naquin and Baldwin (2003) contend that as little as 10 % of the training provided in companies has an impact on learning transfer in the workplace.

In a similar vein, Holton and Baldwin (2003) state that only 10 % of training activities translate into improved performance when the learner returns to work. They note that while there may be only limited empirical grounds for suggesting such a percentage, the findings of professionals in the field confirm that a significant portion of investments in training are not effective, given the low degree of transfer.

This assertion is supported by certain statistics from a Conference Board of Canada study (Hugues and Grant 2007) of 258 Canadian companies. Indeed, the data indicate that 47 % of employees believe that they apply the acquired learning in the workplace immediately upon returning from training. This percentage drops to 12 % after 6 months and 9 % 1 year later. Moreover, data produced by Lavis for the Conference Board in 2011, based on a study of 183 companies, indicate that an

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average of 11 % of organizations believe their employees transfer a significant portion of their learning 12 months after training.

However, it is important to point out that these theories and studies do not associate learning transfer with the same indicators. In fact, whereas some studies connect it to the percentage of learning used, others link it to the increase in performance after returning to work. These divergent approaches reflect different views of learning transfer. Regardless of the differences, however, it is interesting to note that the results remain rather similar, namely that between 10 and 20 % of learning leads to transfer that could be qualified as lasting.

The situation is not very clear from a theoretical perspective either. Indeed, numerous, divergent typologies and definitions exist for learning transfer, a situation which facilitates neither understanding nor action.

In terms of meta-analyses of organizational learning transfer, certain authors refer to a concept of learning transfer based on generalization and maintenance of learning (Baldwin and Ford 1988; Burke and Hutchins 2007), whereas others (Ford and Weissbein 1997) also link it to adaptation of the learning acquired in training according to the different contexts encountered. This contextualized and differentiated view of transfer is also supported by other authors (Haskell 2001; Tardif 1999).

In keeping with the assertions of Thorndike and Woodworth (1901) based on the logic of identical elements, or in the more mechanistic spirit of behavioral psychology, transfer is too often viewed as reproducing what was taught in training, as if learners' main role was to apply what was learned, as is. Such a belief results in the training content delivered in organizational environments, often corresponding to "procedural" knowledge, which translates into fixed, closed linear sequences or work grids that the learner must follow without deviation. It is this mistaken idea of transfer that Haskell (2001) seeks to highlight in noting that we tend to think "step-by-step" techniques will invariably lead to success.

If we rely on these kinds of views, we should not be surprised that the knowledge acquired quickly becomes obsolete in an organizational environment, where change and uncertainty are prevalent. In most cases, long-term, lasting transfer requires more than simple application of standardized procedures. Indeed, it must be based on the learners' ability to use what they have learned and to adapt and not just reproduce it. The overly static view of learning transfer that favors a generalization and maintenance approach, no longer seems compatible with the constant change, even turbulence, organizations are now experiencing (Salas et al. 2003).

Furthermore, this evolution toward an adaptive perspective of learning transfer places the learner at the centre of the transfer process. With this in mind, Bell and Kozlowski (2008) propose implementing a learning approach referred to as active. For these authors, employing training strategies which favor giving learners more control over their learning process illustrates the importance of putting in place a self-regulation process to stimulate learner participation.

Since this article concerns a corporate context, it focuses mainly on learning-transfer research conducted in organizational settings. For the purposes of this article, keywords related to learning transfer (training transfer, learning transfer, skill generalization, skill maintenance) were initially employed to conduct a systematic survey of North American texts, using the following databases: Business Source Premier, Academic Source Premier, ABI Pro-Quest, and ERIC.

This initial survey was subsequently enriched with four meta-analyses pertaining specifically to learning transfer in an organizational environment, namely those of Baldwin and Ford (1988), Ford and Weissbein (1997), Burke and Hutchins (2007), and Blume et al. (2009). These four meta-analyses alone cover more than 200 studies and other works on learning transfer published between 1901 and 2008.

The present article is also based on an examination of theoretical works related to learning transfer written by both European and North American authors. In order to draw inspiration from diverse approaches, this examination included works pertaining not only to an organizational setting but also to the academic environment, where transfer represents an increasingly concerning problem (Frenay and Bédard 2006). Thus, this text focuses mainly on the corporate training, adult training, and education fields, but looks at human resource management as well.

Although learning transfer must be viewed from a systemic perspective, which includes factors related to the trainees' individual characteristics, the training practices, and the environment (Baldwin and Ford 1988; Ford and Weissbein 1997; Burke and Hutchins 2007), this text focuses mainly on the individual dimension. In so doing, it seeks not to deny the importance of training practices and environmental factors but rather to highlight the individual dimension, which seems particularly current and relevant (Blume et al. 2009) given the adaptive view of learning transfer presented here.

Thus it is an adaptive, differentiated view of learning transfer in the organizational environment presented here. To that end, certain definitional elements are proposed and then structured in relation to the context and the learning content to be transferred. Next, the central role to be attributed to the learner is discussed. It emphasizes the development of skills related to self-regulation, which makes it possible to favor this adaptive perspective of learning transfer. Finally, possible avenues for research as well as certain benefits are identified.

4.2 Learning Transfer in an Organizational Context: Definitional Elements and Proposed Taxonomy

4.2.1 The Adaptive Character of Learning Transfer in an Organizational Context

In their review, Baldwin and Ford (1988) defined learning transfer as:

> the generalization of material learned in training to the job context and the maintenance of the learned material over a period of time on the job. (p. 64)

Additionally, they identified three groups of factors which facilitate transfer related to the trainee's individual characteristics, the training practices, and the work environment. The authors define these as follows:

- Trainee characteristics: Variables related to individual ability or skill, motivation, and personality factors;

- Training design: The learning principles, the sequencing of training material (content, activities, etc.), and the job relevance of the training content;
- Work environment: The supervisory and peer support available, work climate, and opportunities to apply learned behaviors on the job.

The authors also identified four limitations in the research done so far, namely the low complexity of the tasks used to examine the training practices for learning transfer; the lack of a conceptual framework for choosing the trainee characteristics to examine, despite their importance in facilitating transfer; the lack of attention to clearly specifying the environment factors; and, finally, the problems related to the conceptualization itself of learning transfer.

In 1997, Ford and Weissbein, following on the heels of Baldwin and Ford (1988), also defined transfer in terms of generalization and maintenance on the job of learning acquired in training. However, referring to Smith et al. (1997), Ford and Weissbein (1997) identified a third characteristic of learning transfer related this time to the adaptation of learning occurring in new work contexts. They underscored the importance of researching the factors that facilitate this more adaptive perspective of transfer.

To that end, these authors believed the factors related to training practices seemed particularly promising for promoting this more adaptive character. Moreover, they emphasized the relevance of focusing on studying practices that support learning by discovery and the development of metacognitive abilities in learners. With respect to transfer, metacognition can be defined as comprising planning, monitoring, and self-regulation, including the ability to know what the most appropriate strategies are to facilitate further knowledge acquisition and application (Ford and Kraiger 1995).

In 2007, Burke and Hutchins produced a third meta-analysis on learning transfer in organizational environments. In order to define transfer, they retained the two characteristics of generalization and maintenance on the job of learning acquired in training. Reviewing more than 100 studies, the authors recommended once again focusing future research on training practices that facilitate transfer, particularly learning by discovery, problem solving, and development of metacognitive abilities in learners. They also noted the importance of measuring transfer relative to the results produced, conducting studies directly in an organizational environment and developing a systemic view of transfer which takes into account the three groups of factors that promote it.

The adaptive, contextualized aspect of learning transfer has been echoed by several authors, including Haskell (2001), who defined it as:

> our use of past learning when learning something new and the application of that learning to both similar and new situations. (p. xiii)

For Haskell (2001), the fundamental problem with transfer lies in the fact that no two situations are completely identical, and nothing happens exactly the same way twice.

Bracke (2004) also referred to the adaptive aspect of transfer, which she links to three constraints: firstly, the fact that the individual is led to overcome the inherent difficulties in certain tasks for which there are no ready-made solutions, secondly,

that the transfer occurs in a problem-solving context, and, thirdly, that it must take into account the richness of the environment in which it occurs. According to Bracke (2004), transfer is not a matter of simple application but instead requires an adaptation based on a process of evaluation that considers the differences which exist between the training situation and the transfer context.

Mc Keachie et al. (1986) take a similar view when they assert that it is relevant to refer to learning transfer in cases where the learning is used in a context relatively dissimilar to the one where it was originally acquired. These authors also state that if the transfer context is different enough that the acquired learning presents certain application difficulties, its transfer will necessitate the use of a problem-solving process. Furthermore, in cases where the transfer context is even more dissimilar, it will require creativity from the learner.

These characteristic transfer contexts for learning and usage are also noted by Tardif (1999), who asserts that learning transfer essentially refers to the cognitive mechanism which consists of using in a target task (the transfer context) knowledge constructed or a skill developed in a source task (the training situation).

From this perspective, it is important to note the highly fluctuating nature of the work contexts in an organizational setting. Indeed, Smith et al. (1997) affirm that these contexts are characterized by uncertainty, constant change, and turbulence. For his part, Thayer (1997) points out that these constant changes are related, in particular, to the introduction of new technologies and work reorganization.

In light of this context of constant change, Smith et al. (1997) also emphasize the importance of the adaptive aspect of learning transfer in an organizational setting, which can not only necessitate the adaptation of various methods learned in training but also require the creation of new approaches in order to cope with the changes effectively. For Haskell (1997), adaptation, made necessary by all of these organizational changes, requires that employees be able not only to understand the similarities which exist between the various work contexts, but also grasp the differences in order to truly be able to transfer the learning acquired in training. So, in an organizational context, an adaptive view of learning transfer (Ford and Weissbein 1997), which requires recontextualization of the learned material, appears relevant because of the changing nature of the work contexts.

The adaptive aspect of learning transfer is becoming more clearly recognized. Indeed, Bell and Kozlowski (2009) underscore the importance of aiming for adaptive transfer, which they contrast with the adoption of predetermined routines, because of the increasingly frequent changes in tasks and work contexts. Even Baldwin and Ford, in collaboration with Blume and Huang (2009), now assert that there are two types of transferable skills: closed skills, which consist in reproducing fixed sequences, and open skills, which involve a degree of latitude rather than a single solution. Thus, transfer is now not simply a matter of generalizing to a broader situation that which applies to a limited number of corresponding cases (Legendre 2005) and then maintaining it for a certain period of time; it also requires a process of particularization (Tardif 1999) which makes it possible to determine what does and does not apply to a specific context within a logic of adaptation.

Although a process of decontextualization (Perkins and Salomon 1989) serving to identify certain more generalizable invariants (Le Boterf 2000) seems initially

necessary, learning transfer also requires a recontextualization that remains crucial in an organizational context in order to produce the expected results and, thereby, contribute to improving the learners' performance when they return to their jobs. As Le Boterf (2000) also points out, transfer is not an operation of generalization but rather a process of particularization supported by certain invariants.

Although it seems clear that learning transfer requires a certain generalization in order to identify invariants, according to Tardif (1999), studies on the development of expertise illustrate that, in their field, experts achieve a large number of astute transfers. The studies also demonstrate that these experts have an extensive amount of specialized knowledge and that this knowledge is highly organized in their memory. In this regard, Tardif quotes Rey (1996, p. 90) who states that:

> All indications are that an expert is not someone who is able to generalize a structure but rather someone who knows a large number of specific procedures. An expert is such not through a power of generalization but rather through one of particularization, and transfer results more from the latter than the former

In this respect, certain characteristics that describe the work of an expert seem enlightening. According to Perrenoud (1997), experts are able to identify similarities between contexts where less-trained individuals would be unable to do so, to retrieve key concepts from their memory, and to construct an original solution from the whole of their diverse knowledge. Thus, these invariants are constructed using a list of situations that allow the expert to identify certain concepts not in order to generalize a unique solution applicable to all contexts, but rather to construct different solutions adapted to each situation encountered.

4.2.2 The Differentiated Character of Learning Transfer in an Organizational Environment

Many typologies have been developed to define learning transfer. Toupin (1995) defines nine types of transfer grouped, for analysis purposes, into typologies, themselves a function of the transfer content or context. With respect to transfer content, the author identifies the following typologies:

- Positive transfer–negative transfer: Positive in the sense that acquiring the knowledge in question can facilitate learning new material or the individual's performance in a task; negative in the sense that acquiring the knowledge interferes with learning new material or the individual's performance in a task.
- Vertical transfer–lateral transfer: Vertical when the knowledge or skill in question directly contributes to acquiring a superior skill; lateral when the knowledge or skill can be generalized to a situation that comprises more or less the same degree of complexity.

In terms of transfer context, Toupin (1995) identifies the following typologies:

- Specific transfer–general transfer: Specific when there is an obvious degree of similarity between the elements of the initial context (source situation) and those of the transfer context (target situation); general when there is little similarity.

- Short transfer–long transfer: Short when it involves a transfer situation that is relatively similar to the learning situation; long when it involves a transfer situation that is relatively different from the learning situation.

Finally, with respect to the two categories, content and context, Toupin (1995) defines analogical transfer as involving the use not of the knowledge as such but rather of our representations in order to think and act in a generally unfamiliar situation.

Haskell (2001) also reviewed various definitions of transfer, grouping them either into the category of transfer content or into the two categories of content and context.

For content, Haskell (2001), referring to the theoretical construct developed in cognitive psychology (Anderson 1983), first identifies two types of transfers: declarative-to-procedural and procedural-to-declarative. Haskell (2001) then specifies that vertical transfer occurs when skills or knowledge already learned directly contribute to acquiring superior skills or knowledge, whereas reverse transfer should be considered a modification of knowledge already learned following the acquisition of new knowledge.

With regard to content and context, the definitions and typologies inventoried by Haskell (2001) are numerous and, as the author explains, not mutually exclusive. They are evidence of the multiplicity of work done as well as the lack of consensus regarding the concept and the very definition of learning transfer. Haskell (2001) defines literal transfer as being related to knowledge and procedures and lateral transfer as concerning procedures and skills. Next, Haskell (2001) connects general, or non-specific transfer to general knowledge, procedural transfer to procedural knowledge, and conditional transfer to conditional knowledge. Finally, he links relational transfer to knowledge acquired about structures, theoretical transfer to knowledge acquired in depth, and strategic transfer to knowledge acquired in the area of mental processes.

Thus, there are a good number of similarities between these different typologies and definitions. According to Toupin (1995), the types of transfer referred to as short, specific and literal, on one hand, and long and general, on the other, define relatively similar realities. In the same perspective, Haskell (2001) asserts that the types of transfer called literal, lateral, and procedural are not mutually exclusive since they all refer to knowledge related to procedures.

Furthermore, even though theirs is not a review of transfer definitions and typologies, as in the case of Haskell (2001) and Toupin (1995), Perkins and Salomon (1989) also propose a context-related typology.

Indeed, these authors present a transfer typology linked to the distance between the training situation and the transfer context. They describe a “low road transfer,” where the degree of similarity between the training situation and the transfer context is so high that a cognitive element learned in training can be quickly identified and transferred with relatively little adaptation, and a “high road transfer,” where the degree of similarity between the training situation and the transfer context is so limited that an abstraction requiring considerable attention is necessary to transfer the acquired learning. The typology of Perkins and Salomon (1989) seems particularly

interesting because in addition to identifying types of transfer, it also specifies the underlying cognitive mechanisms.

Moreover, as these authors explain, the training practices will differ based on the two types of transfer. Thus, in a low-road-transfer situation, the training should focus on automating the learning using sustained practice carried out in varied contexts in order to accelerate making connections and facilitate the transfer in multiple, albeit generally similar, contexts. In contrast, with high-road-transfer situations, the training practices should focus on the use of intentional metacognitive strategies.

This contextualized, differentiated view of transfer is echoed by several authors. In fact, two categories of transfer, namely near transfer and far transfer, are identified by Butterfield and Nelson (1989), Haskell (2001), Holton and Baldwin (2003), Laker (1990), Toupin (1995), and Yorks (2003). Like Perkins and Salomon (1989), Holton and Baldwin (2003) propose a typology related to the transfer context.

For Holton and Baldwin (2003), who, like Perkins and Salomon (1989), associate the types of transfer with the distance between the training situation and the transfer context, near transfer falls within the specific context for which the training was designed and represents the traditional notion of transfer, whereas far transfer occurs in contexts which, although related to the training, do not strictly correspond to the initial objective for which the training was developed.

Furthermore, even though the authors do not explicitly mention it, the two categories of transferable skills referred to as closed and open by Blume et al. (2009) evoke the two types of transfer (near and far). Indeed, the more fixed nature of the sequences linked to closed skills points to a strong degree of similarity between the training situation and the transfer situation, whereas the latitude that characterizes open skills seems instead linked to relatively different contexts.

Thus, based on these various authors' work, one can conclude that the typologies and definitions for learning transfer are nonunifying and warrant review. Furthermore, learning transfer is a differentiated concept which concerns both the context in which it occurs and the content of the acquired learning. The definition and taxonomy proposed in this article align with that perspective.

Moreover, this differentiated aspect of learning transfer, as with transfer's adaptive character, is related to the degree of difference that exists between the training situation and the transfer context. These two characteristics of learning transfer, therefore, appear complementary and shape the definition and taxonomy of learning transfer in an organizational context presented in this article.

4.2.3 A Definition and Taxonomy of Learning Transfer

As noted in the various views, definitions, and typologies discussed above, two basic elements are generally associated with learning transfer:

- Transport: The noun "transfer" is derived from the prefix "trans," which reflects the idea of transport or passage between two situations, i.e., a source situation, referred to here as the "training situation," and a target situation, called the "work context" (Tardif 1999). Transfer, therefore, includes this idea of passage.

- Degree of similarity: The various typologies describing learning transfer generally refer to the degree of similarity between the training situation and the transfer context in the workplace. Hence, classifications such as general or specific transfer and near or far transfer (Holton and Baldwin 2003; Laker 1990; Toupin 1995) indicate the degree of similarity between these two contexts.

In fact, Haskell (2001) refers to the elements of transport and similarity in his definition of transfer, which he equates with the "use of past learning when learning something new and the application of that learning to both similar and new situations" (p. xiii). Holton and Baldwin (2003) similarly assert that transfer requires the application in the workplace of knowledge acquired in training, while also integrating the concept of distance, namely the gap that exists between the training environment and the application of the learning in the workplace.

The definition retained in the present article incorporates these elements of transport and similarity. Additionally, it emphasizes the learner's performance in order to link measurement of learning transfer to the results produced, as recommended by Burke and Hutchins (2007). Furthermore, in keeping with the definitions developed by Haskell (2001), Bell and Kozlowski (2009), Mc Keachie et al. (1986), Perkins and Salomon (1989) and Tardif (1999), the definition proposed in this article reflects the adaptive, contextualized character of learning transfer since it underscores that there must be a certain difference between the source and target situations for transfer to truly occur. And also consistent with this adaptive view, the definition refers to an individual's use of the learning acquired in training and not its generalization and maintenance.

Finally, the definition not only covers knowledge and know-how as learning elements to be transferred from the training situation to the work context, but also addresses skills, i.e.,

> a learning object that refers to the effective use of relatively stable cognitive, emotional, moral and motor processes, etc. in effectively accomplishing a task or action. (Legendre 2005, p. 731).

Consequently, the proposed definition reads as follows:

> learning transfer in an organizational context is the use by individuals of the knowledge, know-how, and skills learned during training in work contexts comprising a certain degree of newness, with the priority objective of improving their performance

4.2.4 A Taxonomy That Structures Learning Transfer

Although it comprises unifying elements, this definition alone is not sufficient to reflect the differentiated character of learning transfer in an organizational context since it refers, if only implicitly, to just one type of transfer.

Indeed, Haskell (2001) affirms that there is no classification system or taxonomy for learning transfer based specifically on the degrees of similarity between the training situation, or source situation, and the transfer context, or target situation. It is relative to the conceptualization itself of learning transfer that this taxonomy

is likely to produce more compelling results in an organizational context. Thus, by proposing a differentiated view of learning transfer based on adaptation (Ford and Weissbein 1997), recontextualization, and generation of new learning (Tardif 1999), this taxonomy could lead to the implementation of renewed mechanisms, particularly in the area of training practices (Burke and Hutchins 2007; Ford and Weissbein 1997), to facilitate learning transfer.

Haskell (2001) structured the degree of similarity between the training situation and the transfer context. The author did this by developing a transfer taxonomy with six levels: nonspecific transfer, application transfer, context transfer, near transfer, far transfer, and creative transfer.

Haskell's taxonomy seems very interesting because it creates six levels of transfer and, in so doing, represents an innovative contribution. However, it comprises one particularity that is important to remember. Indeed, this notion of degree of similarity between the source and target situations (Tardif 1999) is still relatively subjective, because what for one individual may seem like a far transfer might be perceived by another as a near transfer.

So, for Haskell (2001), each of the transfer levels is based on judgments of similarity. According to him, this degree of similarity is related to the individual's knowledge. He thus confirms that what may seem to a novice of a profession or work function like a far transfer could be perceived by an expert in the same profession or work function as a near transfer. He believes that this aspect should be considered, especially with regard to the training practices for learning transfer.

However, Haskell's (2001) taxonomy does not clarify in a consistent manner the elements of similarity or dissimilarity from which it was constructed. Indeed, this dissimilarity is sometimes a function of the transfer context, such as in the case of context transfer, where the author refers to a change in the physical environment, while in other cases, it is also related to the learning content as such, with the author using the analogy of learning ice skating and then roller skating as an example of near transfer.

It is in this perspective that the following taxonomy is proposed (Roussel 2011). Adapted from Haskell's (2001) model, it comprises four levels, ranging from context transfer to creative transfer. It aims, first and foremost, to translate an intention of contextualization relative to the training given in an organizational environment. In addition, this taxonomy structures the differentiated character of learning transfer (Haskell 2001; Holton and Baldwin 2003). It does this by introducing elements of difference between the training and transfer situations, with these elements being linked to both the realization context and the content of the learning to be transferred—two components contained in the typologies of Toupin (1995) and Haskell (2001). Thus, the lesser the difference, the more the type of transfer concerned will resemble context transfer or near transfer. In contrast, the greater the difference, the more the type of transfer will resemble far transfer or creative transfer. The following taxonomy presents these four levels of transfer based on content and context and describes and illustrates each one using examples from situations encountered in an organizational environment.

Context Transfer This first level of transfer describes a situation where the differences between the training situation and the work context are not related to the learning content to be transferred, which remains relatively similar, but instead concern the realization context: work environment, realization conditions, etc. Despite this small difference, a certain degree of adaptation is still necessary. Example: producing a table of data identical to the one learned in training using the same office software, but in a context where there is less time and frequent interruptions.

Near Transfer This second level assumes differences not only between the training situation and the work context, in terms of the realization context, but also in the learning content to be transferred. In this case, the difference between the training situation and the transfer context is large enough that a certain degree of adaptation is necessary for transfer. To use the preceding example, not only is there less time and frequent interruptions, the table of data to be produced (still using the same office software) also requires some additions.

Far Transfer This third level assumes not just differences but major changes in both the realization context and the learning content to be transferred. These changes render the difference between the training situation and the work context so great that a high degree of adaptation is necessary for transfer. A typical example would be transferring learning related to the relational skills needed to conduct a performance appraisal interview, where the issues, outcomes, and expectations vary widely.

Creative Transfer This fourth level assumes not only major changes in the realization context between the training situation and the work context, but also the discovery of a new field of application for the learning to be transferred, relative to the content element. As a result of this new field of application, transfer requires creativity and, therefore, comprises an innovative character. An example would be the transfer of registered scientific knowledge in the context of developing new medications.

4.3 A Greater Role for the Learner: The Development of Self-Regulation

4.3.1 More Active Participation for Learners in the Organizational Environment

The adaptive, differentiated character of learning transfer, for which there is growing consensus (Bell and Kozlowski 2009; Blume et al. 2009; Burke and Hutchins 2007; Ford and Weissbein 1997; Haskell 2001), opens up interesting avenues for training development. These avenues of research highlight the central role to be attributed to the learner. Although it applies to all types of transfer, this adaptive,

differentiated character appears particularly relevant in the case of far transfer and creative transfer.

Indeed, as noted by Blume et al. (2009), in the case of open skills, where latitude and freedom to act are the key elements, learning transfer is linked to individuals' ability to identify and use transfer opportunities in their workplace. Furthermore, for this type of skill, individual factors such as motivation, self-efficacy, and prior experiences, play a more important role than with closed activities (Blume et al. 2009).

Certain trends in the field of organizational training are, in fact, headed in that direction. Indeed, for Lavis (2011), learning in a corporate setting must evolve from a perspective of a "product" created for learners to one of a "process" involving them. According to the author, this will result in a paradigm shift that will lead individuals in the workplace not to apply relatively fixed methods but instead to determine, without any set formula, the means they need to use to incorporate the new learning approaches and activities into their functions.

This evolution toward a greater role for the individual can also be observed in the related area of knowledge transfer. In this case, the recipient (the person for whom the knowledge is intended) was initially perceived as a passive participant who had only to reproduce, as the knowledge is transmitted by a generally more experienced knowledge holder (Parent et al. 2007). This approach was heavily criticized and subsequently replaced by one where the recipient plays an active role (Leonard 2007), somewhat similar to that of a learner.

4.3.2 The Development of Self-Regulation from a Perspective of Learning Transfer

Learners in an organizational environment will, therefore, need to develop more autonomy, particularly with regard to learning methods (Lavis 2011). As notes Carré (2010), this greater control by learners over their learning methods is a characteristic of self-regulation. Unlike self-direction, self-regulation concerns the means to be used, whereas the objectives or goals to be reached are associated with self-direction. In this sense, although attributing a greater role to the learner is very common in the organizational context, the role itself nevertheless remains somewhat structured.

This increased emphasis on the individual's role in learning transfer is, therefore, more specifically related to the development of self-regulation. To begin with, Schunk (2001) describes a four-phase process for developing self-regulation: observation, emulation, self-control, and self-regulation. According to him, the process begins with learners, often novices, observing a given task performed by an experienced expert, followed by guided application. The second phase, referred to as emulation, is reached when the learners are able to carry out the task at a level of performance similar to that of the model observed. The third phase, self-control, occurs when the learners are able to carry out the task not only at a performance level,

similar to that of the model, but also while making it their own, i.e., adjusting the execution process according to their own beliefs regarding efficiency. Finally, the self-regulation phase is reached when the learners develop the ability to adapt the skills and strategies used for the task to other contexts while remaining motivated. This fourth phase clearly evokes the notion of adaptive transfer, illustrating the links that exist between these two concepts.

According to Zimmerman (2000), self-regulation can be described as a cyclical process that uses feedback from prior performance to make adjustments during current efforts. In this respect, his description makes direct reference to the transfer process. Although it was mainly developed in the academic environment, self-regulation still has connections with goal attainment and, more broadly, the dimension of results and performance (Zimmerman and Schunk 2011), which makes it relevant to the reality of learning transfer in an organizational context. Furthermore, Winne (2011), still in reference to an academic context, identifies transfer as being the goal of the self-regulation process. In that regard, he asserts, referring to Perkins and Salomon (1989), that the objective of the self-regulation process is to enable learners to develop a greater ability to anticipate so they can more easily and successfully complete various tasks in the future. Finally, its notion of adjustment fits well with the adaptive view of transfer discussed here.

4.3.3 The Importance of Metacognition in the Context of Skills Development

From the perspective of competency development, the self-regulation process is particularly focused on developing metacognitive skills that enable the learner to choose and use the appropriate learning strategies (Paris et al. 2001). Indeed, Ford and Kraiger (1995) define metacognition by referring to the planning, control, and self-regulation skills that enable an individual to determine the most appropriate strategies to facilitate the acquisition of knowledge and its potential uses.

Even more specifically, Bell and Kozlowski (2009), referring to Keith and Frese (2005), assert that the development of metacognitive skills contributes to achieving an adaptive transfer of learning. They contend that the adaptive character of learning transfer is related to the fact that the learner is led to resolve problems in situations which are different from those encountered in training, thereby, clearly referring to far transfer. Furthermore, they explain that the development of metacognitive skills plays a more important role in the case of adaptive transfer than in cases of transfer; they qualify as analogical or near, where there is a greater similarity between the training and transfer contexts. Finally, Bell and Kozlowski (2009) note that this adaptive transfer can lead to a higher degree of long-term performance unlike analogical transfer which instead leads to performance that is short-term and tends to subsequently decline.

In fact, these two concepts of self-regulation and metacognition are closely connected. Zimmerman and Schunk (2011) believe that individuals are self-regulated

to the extent that they play an active role in their learning in terms of motivation, action, and metacognition. For Cosnefroy (2010), self-regulation means that the individuals self-analyze to develop a critical view of their performance and evaluate the work accomplished in order to make adjustments, if necessary. For this author, metacognition, thus, appears to be a key component of self-regulation from the viewpoint of changing behavior.

However, although metacognition contributes to the development of self-regulation, it mainly emphasizes the development of knowledge and choosing cognitive strategies and, consequently, has less to do with beliefs and the emotional dimensions, which are nonetheless important in developing self-regulation (Zimmerman 2000). Self-regulation, thus, encompasses metacognition. To illustrate the complementarity between self-regulation and metacognition, Zimmerman (2000) offers the example of a novice chess player who, despite knowing a proven defense strategy, is unable to implement it effectively in a highly competitive context owing to a lack of confidence.

From an organizational perspective, the development of metacognitive skills is also related to learning transfer. On this topic, Burke and Hutchins (2007) state that research suggests trainees' metacognitive ability and experience could function as substitutes for a supportive work environment in achieving transfer success. Referring to research conducted by Enos et al. (2003), they note that managers using these metacognitive skills were able to achieve their objectives by identifying certain relevant learning opportunities, despite a difficult work climate. This assertion is promising because it underscores the importance that should be placed on the individual in the learning transfer process, especially in difficult contexts—a current reality for many organizations, given the challenging economic conditions.

Although there are still few studies, some nevertheless clearly illustrate the impact on learning transfer of developing self-regulation and metacognition. Indeed, as early as 1998, Ford et al. established positive links between the development of metacognitive skills in learners and learning transfer through various training simulations. Furthermore, in light of the results obtained, which indicated a positive correlation coefficient with learning transfer, these authors stated that learning strategies aimed at developing metacognition in learners are the most important for increasing the impact of training. Similar results were subsequently obtained by Schmidt and Ford (2003), this time in training activities related to the creation of websites. In this study, after being briefed, the participants were led to reflect on their learning, in particular by means of a self-assessment questionnaire on their performance and learning. Based on the results obtained, which indicated a moderate correlation coefficient between metacognition and post-training learning transfer, the authors asserted that the development of metacognitive skills is a strong predictor of learning transfer.

In a context of managerial competency development, this time, a study conducted by Dierdorff and Ellington (2012) made it possible to establish positive links between the development of metacognitive skills and teamwork-related skills. Here again, various moderate correlation coefficients allowed the authors to conclude that learners demonstrating the strongest metacognitive abilities are better able to

collaborate in a group and make decisions more efficiently. More broadly, Dierdorff and Ellington (2012) assert that in a training context, the development of self-regulation for the learner is important because, due to its dynamic nature, it has a positive impact on both motivation and performance.

Still in relation to managerial-competency training situations, Keith and Frese (2005) link emotion to metacognition. Their research thus makes it possible to more broadly discuss the impact of self-regulation on learning transfer. The results obtained, which highlight the importance of an adaptive perspective for learning transfer, because it involves problem solving, indicate a moderate correlation coefficient with learning transfer both for cognitive aspects and for emotional ones and lead the authors to conclude that these two dimensions need to be taken into account.

4.3.4 The Trainer's Role: A Facilitation Perspective

Even though the development of self-regulation and metacognition are primarily individual processes, an external facilitator can make a significant contribution.

Indeed, Lafortune et al. (2003) suggest that "reflecting metacognitively on one's learning is a complex thought process since it is a process of interiorization" (p. 75). For Doly (1997), whose writings constitute a theoretical model developed in an educational context, this interiorization process requires interaction. More specifically, it follows a four-step progression. First, the expert provides a model, making it imitable by explaining it. Next, the novice takes the expert's place for the task while the expert communicates his or her "know-how." The novice is then encouraged to take initiatives, with the expert questioning and offering explanation, expecting answers instead of trying to provide them. Finally, the novice is able to autonomously manage the tasks.

For Lafortune et al. (2003), this type of interiorization process cannot happen automatically. Like Doly (1997), these authors place it theoretically in an interactive context which, in this specific case, occurs between a teacher and students. It, therefore, requires the intervention of a knowledgeable guide, and, consequently, trainers have a role to play. Lafortune et al. (2003) also indentify four steps for the development of metacognition in an educational context.

According to Roussel (2011), 18 practical actions that facilitate the development of metacognitive skills in learners can be implemented by a trainer during the delivery of a training program, this time in an organizational context, with the objective of enabling far-learning transfer. As in the case of Doly (1997) and Lafortune et al. (2003), these actions are linked to a four-step process, namely modeling, guided practice, cooperative practice, and autonomous practice. Although it is somewhat simplistic to associate the development of metacognition in learners solely with the use of a relatively structured process, it nevertheless seems prudent, for both training and research purposes, to include these actions within a guided approach.

These steps structure the specific actions the trainer can take to facilitate the development of metacognition in learners. However, it is essential that this process

be implemented in a progressive logic that leads to the learners' autonomization. Although initiated by the trainer-facilitator, this interiorization process must subsequently be autonomously integrated by the learner.

A study involving 41 first-level managers in a leadership development program was used to measure the impact of these 18 actions on far-learning transfer (Roussel 2011). The program comprised three one-day training activities delivered in alternation over a 16-month period, which included themes related to developing managerial skills.

For the study, a process was first put in place to evaluate far-learning transfer over a 16-month period. To that end, a competency profile comprising four performance areas—namely execution effectiveness, succession development, communication quality, and ongoing improvement of practices—and 15 indicators was created specifically for the company where the study was conducted.

The results obtained indicate a 10% improvement in perceived performance by the learners. Furthermore, for the "execution effectiveness," "succession development," and "ongoing improvement of practices" performance areas, the specific scores were 14, 11, and 7%, respectively. Only the "communication quality" result cannot be considered statistically significant.

This evaluation of learning transfer aligns with the recommendations proposed by Burke and Hutchins (2007) regarding the measurement of learning transfer, who suggest it be done in an organizational environment using real results, not intentions, over a period of at least 12 months. The results obtained compare favorably with those of similar studies, including the one conducted by Tracey et al. (1995), which indicated a 14% increase in transfer 6 to 8 weeks after the training, and by Axtell et al. (1997) which, after 1 year, did not find any increase in transfer.

Roussel's study of 41 first-level managers in an organizational environment next evaluated the connections between the increase in performance associated with far-learning transfer and the 18 key actions used by a trainer to facilitate the learners' development of metacognition. More specifically, each of these 18 actions was linked to one of the four steps in the metacognition interiorization process, namely modeling, guided practice, cooperative practice, and autonomous practice.

The correlation coefficients between the scores for each of the four process steps and the scores for the far-learning transfer are mostly moderate and as follows: with modeling, 0.532; with guided practice, 0.438; with cooperative practice, 0.168; and with autonomous practice, 0.393. Only the result for cooperative practice cannot be considered statistically significant.

Furthermore, with respect to the regression analysis for this study, the 18 actions to facilitate learners' development of metacognition, when grouped together, make it possible to explain 9% of the variance in far transfer.

The 18 actions related to the four steps in the process for developing learners' metacognition are described in Table 4.1 (Roussel 2011).

Still as part of the same study, but this time using "contrasting case" interviews (Poupart et al. 1997), most of the participants interviewed underscored the importance of the examples given by the trainer with respect to far-learning transfer. This action, which is associated with the modeling step, involves the trainer not only giving examples but also using him or herself as an example. These examples, when

Table 4.1 Eighteen actions by a trainer to foster metacognitive development

1 Modeling
Before beginning the learning activities, the trainer asks questions or provides a review that enables the learners to:
Recall what they previously learned in training or as part of their work experiences.
Remember strong points and areas for improvement that they had identified in training or as part of their work experiences.
At the start of the learning activities, the trainer:
Clarifies the objective and the procedure to be followed.
Gives examples to illustrate how the learning activities will be carried out as well as certain related potential transfer situations.
Not only provides examples but also "uses him/herself as an example" by performing the learning activity in front of the group.
After giving the examples, the trainer:
Communicates his/her own questions and beliefs to the group.
Invites the learners to ask questions or provide feedback.
2 Guided practice
During the preparation for the learning activities, the trainer:
Asks questions or intervenes to help the learners clarify their personal goals.
Reminds the learners of the objective and the procedure, when necessary.
Asks questions or intervenes to help the learners adjust their methods.
During or after the learning activities, the trainer:
Asks questions or intervenes to help the learners clarify their methods with respect to both preparing for and performing the activity.
Gives the learners feedback on the methods they used to prepare for and perform the activity.
Asks questions or intervenes to help the learners self-evaluate the methods they used to prepare for and perform the activity.
3 Cooperative practice
During or after the learning activities, the trainer:
Asks questions or intervenes to lead the learners to give feedback to or receive it from the other learners regarding their methods.
Asks the learners to share with the entire group the feedback they received from their fellow learners.
4 Autonomous practice
During or after the learning activities, the trainer asks questions or intervenes to help the learners:
Identify development opportunities to pursue in their work.
Find meaning in the various elements learned relative to their personal goals and professional plan.
Identify how what they have learned could be used in other contexts, particularly their work.

they concern the transfer of learning occurring in the learning activity in progress, enable the participants to access the trainer's experience and, thereby, better identify possible target situations in which learning transfer is likely to happen. In that regard, this action helps the participants identify possible transfer situations in their work environment, a crucial element for transferring open skills (Blume et al. 2009), such as those developed during this managerial skills training program.

The results of this study point to possible avenues for future research. In addition to reviewing and enriching the key actions related to the third step in the metacogni-

tion development process, i.e., cooperative practice, the impact of this process and the related actions could also be evaluated in less formal learning situations, such as coaching, task training, or knowledge transfer. This would make it possible to better understand the facilitation role that can be played by a trainer in developing metacognition and, more broadly, the autonomization of the learner from a perspective of learning transfer. The possible benefits for the training community seem very promising, especially for training trainers and coaches.

4.4 Conclusion

This article has endeavored to examine a more contemporary view of learning transfer by highlighting transfer's adaptive character. In a constantly changing environment, this type of perspective, for which there is growing consensus, appears to be a necessary condition for achieving lasting results. This new point of view also clearly underscores the importance to be attributed to the learner in the various learning approaches. Placing the individual at the centre of the learning and transfer process, thus, increasingly seems to be a fundamental direction to take in the organizational environment.

It is in this light that using approaches which favor the development of self-regulation becomes particularly relevant. Although sometimes more demanding with respect to training management, such approaches nevertheless seem to offer more promising results, especially in the medium to long term. These approaches place the individual at the centre of the process and enable the trainer to play a facilitating role in the learner's autonomization. Employed in work environments rich in transfer opportunities, they appear to hold great potential for increasing the level of learning transfer in the organizational environment.

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Chapter 5
A Systemic Perspective of Training Transfer

Constantine Kontoghiorghes

5.1 Introduction

During the last two decades, the topic of learning transfer has drawn special attention among human resource development (HRD) scholars and practitioners. What triggered this strong emphasis on the learning transfer topic was its critical importance with regard to training program effectiveness as well as estimates indicating that only 10 to 15 % of what is learned in training is actually transferred back to the job. Given the low learning transfer figures, the widely held belief has been that unless the training transfer process is maximized, the return of training investments, and thus the reputation of the training function, can be greatly compromised.

In the early years, training transfer practice, research, and thinking were significantly influenced by the seminal work of Broad and Newstrom (1992) and Baldwin and Ford (1988). Relying on Newstrom's (1986) study, Broad and Newstrom (1992) prioritized the main training transfer barriers as follows:

- Lack of reinforcement on the job
- Interference from immediate work environment (such as work and time pressure, insufficient authority, ineffective work processes, and inadequate equipment or facilities)
- Nonsupportive organizational culture
- Trainees' perception of impractical training programs
- Trainees' perception of irrelevant training content
- Trainees' discomfort with training change and associated effort
- Separation from inspiration or support of the trainer
- Trainees' perception of poorly designed/delivered training program
- Pressure from peers to resist change.

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5.2 Training Transfer Strategies

A close look at the above-described training transfer barriers will reveal that a sound instructional system design by itself is not enough when it comes to training program effectiveness. The success of the training program greatly depends on a number of work-environment factors which influence the extent to which the trainee will effectively transfer the newly learned skills and knowledge back to the workplace. To alleviate such training transfer constraints, Board and Newstrom (1992) recommended three types of training transfer strategies: transfer strategies before training, training transfer strategies during training, and training transfer strategies following training. A brief description of each set of strategies follows.

5.2.1 Transfer Strategies Before Training

Management support and endorsement of the training effort can greatly influence the success of any training intervention. According to Broad and Newstrom (1992),

> support from the manager greatly strengthens the likelihood that trainees will apply the new learning effectively on the job. (p. 60)

It is imperative, therefore, that such support and commitment from management is gained before training takes place.

What can also facilitate the training transfer process is supervisory and trainee involvement in the needs-analysis phase of the training program. When trainees are involved in the needs-assessment procedures, they will be more likely to be receptive to training, since they will be able to associate it to their personal needs. At the same time, supervisory involvement in the needs-analysis process will assure that the training program will meet high-priority needs, as perceived by them and the projected participants. Broad and Newstrom (1992) further recommended that managers and supervisors should participate in sessions regarding the purpose and scope of the training programs to be attended by employees. By doing so not only will they familiarize themselves with the intended outcomes of the training program, it will also signal to the trainees that the new skills and knowledge to be learned are valued by the organization.

Involvement of prospective trainees during the design phase of the training program can also aid the training transfer process. Broad and Newstrom (1992) emphasize that employees who are given the opportunity to express what their concerns, expectations, and needs for additional skills are, will be more likely to be committed to the goals and objectives of the training program. Employees will also be more receptive and attentive to training if their managers or supervisors explain to them how training will assist them in improving their skills as well as their advancement potential. Aside from trainees, supervisors should also be involved in the instructional design process. By reviewing the training content before the program is finalized, supervisors can make sure that the content is based on the actual needs of the

organization. Moreover, Broad and Newstrom (1992) recommend that before training takes place the organization should conduct a supervisory coaching attitudes and skills assessment.

As Broad and Newstrom (1992) stated,

> supervisors must be convinced that even the best off-the-job training for their employees generally requires that the supervisors engage in follow-up observation, emotional support and encouragement, discussions to review the highlights of what was learned and how to adapt it to their specific jobs, and frequent praise for progress made. (p. 64)

Other pretraining activities that can facilitate training transfer are the allocation of company time to trainees in order to complete precourse assignments, the development of a contract between the trainee and the supervisor in which each party's commitment to maximize the results of the training is specified, the pilot testing of the instructional system, as well as the establishment of a positive training environment in which the trainees can maximize their learning experience (Broad and Newstrom 1992).

5.2.2 Transfer Strategies During Training

Once the appropriate people are selected for training, certain strategies during the implementation phase of the training program can also have a positive impact on learning transfer. One such strategy is the prevention of work-related interruptions. According to Broad and Newstrom (1992), the training process should be free of disruptions and should not lose its sense of continuity, rhythm, and flow. Otherwise, the trainee may run the risk of missing important material, which in turn can inhibit learning, and thus learning transfer.

Another strategy that can facilitate transfer of learning is the practice of allocating work assignments to coworkers while the trainee is attending training. Thus, upon return from training, the employee will not have to face a mountain of work which in turn could force him or her to revert to old skills in order to expedite task completion (Broad and Newstrom 1992). Another strategy to be followed during the training implementation phase of training programs is to ask trainee supervisors to attend the training program. Such an act will communicate managerial support toward the training program.

5.2.3 Transfer Strategies Following Training

According to Broad and Newstrom (1992), supervisory support and involvement after the completion of training can significantly influence the success of the training transfer process. Broad and Newstrom (1992), therefore, recommend that the trainee's reentry to the workplace is accompanied by communicated support from the supervisor. The supervisors should also give the trainees the opportunity to

practice the newly learned skills and knowledge, as well as reduce job pressures initially. That way, the trainees can take their time to solidify the new patterns of behavior.

Systematic reinforcement of the desired work behaviors exhibited by trainees is another way with which supervisors can facilitate the transfer of training to the workplace (Broad and Newstrom 1992). Supervisors can also schedule trainee briefings for coworkers during which the trainees assume the role of the trainer. Such briefings will increase the trainee's likelihood of retention as well as his or her commitment to training transfer. Supervisors can further facilitate the training transfer process by setting mutually accepted measurable and specific performance goals with the trainees (Broad and Newstrom 1992). Supervisors can finally facilitate transfer of training by implementing a promotional policy and recognition system that reward the application of training knowledge.

5.3 Baldwin and Ford Training Transfer Comprehensive Review

While Broad and Newstrom addressed the practical aspect of training transfer by providing certain guidelines and training transfer strategies, a comprehensive research review by Baldwin and Ford (1988) contributed to the development of a conceptual framework which, still date, influences training transfer research. In their review, Baldwin and Ford (1988) defined positive transfer of training as

> the degree to which trainees effectively apply the knowledge, skills, and attitudes gained in a training context to the job. (p. 63)

In reviewing research on training transfer, Baldwin and Ford (1988) utilized a framework which described the transfer process in terms of training-input factors, training outcomes, and conditions of transfer. According to the followed framework, training-input factors and training outcomes were considered to have direct and indirect effects on the conditions for transfer.

Training-input factors included the training design, trainee characteristics, and work-environment characteristics. Training design factors pertained to learning principles, the sequencing of training material, and the job relevance of training content. Trainee characteristics included trainee ability and skill, motivation, and personality attributes. The work-environment category included such factors as supervisory and peer support for training as well as constraints and opportunities to perform learned behaviors on the job. Training outcomes were defined as the amount of original learning that occurred during training and the retention of that material after the training program was completed. Lastly, the conditions of transfer included the generalization of material learned in training to the job environment, and the maintenance of the learned material over a period of time on the job. What follows is a brief description of the various factors comprising each category of the training transfer process.

5.3.1 Training Input Factors: Training Design

In examining the effects of training design on training outcomes and conditions of transfer, Baldwin and Ford (1988) relied on 38 empirical studies dating back to 1901. The authors stated that a large proportion of the empirical research on training transfer has concentrated on the improvement of training design through the incorporation of the following learning principles: identical elements, teaching of general principles, stimulus variability, and conditions of practice. The identical elements learning principle postulates that the training transfer process is maximized when there are identical stimulus and response elements in both the training and transfer settings. Empirical research has shown that identical elements can increase the retention of both motor and verbal behaviors (Baldwin and Ford 1988).

The teaching of general principles hypothesizes that training transfer occurs best when the trainees are taught general rules and theoretical principles in addition to applicable skills. Research in a variety of settings has demonstrated that the teaching of general principles can indeed facilitate transfer of training (Baldwin and Ford 1988). The principle of stimulus variety at the same time supports the notion that training transfer is maximized when the trainees are exposed to a variety of relevant training stimuli. In other words, if the trainees are exposed to several examples of a concept to be learned they are more likely to see its applicability in other situations as well (Baldwin and Ford 1988).

The training-design issues considered with regard to conditions of practice mainly deal with decisions in relation to massed or distributed training, feedback, and degree of overlearning. Massed or distributed training is concerned with whether or not to divide training into segments. Research has shown that material learned under distributed practice is retained longer than material learned by massed practice. However, research has also shown that complex tasks are learned better when massed practice sessions precede distributed sessions (Baldwin and Ford 1988). In terms of feedback, which constitutes an important learning facilitator, its effectiveness critically depends on its timing and specificity (Baldwin and Ford 1988). Overlearning, or the process of providing the trainees the opportunity to practice beyond the mastery of task, has also been proven to facilitate greater retention of training material (Baldwin and Ford 1988).

5.3.2 Training Input Factors: Trainee Characteristics

The effects of trainee characteristics on training transfer were also investigated by Baldwin and Ford by relying on the results of 25 empirical studies. The trainee characteristics examined fell into the following two categories: individual-difference factors affecting training transfer, and motivational strategies affecting training transfer. With regard to the individual factors category, the reviewed empirical research identified need for achievement, locus of control, and general intelligence as personal attributes that could influence learning and training transfer capability.

In terms of learner motivation, Baldwin and Ford suggested that Vroom's expectancy model (Vroom 1964) could serve as a framework for understanding the motivational factors that could affect the training transfer process. Vroom's expectancy model suggests that an individual will make the effort to reach a certain level of performance if he or she expects that the effort will lead to the desired performance level, and at the same time the exhibited performance will in turn lead to a valued outcome or reward. According to expectancy theory, if the expectancies between effort and performance as well as performance and outcome are weak, then it is unlikely that the individual will make the effort to perform a certain task.

Thus, by utilizing the expectancy model, Baldwin and Ford (1988) assert that one can identify the environmental factors that can influence an individual's expectancies and subsequent motivation to transfer the newly learned skills back to the job.

5.3.3 Work-Environment Characteristics

In analyzing the effects of work-environment characteristics on training transfer Baldwin and Ford (1988) considered studies which took place between the years of 1953 and 1984. The work-environment characteristics that were cited as important contributors to training transfer were those of extrinsic rewards and promotion opportunities upon transfer of new attitudes back to the workplace, goal-setting involvement, as well as a supportive supervisor. With regard to supervisory support, what was found to contribute the most to training transfer was precourse discussion with one's superior and subsequent supervisor sponsorship of the training process.

As far as skill maintenance is concerned, Baldwin and Ford (1988) stated that decreases in the use of trained skills on the job could be attributed to constraints in the work environment or lack of rewards for using the new skills. Thus, keeping track of skill retention over a period of time can assist in identifying the problematic areas that cause skill decay. For instance, variability of skill retention within departments may indicate a problem attributed to trainee characteristics, whereas, variability of skill retention across departments may indicate a problem associated with the work environment.

5.4 Traditional Training Transfer Conceptual Frameworks

In many respects, the comprehensive research review by Baldwin and Ford has served as the foundation for much of the training transfer research that has followed. More specifically, the three training inputs identified in the Baldwin and Ford model still date drive much of the training transfer research and thinking (Burke and Hutchins 2008; Gilpin-Jackson and Bushe 2007; Liebermann and Hoff-

mann 2008; Velada et al. 2007). The newer training transfer models and research mainly focus on the individual and training-specific climate factors (Blume at al. 2010; Burke and Hutchins 2007; Chiaburu and Marinova 2005; Colquitt et al. 2000; Hawley and Barnard 2005; Kontoghiorghes 2004; Velada et al. 2007). The impact of work-environment factors on training transfer has been incorporated to a lesser degree in training transfer models and research designs (Ballesteros and De Saa 2012; Brown and McCracken 2009; Gilpin-Jackson and Bushe 2007; Kontoghiorghes 2002, 2004; Scaduto et al. 2008; Velada et al. 2007). An overview of traditional training transfer climate research follows.

> In the training transfer literature, the training transfer climate is seen as a mediating variable in the relationship between the organizational context and an individual's job attitudes and work behavior. (Yamnill and McLean 2001, p. 203)

It is, therefore, considered a critical aspect of the training transfer process (Brown and McCracken 2009; Hatala and Fleming 2007; Machin and Fogarty 2004; Wright 2003). A number of researchers over the years have focused on identifying the distinguishing features of a positive transfer climate. Although the characteristics emphasized in each study may differ, in general, there is a consensus with regard to the main attributes of a supportive training transfer climate.

According to the literature, the most important and frequently cited attributes of a positive training transfer climate are the following: *supervisory and peer support for new learning* (Ballesteros and De Saa 2012; Bartlett 2001; Blume et al. 2010; Brown and McCracken 2009; Burke and Baldwin 1999; Burke and Hutchins 2008; Clarke 2002; Facteau et al. 1995; Kontoghiorghes 2001, 2004; Martin 2010; Scaduto et al. 2008; Tharenou 2001; Tracey et al. 1995; Wright 2003), *opportunity to practice new learning during training and on the job* (Brown and McCracken 2009; Burke and Hutchins 2008; Clarke 2002, 2005; Grossman and Salas 2011; Hawley and Barnard 2005; Kontoghiorghes 2004; Nijman et al. 2006; Wright 2003), *intrinsic and extrinsic rewards for using the newly learned skills and knowledge* (Rouiller and Goldstein 1993; Kontoghiorghes 2001, 2002, 2004; Tracey et al. 1995), *job and career utility of new learning* (Bartlett 2001; Chiaburu and Lindsay 2008; Clark et al. 1993; Giangreco et al. 2009; Grossman and Salas 2011; Liebermann and Hoffmann 2008; Lim and Johnson 2002; Kontoghiorghes 2004; Nikandrou et al. 2009; Yamnill and McLean 2001), *task cues, or the extent to which the content of the training program is similar to the actual tasks performed on the job* (Axtell et al. 1997; Kontoghiorghes 2002, 2004; Liebermann and Hoffmann 2008; Machin and Fogarty 2004; Rouiller and Goldstein 1993; Scaduto et al. 2008; Yamnill and McLean 2001), *the extent to which training is linked to identified personal training needs* (Bjornberg 2002; Lim and Morris 2006; Salas and Cannon-Bowers 2001), *training accountability* (Kontoghiorghes 2002, 2004; Kraiger et al. 2004), and *a continuous learning culture* (Ballesteros and De Saa 2012; Egan et al. 2004).

In addition to training transfer, the aforementioned training transfer climate attributes have also been linked to motivation to learn and motivation to transfer learning back to the job. Motivation to learn refers to

> the desire to engage in training and development activities, to learn training content, and to embrace the training experience. (Major et al. 2006, p. 927)

Motivation to transfer refers to the "trainees desire to use the knowledge and skills mastered in the training program on the job" (Yamnill and McLean 2001, p. 197). The training transfer literature asserts that unless the trainees are motivated to learn during training and transfer what they learn back to the job, even the most sophisticated training programs will not be successful (Axtell et al. 1997; Burke and Hutchins 2007; Kontoghiorghes 2004). Hence, besides a supportive training transfer climate, motivation to learn and motivation to transfer have been extensively acknowledged as cornerstones in the training transfer process (Bartlett 2001; Chiaburu and Lindsay 2008; Facteau et al. 1995; Gegenfurtner et al. 2009; Hesketh 1997; Hawley and Barnard 2005; Kirwan and Birchall 2006; Kontoghiorghes 2001, 2002, 2004; Lim and Johnson 2002; Tracey et al. 2001).

In terms of research, a review by Guerrero and Sire (2001) indicated that the vast majority of empirical studies reflected positive associations between training motivation, learning, posttraining satisfaction, and transfer of knowledge. A study by Chiaburu and Marinova (2005) suggested the existence of a positive relationship between individual pretraining motivation and skill transfer. Along the same lines, Bell and Kozlowski (2008) found learner motivational processes to be key predictors of knowledge transfer. A study by Park and Wentling (2007) found pretraining motivation to be positively related to the transfer of e-learning skills. Finally, the findings of the Gilpin-Jackson and Bushe (2007) study suggested that although a positive transfer climate was important for training transfer, the willingness of employees to use their skills actually explained skill utilization on the job.

The conceptual framework that has traditionally governed training transfer research is depicted in Fig. 5.1 (Kontoghiorghes 2002, 2004). A close look at the variables that researchers have investigated over the years will reveal that the thrust of training transfer research has mainly focused on training design, trainee, and work-environment characteristics which in turn are directly related to the training context or related-training outcomes (Kontoghiorghes 2002, 2004). In essence, the conceptual framework of traditional training transfer research has treated training "as a non-systemic phenomenon, independent of the variables that affect performance" (Kontoghiorghes 2002, p. 125). Important organizational variables that influence performance, and, hence, the trainee's belief that training can actually result in enhanced performance, have been excluded from traditional training transfer research (Kontoghiorghes 2002, 2004).

5.5 Systemic Model of Training Transfer

Although scarce, a number of studies have provided empirical evidence linking broader work environment factors with motivation to learn, motivation to transfer, and learning transfer (Ballesteros and De Saa 2012; Burke and Baldwin 1999; Clarke 2002; Kontoghiorghes 2002, 2004; Velada et al. 2007). According to Velada

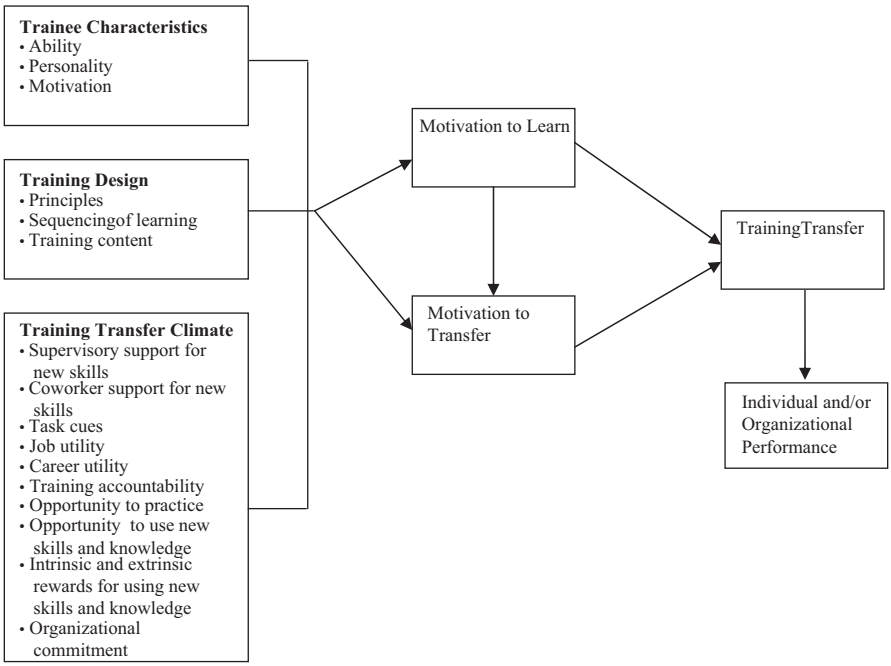

Fig. 5.1 Conceptual framework of traditional training transfer research. (Kontoghiorghes 2002, 2004)

et al. (2007), there are two work-environment aspects that are relevant to learning transfer: organizational culture and training transfer climate. A study by Clarke (2002) indicated that both organizational culture and transfer of training climate have direct effects on posttraining behaviors and particularly on the application of newly trained behaviors on the job. A more recent study by Ballesteros and De Saa (2012) found an indirect effect of a continuous learning culture on training success. In addition to the training transfer climate, as shown in Fig. 5.2, a study by Kontoghiorghes (2004) empirically linked successful learning transfer to high-performance system characteristics, which in turn stemmed from the socio-technical, quality management, and learning organization theories.

Given the strong association between the examined socio-technical, quality management, and organizational learning characteristics with motivation to learn, motivation to transfer, and learning transfer, the Kontoghiorghes' (2004) study concluded that expectancy theory could be better utilized in the training transfer domain if applied at two different levels: the training context and the individual and/or organizational performance level. At the training context level, one is concerned with the degree to which the trainee believes that (a) his or her efforts will result in actual learning; (b) learning can indeed be transferred back to job, given the realities of the training transfer climate; and (c) application of new skills and knowledge is directly linked to intrinsic and extrinsic rewards (Kontoghiorghes 2004).

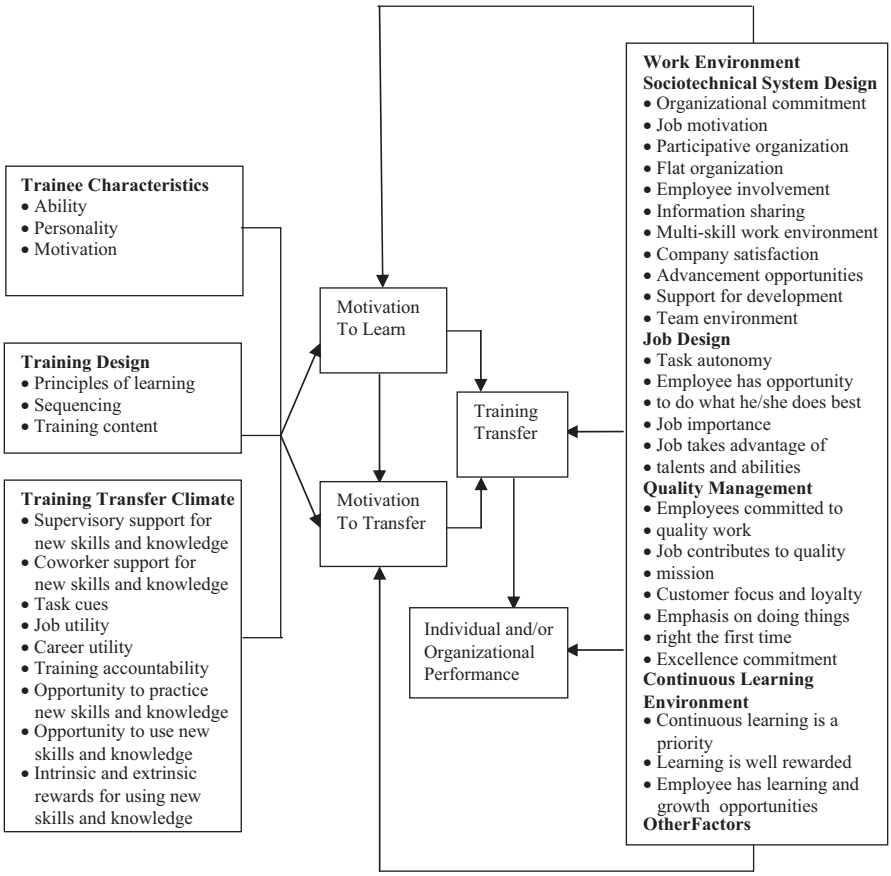

Fig. 5.2 Systemic model of training transfer. (Kontoghiorghes 2002, 2004)

At the employee/organizational performance level, one is concerned with the degree to which the employee believes that (a) application of new skills and knowledge can indeed lead to enhanced individual and/or organizational performance, given the realities of the work environment and organizational culture; and (b) enhanced individual and/or organizational performance can lead to desired and valued outcomes (Kontoghiorghes 2004).

Building on the findings of the Kontoghiorghes' 2004 and 2002 studies, which linked training transfer outcome variables to a high-performance organizational context, a new comprehensive training transfer model is presented (Fig. 5.3). As shown, the new training transfer model encompasses validated attributes comprising a positive training transfer climate, as well as the relationship between the training transfer climate and a high-performance culture. The proposed model further depicts the interrelationships among the most significant training transfer outcome variables of motivation to learn, motivation to transfer, and training transfer. Finally,

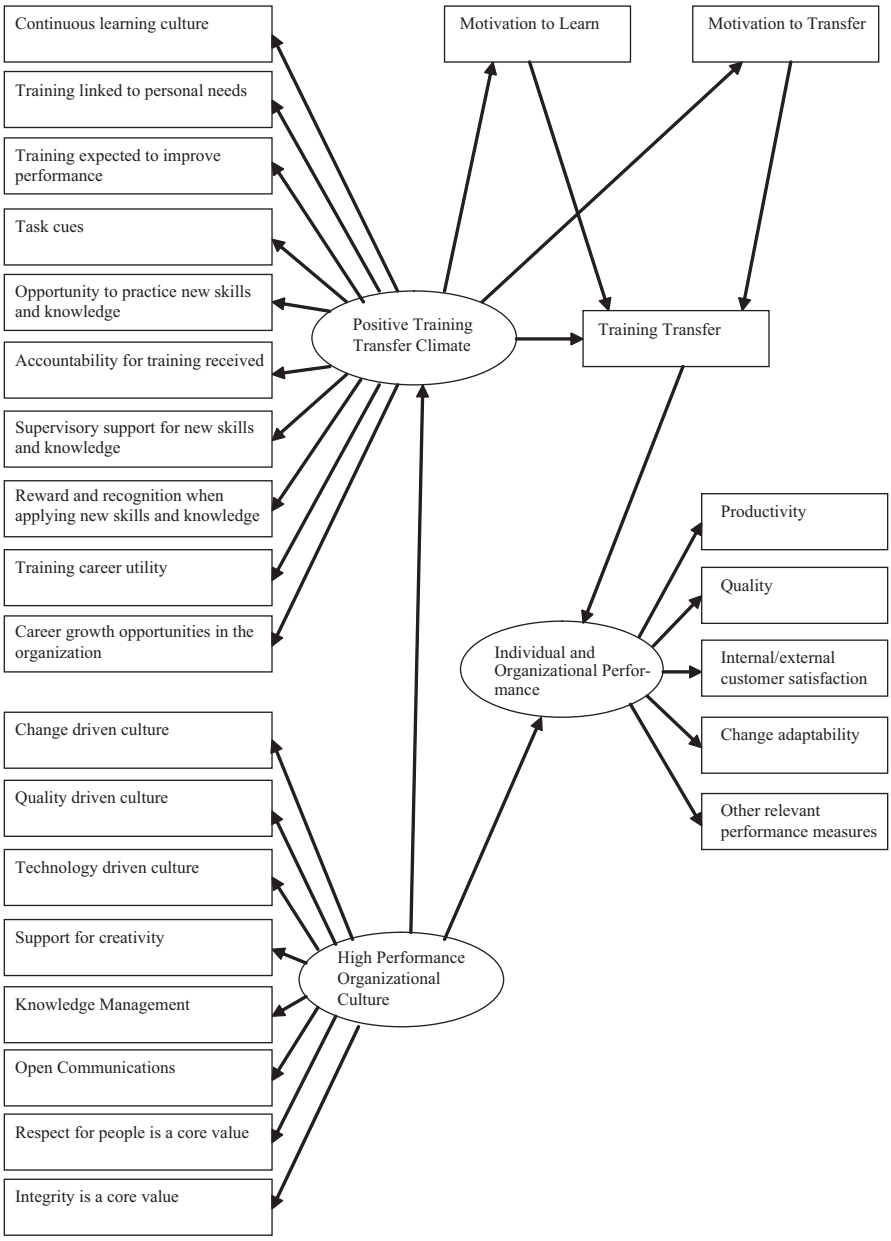

Fig. 5.3 Kontoghiorghes systemic training transfer model

the new model also illustrates how the effects of successful training transfer on performance are mediated by the prevailing organizational culture.

As shown in Fig. 5.3, the high-performance organization construct is defined in terms of core socio-technical, quality management, and learning organization cultural characteristics, which at the same time reflect the key roles assumed by today's strategic HRM function. Collectively, the aforementioned cultural characteristics and strategic HRM roles describe the extent to which the organization is designed to function as an open and optimized system capable of responding to today's turbulent external environments. The high-performance organization construct is expected to have a direct effect on individual and organizational performance and, hence, influence trainee's perception that successful training transfer can, indeed, result in enhanced performance.

Preliminary *structural equation modeling* (SEM) results in two culturally diverse industry settings exemplified the validity of the presented model and demonstrated the existence of a strong association between a positive learning transfer climate and a high-performance culture. The analysis further reflected the existence of a strong association between the training transfer climate construct and motivation to learn, motivation to transfer, and training transfer. Lastly, the SEM analysis further indicated that the impact of training transfer on performance is significantly mediated by the high-performance organizational construct. The latter constitutes an important finding because it statistically explains why some training interventions can be successful in certain organizational settings and not in others. The empirical findings further suggest that the realities of the organizational context will ultimately determine the impact of training on performance, even when the trainee is willing and able to transfer new skills and knowledge back to the job.

5.6 Summary

In summary, over the years, training transfer has been a topic that has been extensively researched by HR scholars. Several models, instruments, and strategies have been developed attempting to explain or facilitate the training transfer process. Despite the vast amount of research,the important effects of organizational culture have largely been missing from training transfer studies. Given that the organizational culture has significant influence on employee behavior and performance, the exclusion of cultural dimensions can be considered a limitation of training transfer research designs.

One of the main objectives of the presented comprehensive training transfer model was to address aforementioned research limitation and, thus, help develop more holistic frameworks addressing the training transfer phenomenon. The preliminary results validate the newly developed framework and suggest that a positive and supportive training transfer climate is more likely to exist in optimized high-performance cultures. Thus, one may conclude that training transfer and corresponding-training initiatives will be likely to be successful if introduced in organizational settings characterized by a high-performance culture.

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Chapter 6
Integration for Training Transfer: Learning, Knowledge, Organizational Culture, and Technology

Doo Hun Lim and Brent Nowell

6.1 Introduction

Till date, the primary goal of many organizations' human resource development (HRD) efforts has been to learn transfer-based performance improvement (Swanson and Holton 2009). This implies that a strong link between HRD initiatives and the outcomes in organizational performance is demanded by various stakeholders of training, such as trainees, trainers, supervisors, and senior executives of the firms. This trend requires that the core processes and strategies of learning transfer before, during, and after training events should be considered and reflected in all aspects of training, including planning, implementation, and evaluation (Yoon and Lim 2007). However, many research studies indicate that trainers and instructional designers of training programs in the workplace have struggled with the planning and implementation of transferrable training programs due to various organizational and work group factors inhibiting training transfer. Based on a report from the American Society for Training and Development, only 21 % of organizations were found to be interested in evaluating to what extent training transfer occurred in their organizations (ASTD 2003). As the delivery setting for training has been changing rapidly in recent years (e.g., e-learning, social learning, mobile learning, knowledge management tools, etc.), it has become more complicated for trainers and instructional designers to devise appropriate training programs and transfer environments in workplace settings.

Benefits of training transfer are many and range from attitudinal to financial. When the members of an organization successfully learn and apply that learning to achieve organizational goals, a number of positive prerequisites are likely in place. Goals and expectations are clear. Rewards are commensurate with expectations. Supervisors are actively participating in the training process. Peers are supportive.

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Training attendees are intelligent and motivated. Learners have the opportunity to apply, practice, improve, and mature their skills. The work environment is consistent with expectations from leadership, and because of that alignment, the financial results of the organization are improved.

In an effort to provide an integrative picture of the concepts, processes, and application of up-to-date technologies improving training transfer for practitioners of HRD, this paper will review and illustrate various theories and literature of training transfer. From the review, we will propose a conceptual map for effective training transfer processes that integrates modern technological systems and tools.

6.2 Conceptual Underpinnings of Training Transfer

6.2.1 Concepts and Definitions

Almost all of the organizations that provide structured training to their members measure the effectiveness of that training in some way. Kirkpatrick's (1998) evaluation model is most commonly referenced by training practitioners. The four levels (categories) of that model have become part of the common language of training practitioners:

- Level 1—Reaction: The lowest level and the simplest evaluation of training, this is a measure of the participants' satisfaction with their learning experience.
- Level 2—Learning: This is a measure of participants' achievement of behavioral, attitudinal, or cognitive course objectives.
- Level 3—Behavior: This is an evaluation of the application of learning to another setting (e.g., job, home, and additional training).
- Level 4—Results: This is a measure of the organizational outcomes or business effects as a result of training.

The first two levels in this model focus entirely on a learner's experience of a training event. These are evaluations of variables over which trainers have the most control and, as a result, are easily measured. The fourth level focuses upon the highest-level organizational outcomes. These outcomes can range from financial bottom lines to cultural strength and quality. At this level, there are many contributing variables (e.g., organizational structure, leadership, climate, knowledge management) that can often be difficult to quantify, and the direct effects of training are much more difficult to measure. In Kirkpatrick's model, level three transfer of training is situated as the connection between the small picture evaluation of a precise and controlled training event and the big picture evaluation of a complex organization achieving (or not) its goals and objectives over time.

Because the transfer of training holds this position transitioning from the evaluations of the simplest outcomes of training to the most complex (Fig. 6.1), the definitions of *transfer of training* are many and varied. Marini and Genereux (1995) define transfer of training as prior learning that affects either performance or new

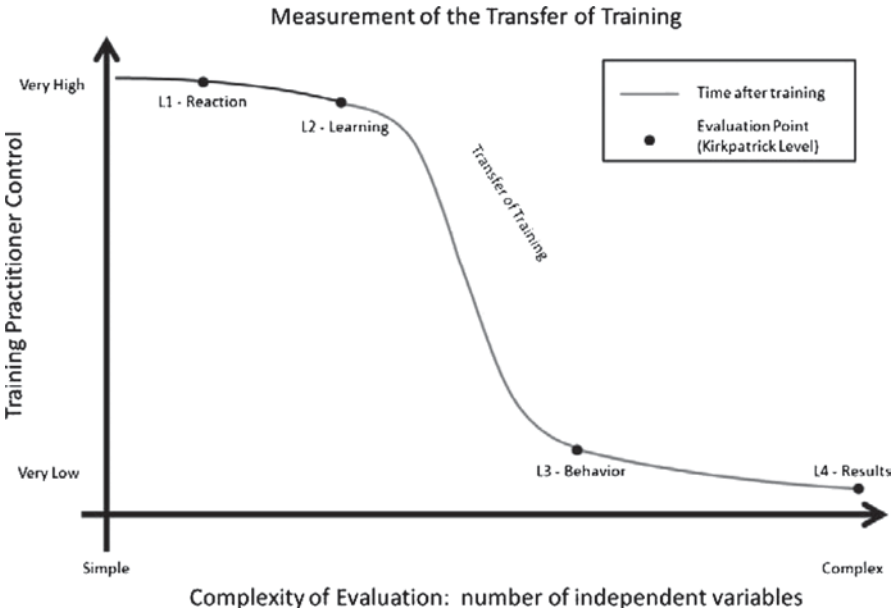

Fig. 6.1 Measurement of the transfer of training. (Source: Authors)

learning. There is little disagreement with this definition (as a whole), but several of the parts have been interpreted differently over time: learning (both prior and new), performance, and effects of learning. Therefore, a thorough definition of transfer of training requires a historic review of the development of transfer of training theories.

6.2.2 Theories of Training Transfer

A number of educational, behavioral, and learning theories have been shown to significantly influence the transfer of training. However, three theories are uniquely transfer-oriented: Identical Elements Theory, Principles Theory, and Cognitive Theory of Transfer. Each of these theories has been successful in describing and predicting the phenomena of training transfer. Nevertheless, like all theories, these have been challenged empirically and conceptually.

Identical Elements Theory In 1901, Thorndike and Woodworth published their Identical Elements Theory. Focusing entirely on observable actions, they theorized that if stimuli, responses, and conditions in the setting of training matched the stimuli, responses, and conditions of the workplace, then the transfer of learned behaviors would occur. In this theory, successful transfer depends upon the number of similarities between the setting of learning and the setting into which that learning is transferred. Identical settings will bring about predictable responses, and maximum transfer will occur. Identical elements theory reflects a behaviorist definition of

learning, which holds that learning results when one develops associations between stimuli and responses (Thorndike 1913). Commonsensical and applicable to training practitioners, this theory established the classical paradigm in which transfer of training is viewed, and it has been extensively tested and supported by research for over 100 years (Ford and Weissbein 1997).

Identical Elements Theory has also received a great deal of criticism. The goal of transferring training is not merely to repeat learned behaviors at a later time in an identical setting. The goal of transfer is to apply learned skills in another setting (Bransford et al. 2000). By definition, this theory fails to account for training that is actually transferred from one setting to a different (nonidentical) setting. As these settings become more and more dissimilar either through the loss of trainers' control over the setting or changes in conditions over time, Identical Elements Theory is diminished in its effectiveness facilitating transfer.

Principles Theory Rather than focusing on the similarities between stimuli and responses, the Principles Theory of Transfer focuses on the concepts and rules underlying the tasks to be transferred (Goldstein 1986). Historically, Principles Theory is founded upon Hoffding's (1892) argument in favor of psychological similarity rather than behavioral stimulus/response similarity between settings and upon Judd's (1908) research highlighting the improved transfer of training when basic principles are taught. Fundamentally, students are prepared during a training event to transfer learned skills into settings that are *not* similar to the setting of the training event. This is generally accomplished through the use of theoretical training (imparting knowledge, concepts, rules, etc.) and through the use of varied practice (practice conducted under varied conditions and in varied settings). Judd (1908) demonstrated early that the combination of theory and varied practice produced performances during transfer that exceeded the performances of those trained in strictly a stimulus-response-style event.

The assumptions and predictions of the Principles Theory have been extensively tested and supported through scholarly research (Baldwin and Ford 1988; Hendrickson and Schroeder 1941); however, this theory has also received criticism. To accomplish transfer to other settings, this theory assumes that knowledge can be separated from the context under which it was learned, and knowledge, skills, and behaviors can be applied in the future independently of the culture, social setting, history, context, and environment of the learning situation (Lobato 2006). The criticism is that learning has been found to be a social phenomenon, and learning is a construct built by individuals who are participating in a dynamic social setting (Lave and Wenger 1991). Conceptual knowledge (concepts, rules, etc.) has been shown to be contextually based with "how tightly learning will be bound to context depends on the kind of knowledge being acquired" (Anderson et al. 1996, p. 6). By emphasizing rules and principles instead of context and social constructs and their varied relationship with the knowledge (by type) itself, Principles Theory is diminished in its effectiveness in facilitating transfer.

Cognitive Theory of Transfer This theory is rooted in the information process theories of learning, which focus on information storage and retrieval. Transfer of training is considered a probability that prior learning can be retrieved and applied

in a relevant context. In this theory, a number of assumptions are made. First, the Cognitive Theory of Transfer assumes that bits of memory have varying numbers of interconnections (i.e., some bits are connected to many other bits, whereas some are connected only to a few others). Second, this theory assumes that memory, while varying in connectivity, is highly structured and can be searched in a systematic way. Finally, Cognitive Theory of Transfer assumes that comprehension of knowledge is necessary for transfer to occur (Royer 1979). Comprehension is necessary because of the act of retrieval. When faced with a new problem for which one has never been trained, memories that one does not comprehend are not generally retrieved by the brain as potential solutions.

Unlike the two previous theories, the Cognitive Theory of Transfer views training as a dynamic and complex phenomenon rather than a linear progression from one situation to the next. All of one's comprehended knowledge can be brought to bear on a problem rather than a subset of only closely related knowledge. Interconnectivity between memories is the key to transfer; therefore, the emphasis is on creating as much connectivity as possible within one's memory. In practice, knowledge is refined incrementally as existing knowledge accommodates new knowledge and new context (Wagner 2006). This allows for novel application and unique combinations of memories and knowledge by learners that can be transferred to multiple contexts and situations (Royer 1979).

Like the Principles Theory of Transfer, Cognitive Theory of Transfer is criticized for the assumption that knowledge can be separated from context. Although Cognitive Theory does add a great deal to transfer that occurs in dissimilar situations, it adds little to transfer occurring in similar situations that is not already established by Identical Elements Theory or Principles Theory (Royer 1979). The assumption that memory is highly structured has also had mixed support in the literature (Merriam and Caffarella 1999; Sylwester 1995). Furthermore, the assumption that comprehension is necessary for transfer is simply contradicted by the Theory of Identical Elements which holds that the occurrence of transfer is a behavioral response to a stimulus (Thorndike 1913).

6.2.3 Factors for Training Transfer

Three main factors are repeated in the literature as influencing training transfer practices. The first factor is the training itself and its design. The second is the characteristics of the learners. The third is the situation and climate of transfer. Practitioners, who seek to maximize transfer of training, address these three areas when implementing training (Broad and Newstrom 1992; Holton 1996).

6.2.3.1 Design

Needs Analysis Caffarella (2002) emphasized the necessity of a process (formal or informal) to determine and state what needs to be accomplished through training. A training program is more likely to affect behaviors when it is being used to address

a performance or knowledge gap determined and stated through the use of a needs analysis (Burke and Hutchins 2007). Applying training solutions to problems that do not represent gaps in skill or knowledge often has low-transfer rates.

Behavioral Objectives Once the skill or knowledge gap has been identified, measurable criteria are set through the use of behavioral objectives. Objectives should state clearly the desired performance, the conditions under which performance is required, and the acceptable criteria of performance (Mager 1997). Well-written objectives establish goals for the students and instructors, which can increase transfer due to the connection between one's goals and one's actions (Locke 1968). The strategy of developing and communicating training objectives to facilitate transfer of training has been well supported in the literature (Kontoghiorghes 2001; Locke et al. 1981; Mager 1962; Wexley and Baldwin 1986).

Content In order for training to transfer, there must be a connection between the setting of learning and the setting of practice. For the behaviorist, transfer from training to the workplace will occur if the settings match. For the cognitivist, transfer from training to the workplace will occur if knowledge applicable to the situation is retrievable. Both theories are supported in the literature to facilitate transfer of training (Duncan and Underwood 1953; Rodriquez and Gregory 2005; Underwood 1969). The commonality between the two theories is that the learners have to see the relevance of the applicability of the content (Noe 2005; Yamnill and McLean 2005).

Practice Incorporating practice into training is critical for transfer. Establishing the connection between the setting of training and the setting of transfer can be done through the incorporation of practice. Procedural examples from the workplace can increase transfer, particularly when they include feedback and interaction between trainers and participants (Kalyuga et al. 2001). Incorporating a variety of practice techniques, conditions, and standards has also been found to increase transfer instead of using one example repeatedly (Shore and Sechrest 1961). Continuing to practice after initial competence (overlearning) has also been shown to increase transfer (Fisk and Hodge 1992). The way that practice is conducted can also affect the likelihood of transfer. For example, letting students rest between practices by spacing the session timeouts has been associated with increased transfer (Donovan and Radosevich 1999; Reynolds and Bilodeau 1952). In addition, the method of assigning a practice problem to a student and having them solve it has been demonstrated as being less effective for transfer than using a worked problem (either partially worked or completely worked) (Paas 1992).

Transfer of Training Plan Broad and Newstrom (1992) introduced a simple structure for transfer of training plans. Their plan addressed the activities of the learners, trainers, and supervisors before, during, and after training. The time directly after training is the most critical for transfer to occur (Tannenbaum and Yukl 1992). Planned interventions that immediately follow training events have a significant effect on transfer of training and help bring about permanent behavioral change (Wexley and Baldwin 1986). The Relapse Prevention Model is one example of post-

training intervention hypothesized to maintain behavioral change following training. The objective is that the learners do not revert to pretraining behaviors (Burke and Baldwin 1999; Marx 1982). The significance of a transfer of training plan is simple: training should be designed to continue structured support for the student after the training has ended. Several tools and systems used to provide performance support will be outlined later in this chapter.

6.2.3.2 Learner Characteristics

Intelligence Learner intelligence and aptitude for course content have been repeatedly correlated with transfer of training. "One of the most common and supportable findings in educational research is that far transfer is achieved by students with higher general ability scores" (Clark and Voogel 1985, p. 120). While trainers cannot generally set the intelligence of students, trainers should consider learners' aptitude when establishing objectives, developing content, incorporating practice, and planning transfer.

Motivation Several types of motivation have been associated with transfer of training. Motivation to transfer can be viewed at three different times: before training, during training, and after training (Broad and Newstrom 1992). Student motivation at each of these intervals can also be divided into intrinsic and extrinsic components (Knowles 1990).

Pretraining motivation significantly correlates with transfer of training (Facteau et al. 1995). The type of motivation is also a factor. Intrinsic motivation has been associated with higher levels of transfer than extrinsic motivation (Facteau et al. 1995; Kontoghiorghes 2001). Early motivation is often the product of (a) the learner's perception of training benefits, (b) the voluntary (or nonvoluntary) nature of the training, and (c) the perceived anxiety of training attendance.

Motivation during training generally results from the learner's interaction with the course materials and context. Early success has been associated with increased motivation (Gordon and Cohen 1973). Intervention fulfillment, defined as "the extent to which training meets or fulfills training expectations and desires" (Yamnill and McLean 2001, p. 200), is also a motivator for learners during training. When students believe that the training content is valuable, they are more likely to be motivated to learn and to transfer learning by putting it into practice (Baumgartel et al. 1984; Knowles 1990).

Motivation to transfer learning post-training is first influenced by a trainee's reaction to the training event. Trainees who like the training event are more likely to transfer what they learned (Tannenbaum et al. 1991). The second influence on motivation to immediately transfer is the perceived rewards like career advancement or money (Kontoghiorghes 2002; Porter and Lawler 1968). The third influence on motivation to transfer is organizational commitment. The extent to which trainees perceive their belongingness within an organization has been linked with post-training motivation to transfer (Noe and Schmitt 1986; Tannenbaum et al. 1991).

6.2.3.3 Transfer Climate

Supervisor Support Supervisors heavily influence transfer of training. Active supervisor engagement or participation in a training event has been associated with increased transfer of training (McSherry and Taylor 1994). One-on-one coaching by the supervisor reinforcing training content helps improve transfer of training as well (Broad and Newstrom 1992). Even simple conversations about the training an employee has received and the application of learned skills to the job can have a significant effect on transfer of training (Lim and Johnson 2002).

Peer Support While the supervisor's role is critical to training transfer, some have posited that the support of peers provides a more consistent predictor of transfer of training (Facteau et al. 1995). Peers affect both pre- and post-training motivation, which affects transfer. Furthermore, strategies to incorporate peer networking and peer support groups to communicate and share ideas have been shown to increase transfer (Hawley and Barnard 2005).

Opportunity to Perform Limited opportunity to apply the knowledge and skills acquired through training is the biggest barrier to successful transfer of training (Clarke 2002). Students must be given the opportunity, time, and flexibility to immediately apply what they have learned. The transfer of training plan should prompt immediate application, and post-training accountability mechanisms for learners and supervisors who significantly increase transfer of training.

6.2.4 Near Transfer–Far Transfer

In training transfer literature, emphasis has been placed upon the patterns of transferring learned knowledge and skills based on the type of content learned. It is especially true in precisely understanding the detailed process of training transfer. Research findings illustrate that there are two types of training transfer: near transfer and far transfer (Spitzer 1984). Regarding the near transfer of training, the transfer process occurs when learned knowledge and skills are immediately applied to a trainee's present work and task results. As for the far transfer of training, the transfer process occurs when underlying theories, principles, and concepts or subject content are conceptually acquired during training, recalled at a time of need, and applied to diverse or sometimes dissimilar situations. In order to achieve these two different types of post-training transfer, instructional designers are advised to selectively adopt particular instructional strategies to facilitate effective training transfer. For example, in order to facilitate near transfer through training, the recommended instructional strategies are: (a) teaching identical learning content related to the job tasks (Baldwin and Ford 1988), (b) using learning activities that will specify the application examples and context of knowledge and skills learned during training (Clark and Voogel 1985), (c) encouraging overlearning of the content during training (Noe and Schmitt 1986), and (d) emphasizing the procedural nature of trainees' tasks during instruction (Clark and Voogel 1985). In order to facilitate far transfer,

the recommended instructional strategies are instruction in general theories and principles to increase comprehension of major learning and how to transfer (Royer 1979) and utilize practice sessions to apply their learning in different or remote contexts during training (Goldstein 1986). Compared to the two types of transfer (near and far transfer), Dixon (2000) indicated three different types of knowledge transfer that can occur within workplace organizational settings: (a) serial transfer (transferred to a different task setting), (b) strategic transfer (transferred to a task critical to the entire organization), and (c) expert transfer (transferred to solve technical problems within the job settings).

6.3 Organizational Systems for Training Transfer

6.3.1 Learning Organization and Training Transfer Environment

When the concept of *training transfer* is compared to that of *learning organization*, learning organization focuses more on environmental factors based upon member-to-member interactions. These interactions between members create useful knowledge for their jobs and tasks through their collaborative learning process. According to Jensen (2005), learning organization is an organizational entity

> that is organized to scan for information in its environment, by itself creating information, and promoting individuals to transform information into knowledge and coordinate this knowledge between the individuals so that new insight is obtained (p. 61).

Similar to the findings from training transfer literature, learning organization researchers emphasize the importance of effective and continuous learning processes taking place at the individual, team, and organization levels (Watkins and Marsik 2003). In addition, the main characteristics of learning organizations (a supportive learning environment, concrete learning processes and practices, and learning reinforcing leadership behaviors) that Garvin et al. (2008) proposed share similar organizational support features that are common in positive training transfer climates.

Researchers have defined organizational learning from various perspectives: the process of identifying and correcting errors between organizational decisions and environmental demands (Argyris and Schön 1978), the organization-wide process of developing and sharing new knowledge and insights (Levinthal and March 1993), and the process of employees' behavioral change (Spender 2008). Even though these perspectives vary, the central concept of organizational learning is a process-driven transformation from an organization in which learning takes place to a learning organization (McLean 2006). A learning organization is one that constantly improves itself by actively advocating a culture that encourages participation in organizational learning to identify and correct errors, to improve employee behaviors and skills, and to develop and share knowledge.

6.3.2 Knowledge Management versus Training Transfer

Definitions of Knowledge Management The processes of knowledge management and training transfer share some common aspects of learning and knowledge application. For knowledge management, researchers have made various definitions. One of the most cited definitions of knowledge management is that knowledge management is the process of utilizing a systematic approach for capturing, structuring, and disseminating knowledge (Pasternack and Viscio 1998; Pfeffer and Sutton 2006) that emphasizes the technical procedures for capturing explicit knowledge for organizational use. Other researchers (Klein 1998; Stewart 1997) claimed that the concept of knowledge management should consider the human-oriented expertise and intellectual properties so that the intellectual capital management component of knowledge management can be included in the notion of knowledge management. In expanding this idea, Dalkir (2005) defined knowledge management as

> the deliberate and systematic coordination of an organization's people, technology, processes, and organizational structure in order to add value through reuse and innovation (p. 3).

Commonalities Between Knowledge Management and Training Transfer As the intention of training transfer is the application of learned knowledge and skills to job settings, knowledge management also emphasizes the collaborative learning processes and activities to share experiences and expertise for creating applicable knowledge for organizational members (as illustrated from the several definitions of knowledge management above). Modern knowledge management concepts and systems include not only the process of managing knowledge from acquisition to storage, but also the process of leveraging and applying knowledge for organizational performance improvement. Core components of knowledge management also present in training transfer include organizational characteristics required for fostering an effective training transfer climate, such as supportive technological tools, a knowledge-sharing strategy, leadership commitment and support, work design, and strong measurement matrices (Jennex and Olfman 2005). As such, both knowledge management and training transfer systems have common goals to support organizational members in obtaining the required knowledge and skills for their jobs and sharing to create justified mutual knowledge asset that can be applied to enhance performance at the workplace.

6.3.3 Technological Systems and Tools for Training Transfer

6.3.3.1 Technological Systems for Training Transfer Management

In achieving efficient management of the training transfer process at the individual and organizational levels, several types of technological systems can be adopted. Those are learning management systems (Ellis 2009), case-based reasoning sys-

tems, group decision support systems, artificial neural networks, semantic search engines, social network analysis, and online communities of practice (Ghani 2009; Rao 2004).

First, the *learning management system* (LMS) is an integrated framework that combines all aspects of the training management process with software tools for the administration, tracking, reporting, documentation of trainees' training activities and delivery of instructional programs through an intranet and the Internet. The main functions of an LMS include trainee registration, administration of learning and communication activities, instructional event management, curriculum and certification management, skills and competencies management, training record management, and courseware authoring (Ellis 2009).

Second, *case-based reasoning systems* are commonly used to support organizational members to make work-related decisions based on a case-filtering method. In making decisions, an employee can select similar cases from a case library database. During the selection process, the database system uses a reasoning process to present an optimal case. In the case library, each case contains the required components, such as information about the underlying competitive situation, environmental conditions, management priorities, experiences, values, and moments of learning (Ghani 2009).

The third type of technology is the *group decision support system,* which is an idea exchange portal where members of an organization can use shared information for work-related decision-making. Because the members' success and failure cases are shared with the use of this system, it allows for a virtual group learning environment effective for individual and group decision-making (Ghani 2009).

The fourth type, *semantic search engines,* is composed of a semantic network of keywords obtained from existing organizational text-based data. During the search process, the network system generates a semantic table of answers and links to user queries, which can be used for work-task completion (Ghani 2009).

Another type of technological system, *artificial neural networks,* adopts the functioning process of the human brain. Like the concept of artificial intelligence, it creates certain patterns and structures of tacit knowledge so that organizational members can use them for effective work application (Ghani 2009).

The sixth type, *social network analysis,* can be used to examine organizational members' relational arrays, identify the movement of knowledge through the relational map, and pick key members for task completion. In many organizations, the results of a social network analysis are used in process redesign, role development, and succession planning (Rao 2004).

6.3.3.2 Technological Tools for Training Transfer Management

While there have been many types of technological tools for training transfer management reported in the literature, a review of those tools indicates that there are four major types of technological tools to effectively manage training transfer process: groupware, enterprise portals, content management tools, and innovation

management tools (Rao 2004). First, *groupware* is a virtual training tool allowing communication, file sharing, and access to organizational resources during and after training. Second, *enterprise portals* are an advanced version of groupware and contain more functions that can facilitate training transfer, such as trainees' interactions after training, collaboration, and information management to support on-demand training transfer (Collins 2004). Third, *content management tools* provide an authoring feature for instructional designers to create and manage learning content used for online or offline training programs. Oftentimes, some content management tools include collaborative functions so that multiple authors can create and modify learning content asynchronously as they need to update it. After training, the learning content is available for trainees to use in their own job settings. Fourth, the *innovation management tool* is a centralized idea bank for trainees and organizational members to be connected to experts, look up past innovations, and use past ideas to improve their practices for workplace performance. In selecting a tool for training transfer management, decision makers should consider if the tool allows (a) maximum transfer of information, (b) social networking among trainees and organizational members, and (c) intelligent interfaces between its user and the computer system for effective interactions to occur (Ghani 2009).

6.4 Integration of Training Transfer Process into Other Organizational Systems

In integrating the process of training transfer with other organizational systems and technological systems and tools, reviewing various perspectives on the major characteristics of such systems is needed. Moreover, reviewing the similarities and differences of the related components of an integrated system becomes another important task. In addition, considering technical considerations during the integration decision process is a critical step to follow. From the review of the various literature on training transfer, knowledge management, and organizational learning, we identified several components to develop an integrated approach for training transfer: (a) learning organization culture as a supportive organizational environment to integrate training transfer, knowledge management, and organizational learning; (b) organizational structure, leadership, and strategies to support the integration of training transfer, knowledge management, and organizational learning; and (c) the technological support systems and tools enabling the integration and deployment process.

As Fig. 6.2 indicates, the integrated approach comprises three major supportive components and one environmental condition (learning organization culture). In the center of the three major components is the integrated process of training transfer, knowledge management, and organizational learning. In Fig. 6.2, the component of learning organization becomes an important element to make the integration process possible. Marsick and Watkins (2003) specified the major characteristics of a learning organization: (a) continuous learning, (b) inquiry and dialogue, (c) collabo-

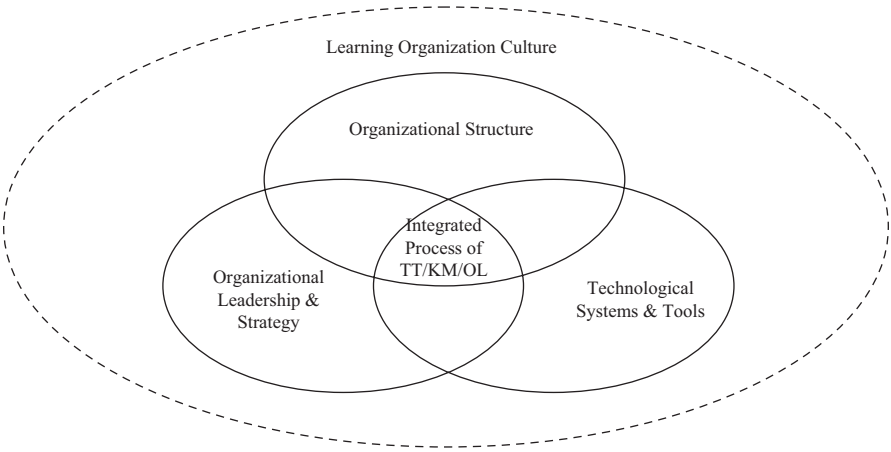

Fig. 6.2 Main components of the integrated approach of training transfer, knowledge management, organizational learning, and technological systems. (Lim et al. in press)

ration and team learning, (d) people empowerment, (e) environmental connection, (f) embedded systems, and (g) strategic leadership. Jensen's (2005) definition of *learning organization*,

> an organization that is organized to scan for information in its environment, by itself creating information, and promoting individuals to transform information into knowledge and coordinate this knowledge between the individuals so that new insight is obtained (p. 61),

specifically emphasized the important supportive nature of the learning organization culture to make the integration process successful.

Organizational leadership and strategy are another critical component comprising the integrative approach of training transfer, knowledge management, and organizational learning. As literature supports, a leader's commitment toward encouraging training transfer and utilization of knowledge management systems among organizational members is regarded as a critical factor for the integration process (Broad and Newstrom 1992). Organizational long-term vision and strategies were also identified as important components to secure the effective implementation of training transfer efforts, knowledge management practices, and organization learning activities.

In explaining the detailed process of integration, however, readers must understand the spectra of knowledge and learning content. First, the spectrum of knowledge can be illustrated by two states, tacit and explicit, comprising the four phases of knowledge process. The four phases are (a) incapable of codification, (b) capable of codification, (c) capable of communication, and (d) capable of prediction (Gamble and Blackwell 2001). Based on how organizational members consume and utilize the knowledge, these researchers also indicated six different types of knowledge: static, dynamic, declarative, procedure, abstract, and concrete (Gamble and Blackwell 2001). The spectrum of learning content has five components of learning: content assets (e.g., text, audio, video, animation, illustration, etc.), content

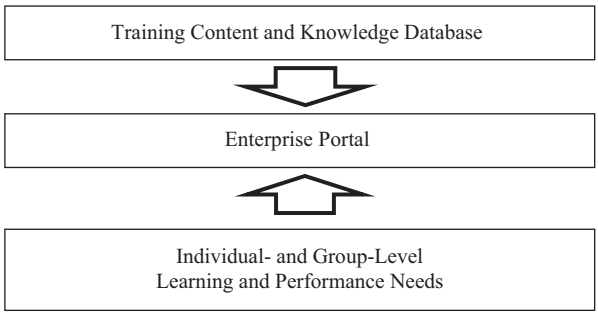

Fig. 6.3 Integrated technological process for knowledge and training transfer deployment. (Lim et al. in press)

objects (e.g., concepts, principles, procedures, etc.), learning objects (composed of learning objectives, content, practice, and assessment items), learning activity components (e.g., job aids and instructional program), and learning environment (e.g., curriculum and learning communities) (Jovanović et al. 2005). By combining both the knowledge and learning content spectra, users of the integrated approach of training transfer, knowledge management, and organizational learning can utilize specific sections from each of the spectrum to meet their usage needs. For example, content assets, content objects, and certain limited type of learning objects (e.g., simple how-to manuals or instructions) can be used during the training transfer and knowledge management process, whereas global learning objects and learning components can be managed through the organizational learning process.

As we integrate the conceptual and practical process of training transfer, knowledge management, and organizational learning, the key enabler of this entire process is utilizing a technological system that can systematically merge training transfer efforts, knowledge management practices, and organizational learning activities. As a core capability, the integrated technological process for training transfer, knowledge management, and organizational learning should be able to handle the organizational members' performance needs in an "anytime and anywhere" manner. In addressing these kinds of performance needs, the following knowledge and training transfer deployment process is suggested as shown in Fig. 6.3.

The knowledge and training transfer deployment process can be explained as a performance support process. That is, during the use of the integrated process, a centralized but customizable delivery portal can be accessed anytime and anywhere when a trainee or organizational members need to perform a job or task-related activities. Through the delivery portal, they can use existing knowledge, learning and content objects, or learning components to make decisions and conduct job tasks. Moreover, they can create and accumulate new knowledge, best practices, learning and content objects, and even learning components by using the centralized portal that can be accessed anytime and anywhere.

It is our intention to propose an integrated approach of training transfer, knowledge management, and organizational learning in order to best address workplace performance issues within today's rapidly changing business and global environment. The rationale for integrating training transfer, knowledge management, and organizational learning is that all these fields have similar goals: enhancing human

knowledge, facilitating training transfer, and improving organizational performance. It is our hope that this proposed approach will satisfactorily meet various kinds of learning and performance needs of many workplace employees and groups who strive to survive in the ever-changing world of business.

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Chapter 7
Training Transfer in Teachers Training Program: A Longitudinal Case Study

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7.1 Introduction

Over the past 2 decades, it has been established that a tradition of research focused on the study of the so-called training transfer. According to Tannenbaum and Yukl (1992, p. 420), training transfer can be defined as "the extent to which a person who has followed a training activity, effectively applies new knowledge, skills and competence in his work." The training transfer is, therefore, seen as a process of applying training on the job (Kirwan and Birchall 2006).

The aim of this chapter is to present a study of individual and organizational factors that facilitated the transfer of classroom teaching models for elementary and middle school teachers. The study was carried out based on previous studies on the topic (i.e., Holton and Baldwin 2003). Data were collected with the Learning Transfer System Inventory (hereafter LTSI), a questionnaire developed by Holton and colleagues (Holton 1996; Holton et al. 2000).

Based on these assumptions the chapter is organized as follows. The first part provides an overview on the theoretical concept of training transfer, mostly related, and useful to understand organizational school settings and teachers' professional development. The second part illustrates the research methodology, with a particular focus on the psychometric characteristics of LTSI version used. The third part is devoted to describe the results of the surveys along the 2 years of the project and follow-up. The last part deals with the discussion of the data and proposes a series of recommendations.

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7.2 Training Transfer in Teacher Professional Development

In theoretical and empirical research on adult learning, the topic of training transfer has been largely neglected (Analoui 1993). A training methodology is characterized not only by a good design, but also by an additional success factor, that is, transfer of, at least, knowledge from training to a specific work setting.

As pointed out by Albanese et al. (2003), the tendency in the past has been to simply admit that the transfer was an automatic effect of learning process, ignoring all the mediators that take place between training phase and the following application, in daily work practices. The mainstream belief is linked to a sort of *automatic cognition* process: once learned, the knowledge would be applied anyway without a hitch or interruption in the transfer process.

The training transfer is certainly part of a wider research-intervention field, which can be defined as design and management of adult education in the workplace (Baldwin and Ford 1988; Campbell 1988; Ford and Kraiger 1995; Goldstein and Ford 2002; Kirkpatrick 1975; Tannenbaum and Yukl 1992). More precisely, training transfer is closely related to the assessment of training. From this point of view, the distinction between *training evaluation* and *training effectiveness* (Holton 1996; Kirwan and Birchall 2006; Noe 1986) seems to be particularly interesting. As shown by Salas and Cannon-Bowers (2001) and more recently by Alvarez et al. (2004), the evaluation of training can be considered as the detection of outcomes in terms of learning and work behaviors modification. Training effectiveness, conversely, is a theoretical attempt to interpret these results considering both individual (Axtell et al. 1997; Baldwin and Ford 1988; Colquitt et al. 2000; Costa and McCrae 1992; Goldberg 1993; Mathieu et al. 1992) and organizational factors (Pea 1987; Rouiller and Goldstein 1993; Salas and Cannon-Bowers 2001).

To have a more focused idea about training transfer, some authors distinguish among different types of transfer. Gagné (1970) described lateral and vertical transfer. The lateral transfer refers to learners' ability in applying learning in different, but with the same complexity, situations in a cognitive domain perceived quite close to the original in which the first learning experience occurred. The vertical transfer consists in applying learning in situations of a very high degree of complexity, in a domain perceived very far from the original in which the first learning experience occurred.

For Laker (1990), it would be appropriate to talk about near and far transfer. The far transfer differs from near one mainly because the first learning task differs significantly from the next one. In the case of near transfer, knowledge will be applied to situations similar to those that characterized previous learning environment, while far transfer is the application of knowledge in contexts dissimilar than previous ones (Baldwin and Ford 1988). Holton and Baldwin (2003) use the concept of *distance of transfer* to show how, in daily work practices, there would be learning situations that require greater or lesser degree of transfer.

In subjects involved in learning experience, the transfer process is completely exposed to what Lewin (1951) called *force field* and, then, to the strength of barriers

or facilitators factors in the workplace. These factors could be grouped in three main categories (Kirwan and Birchall 2006):

- individual factors related to subject during a training experience (e.g., motivation);
- structure and content of training delivered;
- some context variables such as organizational climate, the influence of supervisors (leaders, coordinators, managers), the concrete feasibility of knowledge use, a goal setting post-training, receiving feedback, etc.

Although there is little direct research investigating the impact of individual learner characteristics on teachers' training transfer, it is logical that the broader training transfer research would be generalizable to the field of education. Educational research tends to cluster participants according to variables such as grade level, content area, and experience level. Although these variables have not been linked directly to training transfer outcomes, they can be assumed to explain variability in teachers' training transfer.

Teachers' experience level in particular is recognized as an important distinguishing trait. Novice teachers commonly require a high degree of support and supervision to develop the autonomy of their experienced colleagues, as evidenced by the abundance of new teacher induction programs, by probationary certificates for new teachers, and by experts such as Danielson (2007), whose *Framework for Teaching* model has been marketed as a "roadmap for novices" (p. 11). Research on teachers' career stages provides empirical evidence regarding the existence of differences in instructional skills between novice and more experienced teachers. Huberman (1989) identified the following teachers' career stages: survival and discovery, from 1 to 3 years; stabilization, from 4 to 6 years; experimentation and activism, from 7 to 18 years; reassessment and self-doubts, also during the 7-to-18-year stage, which occurs alternatively to experimentation and activism; serenity, from 19 to 30 years; conservatism, also during the 19-to-30-year stage, which occurs alternatively to serenity; and disengagement, from 31 to 40 years. Huberman concedes that these stages should be viewed as general, with a variety of possible paths of progression.

Although the relationship between years of experience in the profession and teaching effectiveness is not linear, novice teachers often are found to be less effective than their more experienced peers (Darling-Hammond 2000). The nonlinearity of the data implies a point of static or diminishing returns for veteran teachers for whom years of experience no longer correlates with teaching effectiveness and student achievement.

Student achievement data provide additional considerations regarding the differences between novice and veteran teachers. Clotfelter et al. (2007) found significant positive differences in experienced teachers over novice teachers as measured by their students' achievement in reading and math.

Collectively, these studies suggest that professional development is capable of changing teachers' instructional practices, especially when the professional development is sustained in length, emphasizes reform-based instructional strategies, and is linked to curriculum and materials that support these reforms (Banilower et al. 2007; Heck et al. 2008).

Several commonalities have emerged in the research and opinions regarding attributes of effective professional development in public education. The expectation that professional development should demonstrate a high degree of relevance to participants' actual work is repeatedly emphasized (Garet et al. 2001; Guskey 2003; Pritchard and Marshall 2002), and this aligns with findings from the broader training transfer literature (Burke and Hutchins 2007). Similarly, experts agree that trainings should incorporate active learning (Garet et al. 2001) and should derive from assessment of needs (Burke and Hutchins 2007; Pritchard and Marshall 2002). Although a few studies have focused on investigating these attributes in a scientific manner (e.g., Garet et al. 2001; Prichard and Marshall 2002), there is an over-reliance on literature reviews and expert opinions.

7.3 The Present Study: Method

7.3.1 Research Design

As already mentioned, the aim of this study is to investigate factors that portray the application of a peculiar and innovative teaching method (so called "models of classroom personalization") in professional experience of elementary and middle school teachers, during and immediately after the training. Consistent with this aim, it was decided to give a longitudinal data collection structure, at classroom and teachers' level, with six waves of data collection for the classroom level and four waves for teacher's level. Classroom data collection has been done with a non-participant structured observation protocols on teachers and students' behaviors, while applying innovative teaching methods. Teacher's level data collection has been done with a web-based self-report questionnaire on learning transfer perception. Here the ultimate data collection scheduling:

First Wave Questionnaires During the first-year project, after the first cycle of project activities (just after 3 months by the start of the school year); classroom observations: one observation during the same period.

Second Wave Questionnaires During the first-year project, after the second cycle (during the second half of the school year); classroom observations: two observations during the same period, with a break of 2 months between them.

Third Wave Questionnaires At the end of the second-year project; classroom observations: three observations during the same period, each once every 2 months.

Fourth Wave Questionnaires Follow-up 6 months after the conclusion of the project, after the start of the new school year.

Waves of data collection have been studied in such a way to be linked to classroom observations to obtain, as much as possible, matching measures between the two databases. Three strategies of analysis have been applied to collected data:

1. Data description in correlational terms to explore the possible links between individual and organizational factors and background variables (age, years of teaching, educational level, etc.) during the transition among first and second year of the project and the follow-up measure (for questionnaires data). The (supposed to be) causal relationship among explanatory variables and factors of transfer will be deeply explained with the nonparametric one-way analysis of variance, the Kruskal-Wallis Test.
2. To compare the transfer variables' scores in different waves of data collection, due to the small number of subject involved, a nonparametric of one-way analysis of variance for repeated measures, e.g., the Friedman Test, has been used.
3. Consistently with these analyses, scores trend of transfer variables on four waves of data collection has been studied, inside almost the same group of subjects.

7.3.2 Training Process

Training process and content proposed to teachers is based mainly on what Joyce and Showers (1980), and Tilemma and Veenman (1987) suggested in their works. During the project, research staff has proposed three times per year the following set of general activities, aimed to achieve the acquisition of new teaching skills:

a. theoretical description of the strategies and/or specific teaching skills;
b. demonstration of strategies and/or specific skills of teaching;
c. practicing strategies in simulated, but in real context, teaching situations (with the teachers as students or with small groups of students);
d. accurate, specific and non-evaluative feedback;
e. application of skills and strategies in the classroom, with a constant support, by research staff, during the implementation phase.

The contents of the training program include instructional procedures based on cooperative learning and multiple intelligences (Kagan 2000), and on differentiated teaching (Tomlinson 2003). Curricular content taken into consideration was: Natural Sciences, Foreign Languages, Reading and Comprehension, Mathematics.

7.3.3 The Instruments

7.3.3.1 The Questionnaire

The questionnaire is based on the aforementioned LTSI (Holton et al. 2003), an instrument (or better, a part of a wider set of transfer training assessment tools) to measure a model of transfer of learning from training to workplace. This instrument is widely used in the U.S. organizational context and it has never been used before, in our knowledge, in a teachers' training program evaluation. The original questionnaire in the Italian version has been reduced by the research staff in terms of factors

and items, given the partial lack of theoretical congruence of the original factor structure within the school organizational context. At the end, questionnaire factors have been reduced from 16 to 10, and the items number from 89 to 45. Finally, items have been translated into Italian language and the wording was adapted to the typical language of an educational organization, trying to preserve as much as possible the original meaning of the items phrasing.

The scale adopted in the final version is the same as the original version, which is a five-point Likert scale, ranging from 1 = "strongly disagree" to 5 = "completely agree."

As in the original version of Holton et al. (2003), transfer factors examined are divided into general and specific, as indicated in Tables 7.1 and 7.2.

Surveys have been created with a web-questionnaire software, called GrafStat. Before carrying out the data analysis, a study on the reliability and internal consistency of the instrument was done, given the lack of validation of the same instrument for the Italian language and cultural context as well as the organizational context school.

As suggested by Colton and Covert (2007), two strategies have been used to assess the reliability and internal consistency of the LTSI: the average inter-item correlation and Cronbach's alpha. Table 7.3 shows these values for each of the transfer variables considered.

The Overall Cronbach's alpha for the entire instrument is 0.827. In Table 7.3 the results of reliability analysis appear slightly encouraging. With regard to mean inter-item correlation, three factors are below the cut-off recommended in the literature, while the Cronbach's alpha is distinctly under the cut-off 0.7 in the same factors. These factors are: *Personal Capacity for Transfer*, *Perceived Content Validity* and *Transfer Design*.

To improve the internal consistency of these factors a group of item were, at a later stage, excluded from next analysis process. This item exclusion results in an increase of the score of the Cronbach's alpha for each factor (the fourth column in Table 7.3). This item exclusion considerably improves a factor (*Perceived Content Validity*), and let to precautionary consider for the subsequent analysis other two factors (one in particular, *Personal Capacity for Transfer*, continues to have low-reliability scores and internal consistency). For the analysis steps, therefore, items considered decreased from 44 to 39.

7.3.3.2 The Observational Protocol

The aims of classroom observations are of two kinds: one linked to the empirical research and the other linked to the professional development of the teachers involved in training and development.

- The first goal is to collect data useful to understand the link between classroom management strategies and use of innovative instructional procedures by teachers, to observe also what can be defined as proximal transfer of training (Holton and Baldwin 2003), namely the application in the workplace of what they experienced in seminars at the beginning of each year of the project.

Table 7.1 Selection of specific training related factors from the original LTSI set

Factor	Description	No. of items	Item sample
Specific training-related items			
Learner readiness	The extent to which individuals are prepared to enter and participate in learning	4	Prior to the training, I knew how the program was supposed to affect my performance
Motivation to transfer learning	The extent to which individuals are motivated to utilize their knowledge and expertise in their work	4	Training will increase my personal productivity
Personal capacity for transfer	The extent to which individuals have the time, energy and mental space in their work lives to make changes required to use learning on the job	4	I have time in my schedule to change the way I do things to fit my new learning
Peer support	The extent to which peers reinforce and support use of learning on-the-job	3	My colleagues appreciate my using new skills I have learned in training
Supervisor/Manager support	The extent to which managers support and reinforce learning on-the-job	6	My supervisor meets with me regularly to work on problems I may be having in trying to use my training
Perceived content validity	The extent to which the participants judge the learning content to reflect job requirements accurately	5	The instructional aids (equipment, illustrations, etc.) used in training are very similar to real things I use on the job
Transfer design	The extent to which learning has been designed to match job requirements and give participants the ability to transfer learning to job application	4	The activities and exercises the trainers used helped me know how to apply my learning on the job

- The second goal is to contribute to a successful distal transfer application, using observational collected data to coach teachers on this. Observation protocols are aimed to return to teachers the results of classroom application of what they designed, in a way to improve future teacher's work performances.

Observational variables, selected for this study, are based largely on the positive and/ or negative classroom management strategies implemented by teachers. A number of studies in this field (e.g., Stage and Quiroz 1997) indicate a bigger effect size considering students' behaviour control classroom by teachers, both based on the use of negative reinforcement, e.g. penalties for students missing compliance to classroom rules and procedures, and positive reinforcement, e.g., positive rewards for students' compliance behaviors. A selection of variables used in observational checklist is presented in Table 7.4.

The observation grid used in the study can be evaluated also by considering reliability indexes, that consider not only used variables issues (e.g., the efficacy

Table 7.2 Selection of general training related factors from the original LTSI set

Factor	Description	Nr of items	Item sample
General training-related items			
Performance-Outcomes expectations	The expectation that changes in job performance will lead to outcomes valued by the individual	4	My job performance improves when I use new things that I have learned
Resistance to change	The extent to which work groups are perceived by individuals as barriers or discouraging the use of new knowledge and expertise.	6	People in my group generally prefer to use existing methods, rather than try new methods learned in training
Performance self-efficacy	Workers' general belief that they are able to change their performance when they want to	4	I am confident in my ability to use new skills at work

Table 7.3 Reliability and internal consistency of the factors considered in the adapted version of LTSI

Factor	Mean inter-item correlation	α	α (after items exclusion)	Item excluded
1. Learner readiness	0.660	0.885	–	–
2. Motivation to transfer learning	0.403	0.730	–	–
3. Personal capacity for transfer	0.218	0.511	0.523	2
4. Peer support	0.594	0.812	–	–
5. Supervisor/Manager support	0.732	0.942	–	–
6. Perceived content validity	0.227	0.596	0.689	2
7. Transfer design	0.236	0.521	0.577	1
8. Performance-outcomes expectations	0.371	0.696		–
9. Resistance to change	0.595	0.889		–
10. Performance self-efficacy	0.303	0.642	0.658	1

Considering all the data collected in the four waves of data collection; $N = 69$

of categorical or ordinal measures) but even all the issues related to observation protocol codebook creation and sharing.

Reliability level of observations results was estimated by comparing the data obtained by a pair of observers in 14 out of 66 observations (21 %) recorded altogether. Before each observation, the two observers have shared the codebook and then have discussed the results to refine the checklist content. In Table 7.4, reliability measures have been divided according to the variable type considered: categorical, dichotomous, ordinal, and continuous variables.

The first set of categorical-dichotomous variables, which measure the presence-absence of specific activities in the classroom activities' starting phase, presents on the whole, a good level of agreement between the two observers, especially with regard to the presentation of the activities and the use of other introductory modes. The other two categorical-dichotomous variables get reliability values less consistent, especially as regards the categorization of the activities closing part (53.8 % of agreement between two observers).

Table 7.4 Reliability data of a selection of variables used in the observation protocol, from a sample of two-coders/observer setting ($N=14$)

Variable Name	Variable type	Type of reliability index
Introductory activities	Dichotomised	84,6%
Curiosity arousal	Dichotomised	61,5%
Closing activities	Dichotomised	53,8%
Procedures level of application	Ordered Categorical	76,9%
Teachers posture	Ordered Categorical	46,2%
		Krippendorff's alpha
Number of students' cooperative groups	Numeric	0,789
Class teaching duration (in min)	Numeric	0,923
Cooperative groups' teaching duration (in min)	Numeric	0,679

There is more comforting reliability data for continuous variables considered. The Krippendorff's alpha is very good, above the threshold of 0.70, for a good number of variables, while just four are below this threshold. It is, as you can see in the table, the more complex variables to collect.

7.4 The Present Study: Results

7.4.1 Data from Questionnaire

7.4.1.1 Participants

The database consists of 69 valid cases. Teachers come from three schools, namely school A, B, and C in this paper. These schools lay in rural and mountain-based locations. The school with the largest number of collected questionnaires is the school A ($n=28$), followed by school B and C ($n=19$).

The number of subjects remain almost the same from the first to the third data collection wave, hitting a first evident decline in the follow-up measure (a chi-square test of independence between school level and survey period, did not give a significant result, for $p>0.05$). As we will see later in this chapter, subjects who filled in the questionnaire in the first period are not quite the same that filled in the second, third, and follow-up waves. In part, this is due to a rather small turnover which affected the group of teachers during the transition between the first and the second year of the project. In part, this could be a sort of *side effects* of a classic online survey, which caused questionnaire return rates often heterogeneous and not fully under control (even in a small-scale project like this).

Most of them teach in third (14.5%), seven (13%), and eight grade classes (31.9%). With regard to socio-demographic characteristics almost all are female (only one male subject in the first year of the project), while the average age is 44.8 years (SD=9.8) and the average of working experience is 20.2 years (SD=10.9). Considering the data-

set as a whole, those who said they had attended training and development initiatives (courses, seminars, conferences, action-research projects) on learning personalization models during the last 3 years are about 49%, while those who have not attended such courses are about the remaining 51%. From this point of view, a chi-square test of independence between school level and presence/absence of previous experiences did not give significant results ($p > .05$), while the same test, considering the variable school name gave significant results (χ^2 (2, $n=69$)$=6.52$, $p=0.038$). School A has the highest number of teachers who have not had previous training experiences on this topic. School C has the highest number of teachers who have had this experience.

7.4.1.2 Correlations Between Variables

Transfer variables, training specific and general ones, have been linked together with some background variables such as age (continuous variable), years of working (continuous variable), school grade (ordered categories), class typologies (in which teachers work; ordered categories). Statistical significance of correlation coefficients' differences between the first and second year variables data (and then between the second year and follow-up), was tested through the "observed value of z" (Z_{oss} value) method, which is useful to estimate significant differences between variables correlations in various comparison conditions.

With regard to the first year of the project, from a descriptive point of view, the average scores in transfer variable as *Motivation to Transfer* ($M=4.25$, SD$=0.43$, $\alpha=0.76$), *Transfer Design* ($M=4.11$, SD$=0.38$, $\alpha=0.49$), and *Performance-Outcomes Expectations* ($M=4.02$, SD$=0.43$, $\alpha=0.68$). The lowest scores relate to *Peer Support* ($M=2.73$, SD$=0.68$, $\alpha=0.79$), *Supervisor/Principal Support* ($M=2.56$, SD$=0.92$, $\alpha=0.94$), *Learner Readiness* ($M=2.68$, SD$=0.72$, $\alpha=0.87$).

With regard to the relationship between background and transfer variables, in the first year of the project the age of the respondents negatively correlated with *Performance Self-Efficacy* ($r=-0.478$, $p<0.01$), as well as *Years of working experience* ($r=-0.523$, $p<0.01$). The *School Grade* correlates negatively with *Motivation to Transfer* ($r=-0.413$, $p<0.01$), and positively with *Supervisor-Principal Support* ($r=0.504$, $p<0.05$).

Transfer variables correlate in a number of combinations. For example, "*Learner Readiness*" correlates positively with other two variables at individual level, *Personal Capacity for Transfer* ($r=0.416$, $p<0.05$) and *Performance Self-Efficacy* ($r=0.358$, $p<0.01$) and at the organizational level, *Resistance to Change* ($r=0.429$, $p<0.05$). The same variable correlates negatively with the organizational level variable, e.g., *Peer Support* ($r=-0.495$, $p<0.05$), linked to colleagues' support and influences, during the application of learning in the workplace.

With regard to the first year of the project, *Motivation to Transfer* is positively correlated with some aspects of training activity, such as *Perceived Content Validity* ($r=0.435$, $p<0.05$) and *Transfer Design* ($r=0.488$, $p<0.05$); and with the individual factor as *Performance-Outcomes Expectations* ($r=0.489$, $p<0.05$). Characteristics of the training activities and the supportive role of supervisors-principals are

linked to *Perceived Self-Efficacy* (which, in the first year, increases with decreasing of age and school grade).

The second-year project has less emphasis regarding the explanatory variables role, with a series of correlations which decrease and become nonsignificant (e.g., the role played by age and their length of working experience with respect to *Performance Self-Efficacy*). In the second year, there is a still significant positive relationship between school grade and *Supervisors-Principals Support* which increases with the transition from elementary to middle school ($r=0.611$, $p<0.05$). This is confirmed by a negative correlation with the class-grade level considered ($r=-0.478$, $p<0.01$): the closer you get to the first classes of elementary, the less you find perceived *Principals-Supervisors Support* during the application of learning in the workplace.

The relationships between the transfer variables in the second year focus mainly on motivational issues: this is the only variable with meaningful relationships with at least three other transfer variables at organizational (*Peer Support*), training process (*Transfer Design*), and individual level (*Performance-Outcomes Expectations*). The last significant correlation, which does not have significant differences with previous project year correlations, is *Peer Support* with *Resistance to Change* ($r=-0.780$, $p<0.05$). In this case, the correlation is negative: when there is less support perceived by peers–colleagues, then there is greater perceived resistance to change.

Follow-up data are less good than previous with regard to measures reliability scores (four factors are below the .70 cut-off); some important aspects are still underlined though. First, there is a significant relationship again between background variables that was largely reduced in the last year of the project. The role of supervisors-principals is related to motivation to transfer, with a negative relationship to keep in mind ($r=-0.621$, $p<0.01$). These data are almost counter-intuitive: it seems as if teachers had chosen an independent path of action (teaching personalization models) without their supervisors-principals support. Another aspect that emerged in the follow-up is the role of peer support, which is negatively correlated, 6 months after the end of the project, with transfer design ($r=-0.870$, $p<0.05$). There were no longer project activities that might justify the application of personalization models which means less transfer design. In this scenario the supporting role of colleagues emerged, leading the application of learning in workplace. We have no qualitative data to describe a sort of stabilization of collaborative work practices beyond the end of the project, but it is likely that these practices have been substantially reduced after the end of the project, letting the individual commitment back again as the medium and long-term teacher's prevalent transfer factor.

7.4.1.3 Longitudinal Data Results

The second analysis strategy used is the comparison of transfer variables scores in the four waves of data collection. Given the presence of, albeit minimal, a teacher's turnover inside the project, and given the questionnaires' return rates which have not been always consistent in the four waves, data in this section will be presented in two different ways. A first method will present the data as they have been collected

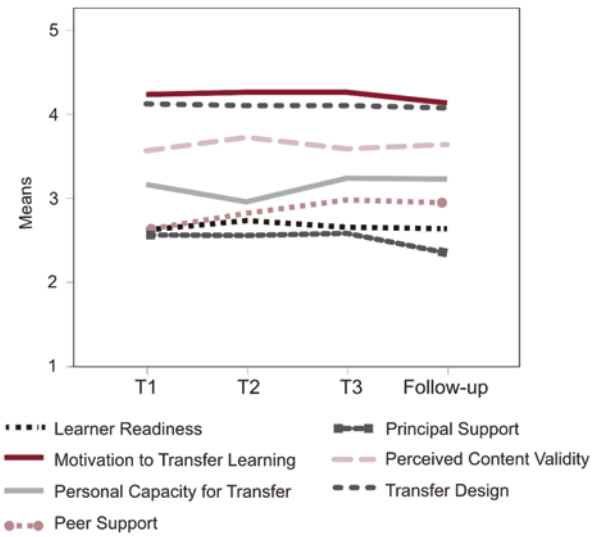

Fig. 7.1 Trend of specific training factors during project four waves of data collection

during the four waves: in this case the variables scores describe the presence of transfer variables basically of four (partially) different groups.

A second method will examine data from a small sample of subjects, e.g., those who have filled in the questionnaire in all the four waves (we call them using the tricky label *always-compilers*). Using the first strategy of analysis we have the results presented in Fig. 7.1 and 7.2.

Due to readability issues in this chapter, specific training variables have been separated from general ones. Figure 7.1 shows the trend of the first kind of variables. The variable with the highest score in the first period is *Motivation to Transfer*, followed by *Transfer Design* and *Perceived Content Validity*. The trend of this first block of variables is fairly stable with minimal score deviations in respect to the initial score content. The only variable with a constant score improvement is "Peer Support" (which is a sort of stabilization between the end of the project and the follow-up), while the variables that end out in follow-up are *Motivation to transfer learning* and *Supervisors-principals support* with minimal score lowering. *Personal capacity for transfer* is the only factor having an evident decline within the first year of project, between the first and the second wave of data collection.

A similar trend is also present in the general training factors (Fig. 7.2), in which two variables are quite stable, *Performance-Outcome expectations* and *Performance Self-efficacy*, while a third factor, *Resistance to change*, appears in a slight decline, even after the end of the project. This could mean that during and after the project, teachers involved have perceived a school organizational context more open to change, regarding the acceptance of methods and models for personalization of learning in daily work practices.

These data depict a sort of stability of the factors facilitating the implementation of educational models in the classroom, over the four waves of data collection. The follow-up data are generally similar to the data collected in the first wave, except

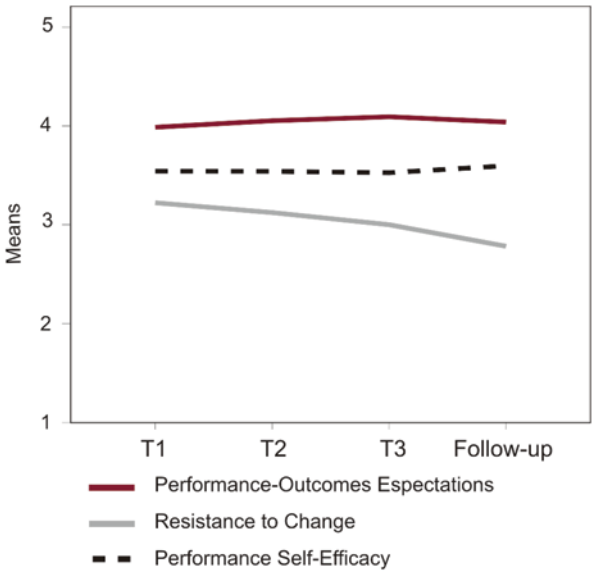

Fig. 7.2 Trend of general training factors during project four waves of data collection

for *Supervisor-principal support* and *Resistance to change*. Lower values mean less presence perceived training application resistance.

The outcome of the Friedman test applied to eleven selected subjects (the *always-compilers*) largely confirms the trends emerged in the previous paragraph. The only transfer variable in which there are significant differences in longitudinal progression is *Personal Capacity for Transfer*. An inspection of mean values shows a scores' decrease between the second and the third period. A series of post-hoc tests with the Wilcoxon Signed Rank Test (with Bonferroni adjustment) confirmed the statistical significance of scores differences between the end of the first year and second year of the project ($z = -2{,}213$, $p = 0.027$) with a moderate effect size (eta squared = 0.10) (Table 7.5).

Holton et al. (2000), considered *secondary influences* including individual characteristics, in terms of training previous experiences and organizational issues due to, in part, to a supportive climate as possible antecedent factors of training transfer, in terms of learning, individual performance and organizational results.

In this section, we will try to evaluate the effects of some independent variables (e.g., age, years of working experience, school setting) which may occur on transfer variables considered.

The age was, for these analyses, coded into a categorical variable with three modalities (based on frequency distribution): 1 = up to 40 years, 2 = 41 to 50 years, 3 = from 51 years onwards. Table 7.6 shows the results of the test. Age has an influence on *Learner Readiness*, *Motivation to Transfer*, *Supervisor-Principals support* and *Performance Self-Efficacy*. With regard to perception of readiness, the youngest group (under 40 years) has higher mean scores; motivational aspects are more positive in the middle range (among 41 and 50 years), and the support of supervisors is felt most frequently by the youngest group. *Performance Self-Efficacy* is lesser

Table 7.5 Results of the Friedman test on transfer variables considering four waves of data collection

Variables	*N*	Chi-squared	d.f.	*p*
Learner readiness	11	2.464	3	0.482
Motivation to transfer learning	11	3.708	3	0.295
Personal capacity for transfer	11	9.160	3	0.027
Peer support	11	1.753	3	0.625
Supervisor/Manager support	11	2.883	3	0.410
Perceived content validity	11	2.228	3	0.527
Transfer design	11	3.000	3	0.392
Performance-outcomes expectations	11	3.239	3	0.356
Resistance to change	11	3.121	3	0.373
Performance self-efficacy	11	3.472	3	0.324

N number of subjects interviewed; *d.f.* degrees of freedom; *p* probability

Table 7.6 Results of the Kruskal-Wallis test on transfer variables, considering the age (recoded into three categories) as the independent variable

Variables	Number of observations	Chi-squared	d.f.	*p*
Learner readiness	69	6.915	2	0.032
Motivation to transfer learning	69	6.240	2	0.044
Personal capacity for transfer	69	0.189	2	0.910
Peer support	69	0.569	2	0.752
Supervisor/Manager support	69	11.915	2	0.003
Perceived content validity	69	0.877	2	0.645
Transfer design	69	4.682	2	0.096
Performance-outcomes expectations	69	0.544	2	0.762
Resistance to change	69	2.244	2	0.326
Performance self-efficacy	69	6.305	2	0.043

N number of subjects interviewed; *d.f.* degrees of freedom; *p* probability

in the higher age group (over 51 years). A similar analysis conducted considering years of working experience as independent variable, shows no significant differences in transfer variables between groups with different experience levels.

The variable *School* is that which produces the highest number of significant effects. This confirms the fact that organizational context in which teachers work seems to have an important role in the dynamic application of teaching models proposed. Schools appear to differ with regard to the *Motivation to Transfer*, *Peer support*, *Supervisors-Principals Support*, *Performance-Outcomes Expectations* and *Resistance to Change* (Table 7.7).

7.4.2 Data from Classroom Observations

As already stated, observations considered for the analysis are 66, for an average duration of 76.6 min (SD = 25.53, min = 36, max = 120). In general, the average number of teachers observed inside the classrooms are 2 (DS = 0.71 min = 1, max = 5), while the average of class size is slightly greater than 18 (DS = 3.26, min = 9, max = 24).

Table 7.7 Results of the Kruskal-Wallis test on transfer variables, considering different school setting (coded into three categories) as the independent variable

Variables	Number of observations	Chi-squared	d.f.	*P*
Learner readiness	69	2.643	2	0.267
Motivation to transfer learning	69	13.184	2	0.001
Personal capacity for transfer	69	3.563	2	0.168
Peer support	69	6.244	2	0.044
Supervisor/Manager support	69	18.869	2	0.000
Perceived content validity	69	2.821	2	0.244
Transfer design	69	1.646	2	0.439
Performance-outcomes expectations	69	6.528	2	0.038
Resistance to change	69	11.395	2	0.003
Performance self-efficacy	69	5.471	2	0.065

N number of subjects interviewed; *d.f.* degrees of freedom; *p* probability

Following the codebook presented in the introductory methodological part, there are two ordinal variables to be taken into account for the analysis: the *Level of application of instructional procedures* and *Teacher's posture*. As we have already seen (Table 7.4), the first variable is measured with four ordered categories, where 0 = not present and 3 = creative; the second variable has a measure at three levels, where 1 = far, 2 = next, 3 = moving.

To enter these two variables in the same graphical representation, the average scores have been standardized (with $M = 0$ and DS = ± 1). The information given perceptually by the graph (Fig. 7.3) is confirmed by a series of *t*-tests on mean scores. Both variable scores have a significant improvement from observation 1 to observation 6: *Level of application of procedures* (t (65) = 03.08, $p = 0.003$, eta squared = 0.13), and *Teacher's posture* (t (65) = 2:47, $p = 0.016$, eta squared = 0.08). These differences are significant with a moderate effect size. Specifically, the variable on the level of application of the procedure undergoes a first decrease at the end of the first-year project, while the variable on teacher's posture remains in a constant growth in the same period. Both have a positive peak at the beginning of the second year of the project, with a decrease in the fifth module (more pronounced for posture teachers), and an improvement in the sixth and final module for the level of application of the procedure. An additional decrease for teacher's posture is present in the same period. If we compare the first and the last module, the differences remain significant, albeit less marked, with effect size very large for *Level of application of the procedure* (eta squared = 0.25) and *Teacher's posture* (eta squared = 0.2), although not significant in this last case ($p = 0.07$).

The next sequence of variables taken into consideration is related to classroom management methods, based on previous work of Marzano et al. (2003). Also in

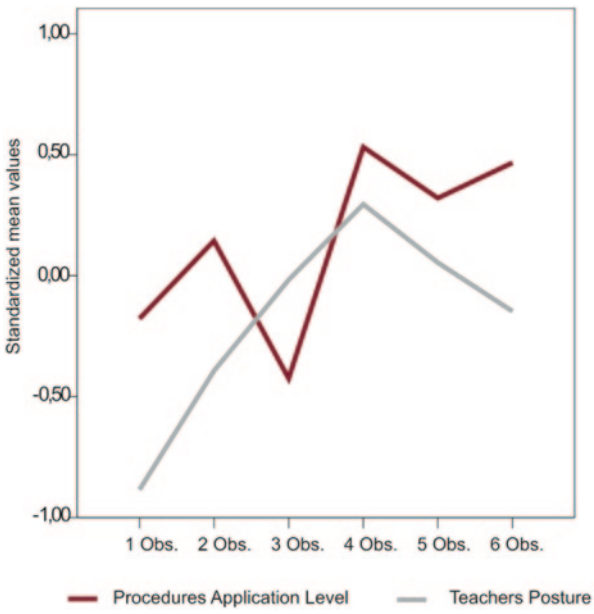

Fig. 7.3 Four periods trend of standardized scores of *procedure level of application* and *teacher's posture*

this case the variables considered, having the different scales of measurement, have been standardized in order to be displayed in a single solution (Fig. 7.4). Considering the 2-year period of the project, significant differences resulted thanks to a series of *t*-test for variables such as the number of cooperative groups components which is in increase (t (61) = 2.13, p = 0.036; eta squared = 0.05), and the number of teachers' activities in student collaboration support, which increases too (t (55) = 4.65, p = 0.000; eta squared = 0.23). Although not statistically significant, however, there are other dynamics in the passage from first to second year of the project. One of these is the increase of teaching time to small cooperative groups.

7.5 Discussion, Limitations and Final Remarks

Schools, as organizations, live the experience of training and development with two types of constraints: an external one, the legislation, and an internal one, the self-imposed limits from organizational point of view, in a flattened structure from hierarchical point of view and role differentiation. On one hand, this can cause considerable idiosyncrasies between schools but on the other there may be common and shared ways to manage and live training and development processes. This is what we have tried to explore in our work research.

The limited number of subjects and limited control of intervening variables led to caution in interpreting the data and in generalizing the results to wider groups of teachers. These issues did not make it possible to carry on a comprehensive validation study on the LTSI for the Italian and teacher's professional development con-

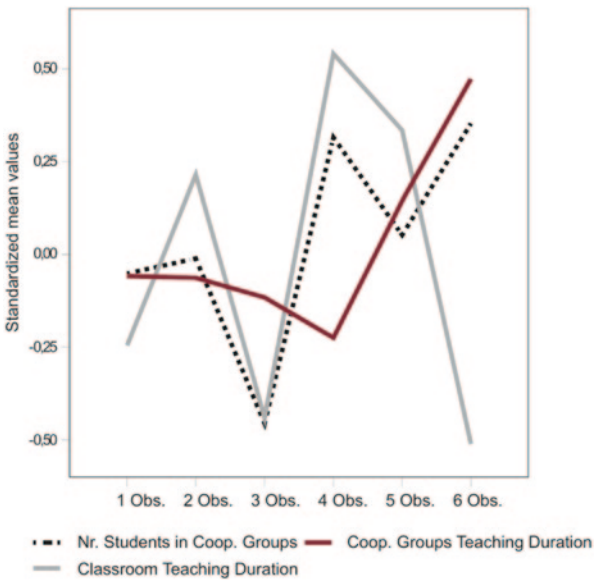

Fig. 7.4 Four periods' trend of standardized scores of cooperative group size and teaching length

text. By contrast, it has been possible, however, to begin a study on scales reliability, which could be useful as a basis for next studies with a larger number of subjects.

The data collected with LTSI as transfer factors have mainly focused on training process at individual level and on training methodologies. Regarding the first aspect, personal skills and motivation efforts seem to have played an important role in teacher's positive perception and judgment on congruence between the project and real workplace setting. This point is highly linked to perceived effectiveness of proposed new teaching methods (models of personalization). On the other hand, transfer design is certainly an important influencing factor. As extensively discussed in the first part of this chapter, the project activity-based component has been integrated with laboratory model study and testing (thanks to classroom observations). Seminars were mainly carried out at the beginning of each project year, while the rest of the time was primarily focused on supported instructional design and classroom observation activities with a shared discussion of observations results during coaching sessions. More than 60% of project's total activities' time span has been focused on classroom practices (from design to implementation).

Less influential factors on training transfer seem to be organizational issues, such as peer support and principal's support. This suggests how an educational innovation with evident work-related implication, like this one, needs to be supported by school's organizational structure and process. On the other side, the project did not include specific interventions on organizational factors, implicitly leaving to schools the task of taking care, or not, on these aspects.

These data seem to reflect the actual difficulties in Italian schools in creating internal organizational support devices for teachers' professional development. From this perspective, a process of continuous improvement of teachers' instructional competence, and consequently, high-quality learning experience of students, not

only requires care, support in training at the individual level factors, but also at the organizational one. Individual and training factors allow maintaining a close focus on process short-term, while organizational factors can have a positive influence even after the completion of professional development projects by promoting a long-term effectiveness.

As already stated in the first part of this work, by the end of the 80s to today, an extensive amount of literature, especially in the US, emerged to improve the description of factors involved in training transfer and their relationships. The present research gives valuable indications, a sort of *meta-transfer* to different kind of organizational contexts. Inside this stream, Holton and Baldwin (2003) edited a collection of essays for the Society of Industrial and Organizational Psychology (SIOP) on how to improve the effectiveness of learning in organizations. Therein, the authors summarize the main features of training transfer. For them, training transfer is a function of a complex system of influences, not just a matter of optimal "transfer" of instructional design issues inside organizational daily life. According to this perspective, the transfer system should take into account all the factors from the individual, to training design and delivery, to organizational one. This model has five steps in managing complex training transfer system, as teachers' professional development in school organizational context surely is. First, a series of individual or group characteristics, such as abilities, motivation, past experiences, have to be carefully explored (step 1). Then, to start the learning process, not only design and content related issues have to be taken into consideration (step 3). In the case of organizational level interventions, a pretraining phase of precondition study (step 2) and a post-training phase of support (step 4) need to be done. In the same way, in the case of individual or group level intervention, a pretraining phase of preparation and a post-training phase of maintenance need to be done as well. This middle part of the model lets the training outcomes to be performed in work settings at individual and group level, to gain near or far transfer (step 5).

Figuring out this model, it is possible to see how teachers who participated in the project have had the chance to experience substantially all five steps of training transfer. Although an assessment of pretraining individual characteristics was not carried out, these have certainly influenced the decision of teachers in agreement with their principals to participate in this type of project. This decision makes us think that a high level of motivation to participate in training activities highlighted in the first wave of data collection through the adapted LTSI was present in the first two phases of the model. Teachers started the project not only as individuals but also as members of small social groups and school communities, thus bringing a wealth of knowledge and professional experience and background. From this point of view, it can be argued that the structure of this project have tried to incorporate a range of organizational devices to better prepare teachers for this type of development activities. For example, project activities presentation was carried out inside each school to spread information about the initiative, and to begin the process of teachers' *recruitment*. The presence of a website was dedicated to the project, in which the research staff had the possibility to update project progression and store instructional resources for teachers. Among others, these devices have certainly contributed to an optimal organization of training transfer setting.

The transition to phase three is summarized in the project implementation in workplace, with group training interventions, in a first phase, and during individual experimentations and observations in classroom. Collected data indicate that teachers have experienced a significant overlap between their daily classroom activities and proposed instructional innovation within the project. For example, the very high score in the factor *Transfer design* is an evidence of the goodness of training system proposed, that is more tuned to real settings. Classroom observations partially confirm this positive aspect: although within an improving trend, it is clear that it is not easy for teachers to quickly acquire and then apply innovative teaching models.

Four phases of the model from one to four proposed in the model are in charge of the project: in fact, from a certain point onwards, from phase four to five in this model, transfer management should become fully in charge of school's organizational devices. Observation activities in classroom and related feedback to teachers, may be part of a first learning maintenance phase and a support to its transfer. Teachers, as we have seen, have the chance to experience immediately, with supported instructional design, by teaching these designed learning units to their students in the classroom. During the experimentations they had the support of research staff in terms of cognitive coaching (Costa and Garmston 1994). From our point of view, coaching should be one of the crucial elements for achieving the transfer of learning *as far as possible*.

Data collected from this point of view through the questionnaire and the comments, give us a positive indication (e.g., average scores and average high frequencies), but tend to be stable during a single school year. At this point, it is questionable whether the *coaching skills*, following the insights of Holton and Baldwin (2003), need to become part of internal organizational devices to give support to teachers' training transfer. From this view *distance transfer* is related not only to a timeline matter, but also in terms of adaptation of individual knowledge and abilities in different kind of work environments. Follow-up data, collected with the questionnaire in about 6 months after the end of the project, are generally similar to data collected in the first time survey, in most cases except for the factor of motivation to transfer, where we saw a significant decline, and the subject training readiness factors, which undergoes a rise in mean scores.

Results obtained seem encouraging, although of an exploratory nature. Data provided by the questionnaires give an indication of what are the elements that characterize most of the teachers' training transfer and at what level (individual, organizational, the training process). In this regard, it can be seen that the training transfer is mainly centered on the individual level and on the training process. The organizational level appears to be more packed down against the backdrop of this scenario. This outcome, albeit contradictory, it is not uncommon in the literature (e.g., Holton et al. 2003). Although there appears to be a decisive factor, support from colleagues and by the principals on both technical and social issues is highly required for a complete implementation of the proposed activities on workplace. It is interesting to note that the peer support does not come into a decrease during the follow-up, unlike the support of the principals who have scores even lower than the first survey.

Although the findings of this study may not be generalizable to principals and teachers in other settings, several recommendations warrant consideration, given their relationship to previous research. Principals and other school leaders should take an active role in influencing teacher's training transfer rather than assuming it will occur. Coaching can be a way to play an active role in promoting a culture of accountability and professional learning. Principals, for example, could conduct formal observations and provide direct feedback regarding teachers' use of learned skills, as well as reinforcing teachers' professional growth. This recommendation is supported by the research regarding leadership and training transfer (Barnett and McCormick 2004; Burke and Hutchins 2007; Desimone 2009; Fullan 2001; Youngs 2007).

Despite the well-established definition of transfer as an application of the skills acquired from training to the workplace, the literature on this subject describe different types of transfer. Holton and Baldwin (2003) use the concept of *transfer distance* to indicate how the work practice can be realized in post-training situations that require greater or lesser application intensity. In their words:

> Learn to drive a car and then find themselves again in the cockpit of a small van might be a situation that requires a certain rate of transfer, but at a short distance […] learn the principles of organizational change in a seminar of development management and then try to apply behaviours based on these principles over time, as the coordinator of a project team on a merger or acquisition, for example, may require more distance (Holton and Baldwin 2003, p. 8).

Observational data, from this point of view, gave really interesting insights of proximal transfer nature. Involved in the changes are only single working practices and mostly inside the same school year. The stop between the first and the second year of the project arrested, what Holton and Baldwin (2003) defined the stage of repetition and application of the maintenance phase. These stages are needed to achieve the generalization stage and, therefore, the so-called distal transfer.

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Chapter 8
Evaluation of Training Transfer Factors: The FET Model

Pilar Pineda-Herrero, Carla Quesada-Pallarès and Anna Ciraso-Calí

8.1 Theoretical Background

Over the last 3 decades, several authors have been working on developing mechanisms and instruments to measure the transfer of training to the workplace. Transfer of training is defined as the degree to which participants apply their knowledge, skills, and acquired attitudes in a context of training for work (Baldwin and Ford 1988); and it is a process which implies generalizability, application, and maintenance of new knowledge and skills (Ford and Weissbein 1997).

This is a core aspect in order to be able to rate the results of training in the workplace, and the implications of the cost/benefit relation for the organization. Training is supposed to be a "planned learning experience, designed to bring out permanent change in an individual's knowledge, attitudes, or skills" (Noe and Schmitt 1986, p. 497). Organizations invest significant resources in training, a priority area in the development of human resources, to update workers so that they are up to the standards required of them in the workplace, and to obtain efficacy indicators of this investment.

However, measuring the transfer of training in the workplace—direct evaluation—is not easy, and it dramatically increases the cost of training. Baldwin and Ford (1988) and Noe and Schmitt (1986) were the first to assert that, although measuring actual transfer was extremely expensive, there was a way to determine which factors hindered or facilitated employees when it came to applying what they had learned from training in the workplace. Detecting the barriers and facilitators to transfer of an organization allows us to predict whether there will be transfer or not, thus allowing the necessary corrections to be implemented. Thus, the factors

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may act as predictors of transfer, allowing an indirect evaluation of the same (e.g., Baldwin and Ford 1988; Thayer and Teachout 1995; Holton et al. 2000; Burke and Hutchins 2007).

Nevertheless, there is little proof that these factors are indeed predictors of transfer. We believe that both the factors and transfer itself should be assessed, as well as establishing a causal model to learn about the role each of these factors plays in transfer.

We have, therefore, developed a model that integrates several theories related to transfer of training, adapted to the context of Spanish businesses. On one hand, we have included dimensions of factors in transfer: trainee, training, and organization, following Baldwin and Ford's (1988) scheme. On the other hand, we added the variable of achieved learning as a necessary result for transfer to take place, as there can be no transfer without learning (Kirkpatrick and Kirkpatrick 2006; Pineda 2010). Lastly, we included the transfer intention variable because, as Holton (2005) pointed out, based on the theory formulated by Ajzen (1991), the intent to act is the primary antecedent of action. In other words, for transfer to take place there must first be the intention to transfer.

The model we propose is called FET (Factors for the Evaluation of Transfer). We present the different constructs the model is made up of and the most relevant contributions from the literature that provides its theoretical and empirical groundwork[1].

8.1.1 Factors in Transfer

8.1.1.1 The Trainee Dimension

Training satisfaction defined as participants' reactions to a training program or action (Kirkpatrick and Kirkpatrick 2006) is one of the short-term results of training, and the first level of assessment in most models. Training satisfaction is also an intrinsic reward for the participant, and it can help transfer. Therefore, this variable has been amply studied related to the application of learning to the workplace (e.g., Thayer and Teachout 1995; Holton 1996, 2005), and it was already taken into account in the theoretical model by Noe and Schmitt (1986), that posits that training satisfaction also has an impact on the level of learning achieved by participants. At an empirical level, training satisfaction has proven to have a significant relation with transfer of training, even though the results are not always concordant. For instance, Tan et al. (2003) concluded that negative reactions from participants in training correlate positively with learning and turned out to be its best predictor ($\beta = 0.41$, $p < 0.01$). On the other hand, studies by Moreno (2009) provided empirical evidence that satisfaction with training has a significant positive influence on changes in workplace attitude. This confirms the results obtained by Alliger et al.

[1] We tried to report β and *p* coefficients; when the articles we used did not provide these statistical coefficients, we have reported the nearest one.

(1997) that proved that a combination of utility judgments—opinions from trainees on the applicability of the contents of training—and personal feelings about training are related significantly with transfer ($r = 0.21$).

One variable that has high technical and empirical support as a key factor in transfer is *motivation to transfer* (Baldwin and Ford 1988; Axtell et al. 1997; Holton 1996, 2005; Bates 2001; Chiaburu and Marinova 2005), which can be defined as the trainees' "desire to use the knowledge and skills mastered in the training program on the job" (Noe and Schmitt 1986, p. 503), and is influenced by trust in the use of new skills, expectations of improvement in job performance as a consequence of new skills, and the belief that learning helps to solve work-related problems and job demands (Noe 1986). Conceptually, it is included in the training motivation construct, defined by Tannenbaum and Yukl (1992) as the intensity and persistence of the efforts applied by trainees in learning-related activities before, during, and after training. Axtell et al. (1997) proved that motivation to transfer is a significant predictor of transfer in the model, even 1 year after the training action ($\beta = 0.48$, $p < 0.01$), along with relevance/usefulness, self-efficacy, management support, and autonomy. Nevertheless, other studies show that motivation to transfer only has a weak link with transfer (Wolfe et al. 1998; Burkolter et al. 2009).

In the trainee's dimension we can also find two variables that are closely related to each other: self-efficacy and the locus of control. *Self-efficacy* is defined as the "conviction that one can successfully execute the behavior required to produce the outcomes" (Bandura 1977, p. 193); people with a high self-efficacy, according to the same author (1986), are more confident in their ability to carry out a task, and take on more ambitious challenges than people with a lower level of self-efficacy. Many researchers have proved that self-efficacy correlates positively with transfer of training as well as its generalization and maintenance: among them, we should point out contributions by Mathieu et al. (1993), Gaudine and Saks (2004), Machin and Fogarty (2004), Chiaburu and Marinova (2005), and Yamkovenko and Holton (2009). This variable can also constitute an indirect factor, mediated by other variables. Chiaburu and Marinova (2005) established that "training self-efficacy" (Noe and Wilk 1993) has a significant influence in pretraining motivation ($\beta = 0.34$, $p < 0.05$), which, in turn, affects skill transfer ($\beta = 0.24$, $p < 0.05$). Furthermore, self-efficacy is all the more important due to the fact that it is a characteristic of the trainee that can be influenced by giving him or her feedback on his or her performance, by establishing self-management strategies after training, and through the use of verbal self-guidance (Frayne and Geringer 2000; Kuchinke 2000; Brown and Morrissey 2004; Burke and Hutchins 2007), the whole being related to self-regulation strategies.

Finally, the *locus of control*, i.e., "the extent to which the individual is apt to make internal or external attributions regarding work outcomes" (Noe and Schmitt 1986, p. 501), is related to transfer both in theoretical models and empirical evidence. In the hypothetical model by Noe and Schmitt (1986), the locus of control influences the trainee when it comes to reacting to skill assessments, expectations on the relationship between effort and mastery of the skills learned in training, between efforts and the rewards resulting from successful training, and attitudes on work

and career. These variables, in turn, lead to stable behavioral changes. The meta-analysis carried out by Colquitt et al. (2000) also proves that people with an internal locus of control have a higher level of motivation ($\beta = -0.42$, $p < 0.05$), which turns out to be a predicting factor for transfer; furthermore, the internal locus of control per se also has a moderate predictive power in transfer ($\beta = -0.42$, $p < 0.05$) but with an opposite relationship: people with an external locus of control have higher levels of transfer.

8.1.1.2 The Training Dimension

The second dimension taken into account is the one regarding the training action in itself as well as its design. According to Kavanagh (1998), scientific literature on this dimension is in development, but some training methods and strategies geared towards the real application of training, which constitute *transfer design*, have emerged. One factor that can have an impact on transfer is the instructions given to trainees: Velada et al. (2007) suggest that, when the said instructions are relevant and similar to the ones given on the job, it is easier for transfer to take place. This is called *near transfer*, a term coined by Royer in 1979, "in which the stimulus is similar to the stimulus in the original learning condition" (Holladay and Quiñones 2003, p. 1095). In the study by Velada et al. (2007), the transfer-design construct was made up of items such as "examples about ways to use learning on the job," and "activities and exercises about how to apply learning"; obtaining a $\beta = 0.31$ ($p < 0.01$), which points to an average capacity to explain training transfer.

Another aspect of training design is the introduction of follow-up sessions, or other means of post-training intervention, as a strategy to favor transfer. Based on social cognitive theory, Tziner et al. (1991) proved that relapse prevention helps trainees to anticipate and overcome obstacles they may encounter when applying learning on the job as well as in applying transfer strategies. This concept can be applied both to post-training interventions and in guidelines provided by the trainer, during the training itself, on practical situations that can take place when applying the training. Even though it has a theoretical basis (Pineda 2010), there is no published empirical data to support this hypothesis.

When it comes to the contents of training actions, one relevant variable found throughout the scientific literature, albeit under different names, is *orientation towards job requirements,* defined as the trainees' perception of how training responds to their professional needs related to the workplace (Clark et al. 1993; Rouiller and Goldstein 1993; Tracey et al. 1995; Axtell et al. 1997; Ruona et al. 2002; Taylor et al. 2005). Lim and Morris (2006) demonstrated that the "job helpfulness of learning content" (p. 92), understood as the relation of the training contents with what participants need in their job, maintains a significant ($p < 0.01$) correlation with the application of learning ($r = 0.338$) when finishing training. Nonetheless, the correlation is not significant, related to the perception of transfer, 3 months after finishing training ($r = 0.245$, $p < 0.05$).

8.1.1.3 The Organization Dimension

In the workplace, one of the variables that appears related to the application of training throughout scientific literature is *manager's support to transfer* (Clarke 2002), understood as the manager's strategies to help the trainee transfer, as well as emotional support and resources that can help the application of learning on the job. The effects of the manager's role in transfer have emerged in both quantitative and qualitative empirical studies (Salas et al. 1999; Smith-Jentsch et al. 2001; Van der Klink et al. 2001; Awoniyi et al. 2002; Chiaburu and Marinova 2005). Facteau et al. (1995) examined the influence of two kinds of support: from top management and supervisors. Contrary to what was expected, the former did not display a significant relation to transfer; and the latter was related negatively ($\beta = -0.09$, $p < 0.05$). However, the meta-analysis by Colquitt et al. (2000) displayed a strong relationship between support from the supervisor and transfer ($r_c = 0.43$). Other studies, furthermore, showed the influence of this variable in motivation, thereby acting as a mediating variable towards transfer (Cohen 1990; Clark et al. 1993; Brinkerhoff and Montesino 1995; Gregoire et al. 1998).

Marx (1982) suggests that errors are most probable in the first phase of transfer that immediately follows training; this is why support from the manager in this phase may be particularly critical for skills to transfer, and for transfer to be maintained over time.

Peers' support to transfer is another variable that, in the organization's dimension, has proven to play a significant part in the transfer of training. It is defined as the degree to which peers in the workplace support the use of skills acquired in training on the job, including feedback to the trainee in transfer as well as setting learning objectives, among other aspects (Facteau et al. 1995; Xiao 1996; Chiaburu and Marinova 2005; Hawley and Barnard 2005). In some studies, support from peers has proved to have a more relevant impact than support from management: for instance, in Facteau et al. (1995), peer support obtained a $\beta = 0.21$ ($p < 0.05$), as in the meta-analysis by Colquitt et al. (2000), in which peer support was strongly related to transfer ($r_c = 0.84$). Along those lines, in the individual and organizational support model for transfer by Chiaburu and Marinova (2005), this variable was the only one with a significant direct relation ($\beta = 0.65$, $p < 0.05$) with transfer, whereas the other variables were mediated by pretraining motivation.

Another variable in this dimension, which Burke and Hutchins (2008) believe to be "understudied," is *accountability* which is defined as the degree to which the learners are expected to use trained knowledge and skills on the job by the organization, culture, and/or management; and their perception of responsibility to do so (Yarnold et al. 1988; O'Leary-Kelly et al. 1994; Brinkerhoff and Montesino 1995; Kontoghiorghes 2004). Pineda and Quesada (2013) formulated a proposal for a factor model that includes, among others, the more personal dimension of accountability, understood as the perception of responsibility felt by the participant when it comes to demonstrating how his or her work has changed due to training. The results obtained display that accountability has a significant impact on transfer ($\beta = 0.048$, $p < 0.05$).

The last variable analyzed was *lack of possibilities to transfer*, understood as the lack of situations to put the training into practice, and the lack of resources necessary to apply it (Brinkerhoff and Montesino 1995; Clarke 2002; Gaudine and Saks 2004; Lim and Morris 2006). In a qualitative study by Clarke (2002), the lack of real opportunities to transfer was the main obstacle, according to participants in training, from obtaining good transfer results. More empirical evidence for this variable's relation with transfer is provided by the results obtained by Pineda and Quesada (2013), in which the predictive model proved that a lack of possibilities to transfer influenced transfer negatively ($\beta = -0.057$, $p < 0.01$).

8.1.2 Achieved Learning

Another variable included in the transfer-factor model is *achieved learning*, conceived as the degree of learning achieved by the trainee through the training process (Xiao 1996; Alliger et al. 1997). Both at an empirical and at a theoretical level, several authors consider learning to be a predicting factor for transfer, either directly or as a variable mediating between other variables (for instance, self-efficacy, commitment to the organization, trainees' expectations, behavioral intentions, satisfaction, etc.) and transfer (Noe 1988; Rouiller and Goldstein 1993; Thayer and Teachout 1995; Moreno 2009). In the model by Baldwin and Ford (1988), "learning and retention" was already considered a variable with direct effects on the conditions of transfer (generalization and maintenance), which was influenced in turn by the characteristics of the trainee, training design, and work environment. And studies such as the one by Rouiller and Goldstein (1993) proved that learning in training is significantly related to transfer behavior ($r = 0.28$, $p < 0.01$).

Colquitt et al. (2000), in their meta-analysis, found that achieved learning is correlated to transfer with moderate to large effects ($r_c = 0.38$ using declarative knowledge and $r_c = 0.69$ using skill acquisition); however, as it has been pointed out by Burke and Hutchins (2008), the teaching-learning methods that can ease retention, generalization, and application of learning to the workplace have not yet been explored in depth.

8.1.3 Intent to Transfer

The *intent to transfer* variable, generalized from the theory of planned behavior (Ajzen 1991), is defined as the trainee's disposition to transfer skills; in other words, how much effort he or she will carry out to transfer the learning back to the workplace (Griffeth et al. 2000; Kirschenbaum and Weisberg 2001; Machin and Fogarty 2003; Combs and Luthans 2007). Behavioral intentions linked to transfer are a relatively new concept (Yamkovenko and Holton 2009) that needs to be studied in

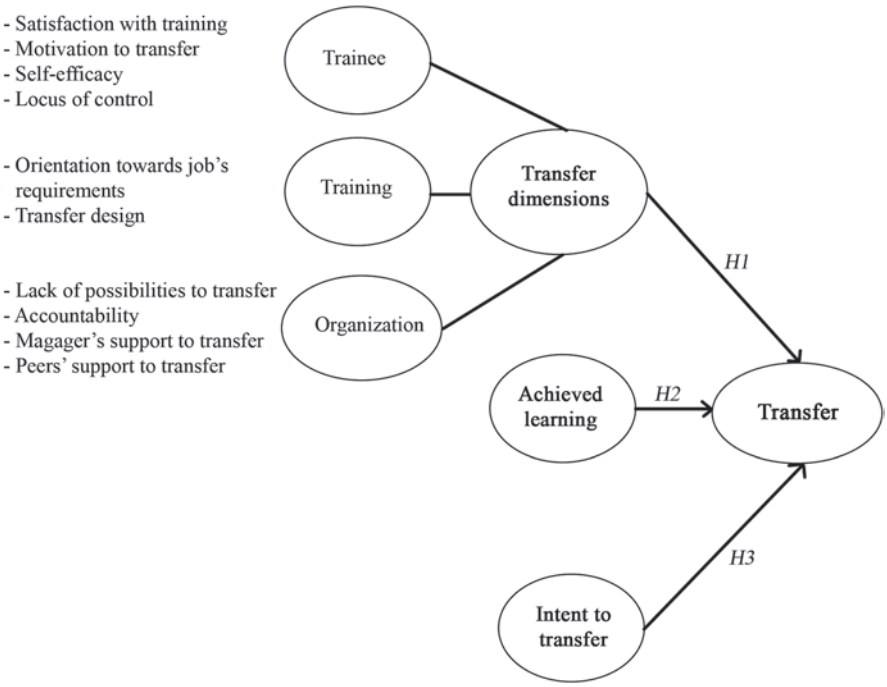

Fig. 8.1 Exemplification of the study hypotheses related to goal 2

depth to analyze its empirical validity. For now, we have not found any published studies that empirically analyze transfer intent as a predictor for transfer.

Now that we have presented the different variables that make up our model, we will develop the validation process to which it was submitted, as well as its predictive capacity.

8.2 Method

We have set three goals in this paper: (1) to test the theoretical model we propose, based on the three dimensions of transfer: trainee, training, and organization, and on two independent scales—achieved learning and intent to transfer; (2) to assess the predictive level of the variables that make up the dimensions and scales on training transfer; and (3) to establish which model has the greatest predictive power on transfer—transfer dimensions, scale of achieved learning, or scale of intent to transfer.

Related to goal 2, we have postulated three hypotheses (Fig. 8.1):

Table 8.1 Profile of the trainees in the study

Profile variables	Trainees' distribution according to their responses
Sex	Men: 32 %
	Women: 68 %
Age	Mean: 43.62 (Standard Deviation: 7.75)
Professional position	Manager: 3 %
	Middle manager: 17 %
	Technician: 35 %
	Skilled worker: 34 %
	Unskilled worker: 13 %
Training content	Technical: 35 %
	Law: 32 %
	Social skills: 33 %
Training modality	Classroom: 55 %
	E-learning: 45 %

H1: The 10 variables that make up the dimensions of transfer—trainee, training, and organization—are factors that significantly predict transfer of training.

H2: The scale of achieved learning predicts transfer of training in a statistically significant manner.

H3: The scale of intent to transfer significantly predicts transfer of training.

Likewise, related to goal 3, we have formulated the following hypothesis:

H4: The 10 variables that make up the dimensions of transfer have a greater predictive capacity on transfer compared to the scale of achieved learning and the scale of intent to transfer.

In order to provide an answer to the goals and hypotheses we have formulated, we used a quantitative methodology with a longitudinal design, with two time measures: when finishing training (t_1), and 2 months and a half after finishing training (t_2). We will now go into more detail on the methodological aspects of this study.

8.2.1 Sample

We used a nonprobabilistic multistage sampling procedure (Hernández et al. 2008), since different criteria selected according to the characteristics of the study were used: content of training (three content areas were identified: technological, legal, and social skills), timing of training (training done during the next 3 months), and type of training (classroom and e-learning). We obtained a sample of 1,527 trainees and, based on the volume of participation of these organizations in the previous year (57,111 people), we obtained a margin of error of 2.47 % ($Z^2{}_a = 1.96$). Table 8.1 presents the distribution of the surveyed trainees according to some profile variables.

Since we carried out a longitudinal study, we administered a second instrument two-and-a-half months after training to the trainees who responded to the first instrument. Out of the 1,527 trainees (t_1), 74.78 % responded to the deferred instrument (t_2, $n = 1{,}142$).

8.2.2 Measures

In the study, we used different kinds of measures according to their different purposes and always from the trainee's perspective, that is, a self-report survey.

Dimensions Related to Transfer Factors In order to determine which factors influence transfer of training, we constructed 10 variables that covered the most relevant aspects pointed out in the theory and literature of related sectors (see theoretical foundation). These variables are grouped in three dimensions—trainee, training, and organization—and are rated with a five-point Likert scale (1: strongly disagree, 5: strongly agree), administered at the end of the training program. These variables are:

- Accountability: This one belongs to the organization transfer dimension, and it is used to explore the degree in which trainees inform their managers on the uses that have resulted from the learning acquired in training. It is made up of five items, such as "My boss asks me for evidence of the application of training."
- Lack of possibilities to transfer: This one belongs to the organization transfer dimension. It is meant to identify whether or not there are any options to put the training to use and whether or not the resources required to transfer are available in the trainee's work environment. It is made up of four reverse items, such as "My daily workload does not allow me to apply the training to my job."
- Locus of control: This one belongs to the trainee transfer dimension, and it is meant to determine the degree to which the trainee establishes causal relations between his or her behavior in training and the transfer carried out. It is made up of six items, such as "Success in the application of training depends on me."
- Manager's support to transfer: This variable belongs to the organization transfer dimension. Its goal is to identify the level of support trainees get from their managers to transfer. It is made up of five items, such as "My boss promotes changes based on training."
- Motivation to transfer: It belongs to the trainee transfer dimension, and its goal is to explore about which degree trainees desire and have the will to apply the knowledge acquired during training on the job. It is made up of four items, such as "I usually want to put what I have learned in training in practice."
- Orientation towards job requirements: This variable belongs to the training-transfer dimension. It is used to assess trainees' perceptions on whether or not the training responds to their professional and workplace needs. It is made up of five items, such as "Training allows me to attain goals in my job."
- Peers' support to transfer: This one is a part of the organization transfer dimension; it is used to learn about the degree of support trainees get from their coworkers in order to transfer what they have learnt in training to their job. It contains five items. "My coworkers object to changes in the way I work due to training" is an example of the items in this variable that, specifically, is formulated negatively.
- Satisfaction with training: This variable belongs to the participant transfer dimension and its goal is to identify trainees' degree of satisfaction with the training they have carried out. It is made up of five items, such as "I am happy with the training I have done."

- Self-efficacy: This variable belongs to the trainee transfer dimension. It is meant to allow us to learn about trainees' perception of their chances of success when transferring what they have learned in training. This variable contains five items, such as "When I follow a training course, I feel that I am capable of putting it to use."
- Transfer design: This one is a part of the training transfer dimension. It is used to assess whether participants believe that the training is geared towards real applicability. This variable is made up of six items, such as "I was given examples that were close to my job situation in training," and "After I have finished training, the trainer is available to help me apply it."

Achieved Learning Scale The goal of this scale is to measure the level of learning that trainees achieved through a training process. According to the theoretical revision presented in this paper, learning is a result of training, which plays a key role to allow the transfer process to take place. It is made up of five items rated on a Likert scale (1: strongly disagree, 5: strongly agree) and is administered at the end of training. One example of an item in this scale is: "I have developed new skills in training."

Intent to Transfer Scale The goal of this scale is to identify the trainees' degree of willingness to transfer what they have learned to their jobs. It is made up of four items, rated on a 5-point Likert scale (1: strongly disagree, 5: strongly agree), administered at the end of training. "I want to apply what I have learned in training to my job" is one of the items that exemplifies this scale.

Deferred Transfer Scale The transfer scale was designed to identify the degree of application of skills acquired in training by the trainees. For this purpose, we administered this scale by e-mail two-and-a-half months after the end of training (t_2) to trainees who had responded to the earlier scales (t_1), granting a margin of 2 weeks to complete the survey. It is made up of five items to be rated on a 5-point Likert scale (1: strongly disagree, 5: strongly agree), with statements on the perceived degree of application of learning, changes in professional attitude as a consequence of learning, improvements in performance, and attaining professional goals. For example: "I have applied the skills I acquired through training to my job."

8.2.3 Validation Procedure

In order to provide an answer to the goals and hypotheses formulated in this paper, we carried out two levels of validation: a field validation of the scales and a pilot test.

In the first place, we designed the scales to collect information and carried out a reliability and validation process. In order to assess the comprehension of the scales and detect possible differences in the interpretation of the items, we conducted a field validation (Martín 2004). To this end, we applied the survey to a sample of seven people with characteristics similar to those of its target population; the

Table 8.2 Cronbach's alpha coefficients in the pilot test

Dimension/Scale	Variable	Cronbach's alpha value
Trainee transfer dimension	Satisfaction with training	0.961
	Motivation to transfer	0.789
	Self-efficacy	0.716
	Locus of control	0.783
Training transfer dimension	Transfer design	0.651
	Orientation towards job requirements	0.722
Organization transfer dimension	Lack of possibilities to transfer	0.666
	Accountability	0.362
	Manager's support to transfer	0.838
	Peers' support to transfer	0.878
Learning achieved scale	Achieved learning	0.738
Intent to transfer scale	Intent to transfer	0.796

criterion to be included in this validation phase was that they should have recently attended a continuing training program.

In this process, we administered the scales and a guided interview to each subject on an individual and face-to-face basis. Throughout this process, we measured the global amount of time taken to answer the scales, the general level of difficulty, the capacity to reformulate items or to provide examples from their work experience, the level of comprehension of the items, the need to read the items several times, and the level of difficulty involved in answering the items. Each assessment interview lasted approximately an hour and a half.

On average, participants took 9.30 min, with a standard deviation of 3.62 min, to answer the scales; this confirmed our previous estimations. All the interviewees considered that the scales, as a whole, were easy to answer.

The main comprehension problems were found in the *orientation towards job requirements* (four items) and *transfer design* (three items) variables. Other variables that caused misunderstandings were *lack of possibilities to transfer* (two items) and *satisfaction with training* (two items), as well as the *achieved learning* scale (two items). The criteria we followed to reformulate an item were: that it had not been understood by more than two people; that it could give rise to misunderstandings; words that create more confusion; and items that were not easy to answer. As a whole, we modified 24 out of 59 items, a modification of 40 % of all items.

Secondly, we applied a pilot test to a group of 15 subjects who had undertaken training similar to that of the subjects selected for the study sample—we do not include these cases in this study. We administered the survey in the same conditions as in its real application, and studied the internal consistency of the collected data.

As can be seen in Table 8.2, almost all variables have a reliability that varies between 0.7 and 0.9; in these cases, according to Nunnally (1978), the variable has a sufficient or good reliability. Nonetheless, in the case of *lack of possibilities to transfer* and *transfer design* variables (0.6 and 0.7, respectively) we can state that the alpha coefficient is acceptable (Pfeiffer et al. 1976), keeping in mind that both variables are not meant to assist decision-making on specific subjects.

The variable with most reliability problems is *accountability* (.362), whose internal consistency could be improved by eliminating certain items. Nevertheless, we decided not to do so in this phase of the study for a number of reasons. Firstly, we should keep the complexity of the construct in mind. As Morales Vallejo (2006) argues, complex definitions necessarily require more differentiated and less related questions, which in turn imply a lower internal consistency. Furthermore, the field validation revealed that these items were properly understood, so the low internal consistency could be due to other reasons. Finally, and due to the fact that our sample was small, we considered that these were temporary results and that their internal consistency should be tested against a larger sample.

Based on the results of the validation process, we began the study with the previously revised tools.

8.2.4 Data Analysis

In order to analyze the data from the field survey, we subjected all the variables to a validity and reliability analysis to determine both their factorial structure and their internal consistency. Furthermore, we carried out a descriptive and predictive analysis in order to test the hypotheses we formulated.

We carried out the analyses separately according to the: *transfer dimensions, achieved learning scale, intent to transfer scale,* and *deferred transfer scale.*

We performed an *Exploratory Factor Analysis* [EFA]. The use of this analysis rather than a Confirmatory Factor Analysis is justified by the fact that the measures are new; since, this was the first time these variables were created, we needed to carry out a construct validation of the measures, ensuring that the theoretical model we had initially formulated was congruent with the variables we used. According to Hancock and Mueller (2010), an EFA is used for situations in which the variables to be analyzed have either been developed very recently or have not previously been analyzed together, or when the theoretical foundations of the factor analysis model are weak.

In order to develop it, we used the Maximum Likelihood method—being more robust—as well as the Promax method for an oblique factor rotation—since the constructs are related—and the combination of the KMO test with eigenvalues greater than one and a Cattell screeplot as the criteria to determine the number of factors (Conway and Huffcut 2003; Fabrigar et al. 1999).

We used Cronbach's alpha to assess the internal consistency of the different scales or factors after we identified their factorial structure. Finally, we carried out multiple regression tests on the *transfer dimensions, learning achieved scale*, and *intent to transfer scale* variables as being independent from the *deferred transfer scale*, which acts as a dependent variable. We thus tested the predictive capacity of the model's three independent variables.

In order to carry out the different statistical analyses, we used the SPSS v.17 Inc. statistics program.

8.3 Results

8.3.1 Validity and Reliability of the Transfer Dimensions

We explored all of the items in the transfer dimensions using the Maximum Likelihood method. We began the analysis with an orthogonal Varimax factor rotation, an eigenvalue greater than one, and setting the minimum value for coefficients to .30. Bartlett's sphericity test and the KMO suggested that the model was adequate and that it could be analyzed (KMO = 0.940 and Bartlett's significance $p < 0.05$). The screeplot graph revealed an appropriate amount of factors to obtain a cleaner matrix, setting the objective between 7 and 9 factors.

With the first analysis, the results we obtained displayed a confused distribution of item coefficients in the factors. We, therefore, carried out the appropriate analyses, alternating the rotation type (Varimax or Promax) with an eigenvalue greater than one. The only item that we had to remove, due to its low correlation coefficient (< 0.30) with the emerging factors, was item 4: "Thanks to the training, I can develop my professional career."

The KMO test results (0.939) and Bartlett's sphericity test results ($p < 0.05$) in the transfer dimensions' EFA revealed that we could carry on with the model's analysis. One more time, the screeplot graph pointed to a number between 7 and 9. We carried out the analysis again, with a Promax rotation and without setting factors.

Finally, a model of 8 factors emerged, which explained the 50.73 % variance. In Table 8.3, we show the composition of the emerged factors.

The first factor, consisting of eight items, included the "satisfaction with training" variable and three items of the "transfer design" variable that specifically referred to the trainer's role. Therefore, the factor was labeled *satisfaction with training*, which had to do with the trainee's reaction to training and to the trainer's role.

Factor 2 consisted of eight items; six of them belonged to "accountability" and two to "manager's support for transfer." Due to the formulation of these two items, and based on theoretical criteria, we decided to keep the name *accountability* for this factor, which refers to the degree to which the organization, specifically the employee's manager, requires evidence of the training transfer's results.

Factor 3, consisting of seven items, included *orientation towards job requirements* from which it took its name, and three "transfer design" items, which referred to the similarity with or closeness to the workplace to materials, tasks, and examples of training. Therefore, this factor can be defined as the link between training and the job's specific needs.

Factor 4 consisted of ten items, which pertained to the variables "lack of application" (four items), "locus of control" (three items), "self-efficacy" (two items), and "peers' support or transfer." It was labeled *environment opportunities for application*, since it referred to those elements perceived as external to the participant—e.g., resources for applying learning, workload, difficult and unexpected events, third-party interventions—which may influence the capacity to transfer the acquired skills during training to the workplace.

Table 8.3 Composition of transfer factors

Items	[a]Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7	Factor 8
i6	0.882							
i1	0.873							
i25	0.871							
i13	0.818							
i20	0.776							
i14	0.596							
i49	0.522							
i7	0.368							
i58		0.818						
i50		0.806						
i33		0.690						
i43		0.656						
i45		0.534						0.365
i52		0.519						0.329
i17		0.327						
i39			0.872					
i30			0.844					
i35			0.790					
i36			0.678					
i12			0.644					
i57			0.606					
i22			0.356					
i21				0.633				
i31				0.595				
i41				0.574				
i19				0.573				
i46				0.549				
i15				0.540				
i32				0.528				
i59				0.487				
i47				0.458				
i3				0.438				
i29					0.875			
i28					0.753			
i53					0.747			
i44					0.486			
i2					0.427			
i56						0.826		
i37						0.808		
i16						0.740		
i27						0.360		
i8						0.338		
i26							0.790	
i5							0.698	
i54							0.657	

Table 8.3 (continued)

Items	[a]Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7	Factor 8
i42							0.654	
i23								0.895
i10								0.761

[a] 1: Satisfaction with training, 2: accountability, 3: orientation towards job requirements, 4: environment opportunities for application, 5: motivation for transfer, 6: internal locus of control; 7: peers' support for transfer; 8: manager's support for transfer

Table 8.4 Descriptive and reliability analysis of the emerged factors

Items	[a]Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7	Factor 8
Mean	4.12	2.60	3.44	3.50	4.27	3.59	3.32	3.42
SD[b]	.66	.77	.74	.64	.49	.77	.71	.92
% VE[c]	22.92%	9.16%	6.27%	3.62%	2.90%	2.24%	1.77%	1.85%
α[d]	.901	.862	.880	.800	.807	.815	.815	.891
N[e]	1,526	1,525	1,526	1,525	1,526	1,526	1,525	1,526

[a] 1: Satisfaction with training, 2: accountability, 3: orientation towards job requirements, 4: environment opportunities for application, 5: motivation for transfer, 6: internal locus of control; 7: peers' support for transfer, 8: manager's support for transfer
[b] Standard deviation
[c] Variance explained from extraction sums of squared loadings
[d] Cronbach's alpha value, based on standardized items
[e] Sample

Factor 5, called *motivation for transfer*, included four items of the corresponding variable and one item of "self-efficacy." This factor refers to the wish, effort, and personal involvement of the trainee in applying learning in the workplace.

Factor 6 consisted of five items of "locus of control" and "self-efficacy." It was called *internal locus of control*, since it defined a tendency of the trainee to perceive his/her own control of transfer and the capacity for converting the training results into concrete benefits.

Finally, factors 7 and 8 consisted of four and three items respectively. They were composed of *peers' support for transfer* and *manager's support for transfer* and they kept their same denominations.

Table 8.4 presents explained variance percentage, descriptive analysis, and Cronbach's alpha coefficient for each factor in the model. Analysis of the reliability of the factors was conducted by calculating a Cronbach's alpha, whose value tells us the degree of internal consistency of the instrument; we also calculated this for all the factors as a whole ($n = 1{,}493$), obtaining a value of 0.927.

We did not need to delete any items from the factors. Furthermore, we can state that all resulting coefficients were considered satisfactory, following the criteria of Nunnally (1978), i.e., the analyzed scales are reliable by themselves and have good internal consistency.

Table 8.5 Composition of the achieved learning factor

Items	Achieved learning factor
i51	0.766
i40	0.756
i34	0.755
i11	0.705
i24	0.556
Mean	4.11
SD[a]	0.62
N[b]	1,518
α[c]	0.835

[a] Standard deviation
[b] Sample
[c] Cronbach's alpha value, based on standardized items

8.3.2 Validity and Reliability of the "Achieved Learning" Scale

We carried out an EFA in the *achieved learning* scale, whose goal was to assess the level of learning the trainee had achieved through the training process. We used the Maximum Likelihood method, oblique (Promax) rotation, and Eigenvalues greater than one. We obtained one factor model that explained the 50.72 % variance (Bartlett $p < 0.05$ and KMO = 0.818).

We obtained a satisfactory (0.835) Cronbach's alpha coefficient from the reliability test. The factor's composition is displayed in Table 8.5, along with the main statistics.

8.3.3 Validity and Reliability of the "Intent to Transfer" Scale

We also carried out an EFA on the *intent to transfer* scale (the trainee's degree of predisposition to apply what they have learned in their workplace training); we used the Maximum Likelihood method, an oblique Promax rotation and eigenvalues greater than one. Bartlett's significance value ($p < 0.05$) and the KMO (0.792) indicated that the model could be analyzed. This finally explained the 56.65 % variance and was made up of a single factor whose composition is displayed in Table 8.6, with an alpha coefficient that shows a good internal consistency (0.839).

8.3.4 Validity and Reliability of the "Deferred Transfer" Scale

Finally, we analyzed the model that emerged from the EFA in the *deferred transfer* scale, which we define as the trainees' transfer level what they have learned in their jobs. We used the Maximum Likelihood method, oblique Promax rotation, and we did not set factors. After checking the Bartlett's significance ($p < 0.05$) and KMO (0.856) values, we found a single factor model that contained the five items

Table 8.6 Composition of the intent to transfer factor

Items	Intent to transfer factor
i48	0.793
i9	0.751
i55	0.738
i18	0.727
Mean	4.11
SD[a]	0.62
N[b]	1,521
α[c]	0.839

[a] Standard deviation
[b] Sample
[c] Cronbach's alpha value, based on standardized items

Table 8.7 Composition of the deferred transfer factor

Items	Deferred transfer factor
i3	0.845
i5	0.813
i1	0.784
i4	0.778
i2	0.756
Mean	3.42
SD[a]	0.72
N[b]	1,148
α[c]	0.894

[a] Standard deviation
[b] Sample
[c] Cronbach's alpha value, based on standardized items

introduced in the analysis, which explained the 63.31 % variance. The alpha value (0.894) points to a good reliability (see Table 8.7).

8.3.5 Predictive Power of the FET Model

We used regression to check the predictive power of the transfer factors and the *achieved learning* and *intent to transfer* on the transfer of training (goal 2). Before carrying out any statistical regression tests, we verified that none of the assumptions of the regression were infringed.

First, we performed a multiple regression of all *transfer factors* towards the deferred transfer. A model emerged which explained 32.9 % of the variance, but we found that three factors were not significant: *motivation to transfer*, *peer's support*, and *manager's support*. Excluding these factors, we obtained a model with an adjusted R^2 of 0.328, as shown in Table 8.8. This implies that the developed model can explain almost 33 % of the variance of the transfer with five transfer factors. This percentage can be considered appropriate in social sciences; in the absence of similar studies in our context, it is assumed that the R^2 obtained indicates a large effect, following the advice of Cohen (1988).

Table 8.8 Multiple regressions towards deferred transfer

Independent variables	B[a]	SE B[b]	ß[c]
(Constant)	0.642	0.145	
Satisfaction with training	0.169	0.031	0.156**
Accountability	0.082	0.026	0.084**
Orientation towards job requirements	0.315	0.031	0.329**
Environment opportunities	0.099	0.030	0.086**
Internal locus of control	0.121	0.028	0.131**

[a] Unstandardized coefficient
[b] Standard error
[c] Standardized coefficient
*$p<0.05$; **$p<0.01$

Secondly, we carried out the simple regression test of the *achieved learning and intent to transfer* towards the *deferred transfer*, using the latter as a dependent variable.

The results of both regressions show that *achieved learning* predicts 13.5% of transfer (ß=0.369, $p<0.01$); whereas *intent to transfer* predicts 15.9% of transfer (ß=0.399, $p<0.01$). In this case, results show that *intent to transfer* predicts transfer 2.4% more than *achieved learning*.

In order to test hypothesis 4, we obtained the general model presented below by integrating the models and the results of simple regressions. In Fig. 8.2, we did not focus on dimensions, being theoretical groupings. Rather, we focused on the factors that emerged empirically.

Figure 8.2 indicates that the greater R^2 is obtained by transfer factors as a whole, revealing a greater predictive capacity on transfer compared to *achieved learning* or *intent to transfer*. It is observed that the factor that has a higher coefficient, and therefore a greater weight, is the *orientation towards job requirements* factor. However, due to the fact that we performed a multiple regression with five transfer factors, *orientation towards job requirements* has sense if we take into account the others transfer factors; it means, we need to keep in mind that the *orientation towards job requirements* has the greatest weight because it is related to the other four transfer factors: *satisfaction with training, accountability, environment opportunities for the application,* and *internal locus of control*.

8.4 Discussion

The chief goal of this study was to test the theoretical model for factors in transfer of training, based on extant scientific literature and based on three dimensions: trainee, training, and transfer. The results presented throughout this paper show that our final model has construct validity, and that the instrument we created and refined allows us to reliably assess factors in transfer.

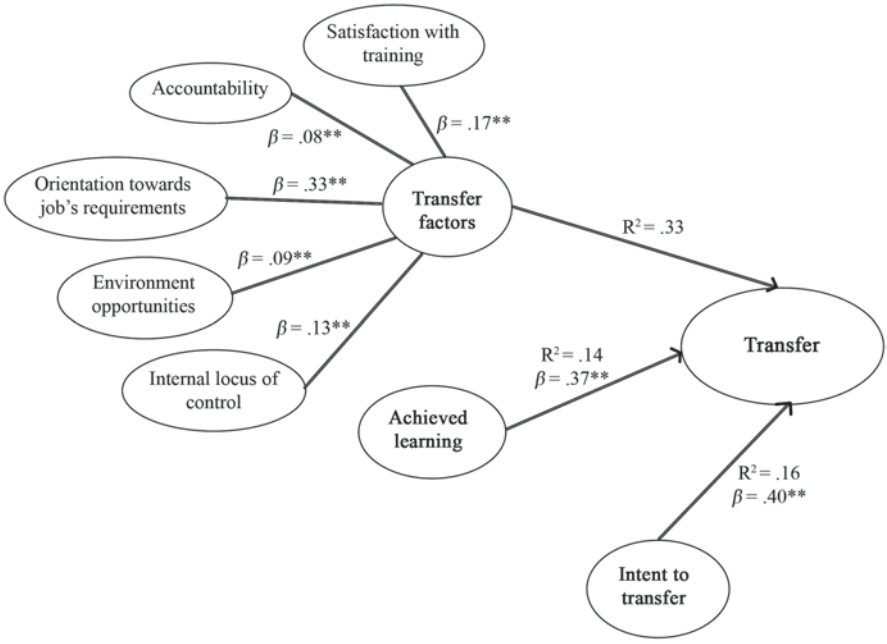

Fig. 8.2 The FET empirical model

Nevertheless, the grouping of factors and the relations they maintain with variables in the model show some contradictions with the hypotheses we formulated. It is emphasized that all variables in the questionnaire were reflected in the model, although two of them were distributed on factors different than expected. The loss of the "self-efficacy" variable and the absorption of the "transfer design" construct by a part of two factors confirmed results already obtained in previous studies (Pineda and Quesada 2013).

As we have shown, "transfer design" did not emerge as an autonomous factor from the exploratory factor analysis. Rather, the items that composed this variable were distributed into the *satisfaction with training* and *orientation towards job requirements* factors. One of the possible explanations for this phenomenon might stem from the difficulty for trainees to identify the more pedagogical elements of training; this difficulty was already highlighted in the instrument's field validation phase. Another explanation could be that the variable was divided into two aspects of training design, separated from the trainee's perspective: on one hand, that which is perceived more directly as tasks specifically associated with the trainer (guidelines, availability to coach, and guide trainees in the application of knowledge), and, on the other hand, the more visible aspects of the training action, related to the con-

tents and activities (exercises, examples, materials, and closeness to the trainee's job situation). The first aspect was related to *satisfaction with the training* and trainer, whereas the second was grouped with *orientation towards job requirements*. In order to gain a more detailed understanding of why the "training design" variable did not emerge as a factor, it would be interesting to study the specific role of training design in transfer from another, perhaps qualitative methodological point of view.

Likewise, the final structure of the factors lost self-efficacy, due to the fact that it did not emerge in the factor analysis either. The items that made up this variable were spread in the *environment opportunities for the application* (the perceived personal capacity to apply training, due to the difficulties in the job environment); *motivation to transfer*; and *internal locus of control*. In this case, it would also be interesting to explore this variable more in depth, perhaps by revising the items it is made up of and reformulating some of them. We propose following the model by Bandura (1977), differentiating efficacy expectations and outcome expectations within self-efficacy, due to the fact that the trainee's perception of the work environment may impact these two dimensions differently.

The second goal of this study, to verify the variables' predictive level on transfer of training, was partially achieved. Even though not all of the theoretical variables we formulated could significantly predict transfer of training (H1), the model made up from the *satisfaction with training*, *accountability*, *orientation towards job requirements*, *environment opportunities for the application*, and *internal locus of control* factors did predict transfer significantly. The factors that turned out not to have a significant relation with transfer were *peers' support, manager's support*, and *motivation to transfer*. This last factor should be studied in more detail in order to learn why it did not emerge as a statistically significant factor in spite of its theoretical basis. In any case, we should point out that there is still some discrepancy in the scientific literature on the role of motivation in transfer of learning, and that empirical evidence so far is unclear, as suggested by some meta-analyses (Gegenfurtner et al. 2009; Gegenfurtner 2011). The concept of motivation to transfer might possibly need to be defined more accurately and set into a more robust structural framework.

To answer our third and last goal, results have shown that *achieved learning* and *intent to transfer* also predict transfer of training significantly (H2 and H3). However, the transfer factor model has turned out to have more predictive capacity for transfer than *achieved learning* and *intent to transfer*, confirming hypothesis 4 of this paper. Therefore, these scales could be excluded from future applications of the FET model, in order to make the survey smoother without any loss in its capacity for analysis.

The FET instrument now presents several possibilities for development to further our knowledge of factors in transfer of training. In order to explore this tool's diagnostic and predictive capacity in depth, we are currently carrying out another application of the instrument to perform a Confirmatory Factor Analysis (Pineda et al. 2013) and, with it, to apply Structural Equation Modeling with a strongly validated model. This will, furthermore, allow us to investigate the possible action of some factors as mediating variables, as it might be the case with motivation, considering its lack of statistical significance on transfer. Likewise, since the FET

model has been developed in the context of Spain, it will be interesting to test its generalization to other European contexts, due to their cultural similarity and the closeness of their working environments.

We would like to use the FET model and future studies to further the creation of an alternative, reliable, valid measure of transfer in training that is viable and accessible to all organizations. Our aim is to provide a streamlined and simple instrument that can be used by organizations to indirectly rate transfer of training, thus avoiding the difficulties involved in direct rating. These technical, economic, and ethical difficulties prevent many professionals in the field of training from evaluating results of training, in order to make sound, well-founded decisions. We hope that the FET model will help them for this purpose.

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Chapter 9
The Measurement of Transfer Using Return on Investment

Paul Donovan

9.1 Introduction

The transfer of training, as an area of research has been developed out of the literature on evaluation of training. Originally, evaluation research was principally focused on outcomes from the learning process in terms of reaction, learning, behavior, and results and this is described in terms of content and process (Kirkpatrick 1959a). This approach, and the work of its adherent group, was roundly criticized by academics who sought a more holistic approach for the effectiveness of training interventions. Subsequently, some academics began to seek approaches for effectiveness which were more cognizant of context and process, and with a lesser focus on tangible outcomes (Baldwin and Ford 1988; Broad and Newstrom 1992; Holton 1996). These approaches concentrated more on creating measures of transfer that would indicate the effectiveness of training.

This chapter charts the development of evaluation from its early days up until its current evolution, as measurement of the transfer of training. It describes the early years and stages of development of transfer including its early atheoretical phase. Evaluation philosophy is discussed and note is made of the tendency toward objectivism and positivism in the approaches to evaluation and transfer. The original outcomes' model, the four-level model by Donald Kirkpatrick, is described and its derivatives, contributions, and criticisms are discussed. Phillips' ROI, also known as level 5 is also covered. A description of how to measure the transfer of training is discussed. Finally, the implications of using ROI as a measure of transfer are considered.

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9.2 Evaluation in Times Past

The evaluation of training and development interventions today is a development of early attempts to improve the process of education, particularly in the United States. In the early decades of the twentieth century, the popularity of the discipline of scientific management encouraged the measurement and assessment of people; American educators began to see the possibility of adopting these methods and applying them to educational improvement. By the 1920s a great deal of experimentation was taking place in educational establishments. It was decided that the greater availability of education to the masses and the greater range of abilities among pupils might require different approaches. In the United States, an evaluation program was set up to compare the traditional curricula with the more novel approaches. In order to make these comparisons it was decided to use the objectives of the educational approaches themselves as a means of evaluating those same approaches.

> The process of evaluation is essentially the process of determining to what extent the educational objectives are actually being realized …. however since educational objectives are essentially changes in human beings, that is, the objectives aimed at are to produce certain desirable changes in the behaviour patterns of the students, then evaluation is the process for determining the degree to which these changes in behaviour are actually taking place. (Tyler 1949, p. 105)

This approach was an advance over previous methods that focused on examination results and teacher's impressions of classroom work. Educational establishments understood and accepted the work of Tyler, especially the way it made explicit what they were trying to achieve.

9.2.1 Stages in Evaluation

An understanding of evaluation of training can be gained by tracing its development over the last half century. Wang and Spitzer (2005) suggest that the evolution of evaluation in human resource development (HRD) comprises three distinct stages: (a) practice-oriented atheoretical stage, (b) process-driven operational stage, and (c) research-oriented, practice-based comprehensive stage. Overall it may be viewed as a movement from nomothetic to ideographic approaches, see Table 9.1. The first stage took place between the 1950s and 1987 and features the initial development of the four-level model of evaluation (Kirkpatrick 1959a, 1959b, 1960a, 1960b). In this period there was an unconscious attempt at developing techniques for this little-understood topic of evaluation. Much confusion abounded among practitioners and academics about what needed to be done and even the original author seemed to be "unclear about the role that the model would play" (Wang and Spitzer 2005, p. 6).

The second stage of process-driven operational activity took place against the backdrop of globalization and international competition and saw the rise of the ROI movement (Burkett 2005; Phillips 1995, 1996; Phillips and Phillips 2002). This movement was given impetus by constant pressure from management for proof of

Table 9.1 Comparison of emphasis in nomothetic and ideographic approaches

Nomothetic methods	Ideographic methods
Deduction	Induction
Explanation via analysis of causal relationships and explanation by covering-laws	Explanation of subjective meaning systems and explanation by understanding
Generation and use of quantitative data	Generation and use of qualitative data
Use of various controls, physical or statistical, so as to allow the testing of hypotheses	Commitment to research in everyday settings, allowing access to, and minimizing reactivity among, the subjects of research
Highly structured methodology	Minimum structure

business returns from training investment. HRD academics and practitioners responded by seeking to justify the expenditure in HRD with methods for calculating ROI from training initiatives.

The third stage of evaluation has moved to context and began in 1996 with a radically new approach to evaluation. In his article, *The Flawed Four-Level Evaluation Model* Holton (1996) succeeded in creating a new agenda for research and for practitioners. Holton introduced a concerted effort to move the discussion away from outcomes as had been the case with the Kirkpatrick and Phillips' models in the preceding years. Holton suggested that by introducing context in the form of research into the transfer system, it would be possible to develop evaluation methods that were grounded in theory and also of practical value to the practitioner (Holton 1996). Other major contributions to the research on transfer have subsequently been advanced (Kontoghiorghes 2001, 2002, 2004; Tracey and Tews 2005). These three stages in the development of evaluation are worthy of discussion and development.

9.2.2 Philosophical Approaches to Evaluation

Most of the evaluation research has been conducted using a highly positivist and result-driven approach. It is conventional to position the various approaches to research along a continuum of increasing rigor. At one end is laboratory-type experimentation, and at the other, field research. The former is often known as the scientific method or positivism and draws upon structured methods copied from the natural sciences. At the other end of the continuum is the inductive tradition that uses ethnographic methods. This approach rejects the positivist tradition in favor of methods that help give richer insights in areas where subjective meaning and context play a major role. In between these poles are numerous methods that have been used by researchers to combine elements of the two traditions.

These two traditions have also been called nomothetic and ideographic. Nomothetic methods base research on systematic protocol and technique and use methods employed in the natural sciences. Ideographic methods analyze the subjective accounts derived from deep involvement in the research situation. Following Gill (1996), Table 9.1 compares the main points of nomothetic and ideographic methods.

Debate on the method of evaluation has gone through a number of phases in recent times. This progression can be shown as a kind of continuum from scientific to phenomenological approaches. While the scientific approach concerns itself with using the scientific method—being objective, quantitative, looking for scientific proof, using measures, controls and statistics, being rigorous—phenomenology concerns itself with individuals' perceptions of reality and the meaning which people attribute to their experiences. Easterby-Smith (1986) identifies three phases of this progression as scientific, systems, and naturalistic approaches.

Phenomenological evaluation tends to concentrate on how individuals perceive their experience. It is totally context specific and cannot be generalized to other individuals or to a community at large. Most approaches to the evaluation of training, in both the economics and HRD literatures, have been positivist in nature, attempting to establish causation between the independent variable (training) and the dependent variable (some organizational good or outcome). However, because there are so many intervening variables between the training and the outcome, positivist approaches have limited diagnostic utility for the human resource practitioner. It is difficult, therefore, to identify the source of problems if outcomes are not favorable. An approach is needed that will specify the intervening variables and their effects and establish a means for their measurement.

9.2.3 Kirkpatrick's Four-Level Model

The most popular and most enduring contribution to the field of evaluation has proven to be the model developed by Kirkpatrick in a series of four articles for the American Society for Training & Development Journal (Kirkpatrick 1959b, 1960a, 1960b). In these articles, Kirkpatrick outlined his four-step model of *reaction, learning, behavior*, *and results*. Perhaps because of its simplicity and ease of understanding it has become the most widely known and accepted approach to the subject among practitioners (Alliger and Janak 1989; Bates 2004; Salas and Cannon-Bowers 2001). Such has been the influence of this model that, many years later, Kirkpatrick could claim, with considerable justification, that very little had changed, in terms of content, since 1959 (Kirkpatrick 1994).

Kirkpatrick's step one was termed as *reaction* and is commonly measured soon after a training program. This step refers to the way trainees "like" and "feel toward" a program of training. Although this measurement is often referred to derisively by trainers as smile sheets or happy sheets, this practice attempts to measure the participant's reaction to the program.

Step two measures *learning* or the amount the participants believe they have learned. Kirkpatrick defines this step as measuring principles, facts, and techniques understood and absorbed by the trainees.

Step three is termed *behavior* and refers to the behavior change that has happened since the training and is defined as using learned principles and techniques back on the job.

Step four is *results* and this simply refers to a measurable impact of the training on the performance of the organization and is referred to by Kirkpatrick as results desired, including reduction of costs, reduction of turnover and absenteeism, reduction of grievances, increase in quality and quantity of production or improved morale.

The popularity of the model has been phenomenal and can be explained by several factors. Firstly, it has provided a language for talking about evaluation of training and has given practitioners a simple-to-understand systematic model for undertaking evaluation (Shelton and Alliger 1993). Secondly, it introduced a connection between the work of HRD professionals and the results of the business through its encouragement of the development of techniques to measure the impact of the training's results. If the training function is to become a true business partner it must begin to demonstrate where it is contributing to the overall results of the organization (Bates 2004). Lastly, Kirkpatrick's model simplifies (and perhaps oversimplifies) for practitioners what is complex.

The emphasis on outcomes de-emphasizes the contextual nature of a learning event which is nested within a system such as is a modern organization. The countless variables which affect human and organizational performance are not addressed in the model and thus the four-level-model of evaluation appears to have a simple and seductive appeal to the busy practitioner.

In his early articles Kirkpatrick used the term *steps* to describe the four elements of his model (Kirkpatrick 1959a, 1959b, 1960a, 1960b). Subsequently in the literature this model became known as the four-level approach to training evaluation. In these early stages Kirkpatrick was probably unconscious of the major effect that his model would have on the world of HRD. In the early years he may not have intended it to be more than a "heuristic for training evaluation" (Alliger and Janak 1989). Wang suggests that these early stages of development of the field of evaluation were atheoretical, pointing out that Kirkpatrick was confused about the role that his scheme would play (Wang and Spitzer 2005). An examination of Kirkpatrick's early articles suggests that there is some merit in Wang's assertions.

However, in more recent times Kirkpatrick asserted the implied causal linkages in the model from step to step thus:

> if training is going to be effective, then it is important that trainees react favourably. (Kirkpatrick 1994, p. 27)

> without learning, no change in behaviour will occur. (Kirkpatrick 1994, p. 51)

Kirkpatrick thus, alters his conceptualization of the model from taxonomy to a theory of training evaluation. Kirkpatrick's model has achieved a dominant position in the HRD marketplace and has achieved widespread and enduring popularity (Alliger and Janak 1989). The field of industrial and organizational psychology has adopted this model in great measure (Cascio 1987), and Kirkpatrick has popularized the training evaluation concept and created a convenient language for facilitating communication in evaluation. This popularity and dominance of the field may be due, in part, to the simplicity of the model. Practitioners find it easy to understand

Training	
Leads to	Reactions
that lead to	Learning
that leads to	changes in behavior
that lead to	changes in the organization
that lead to	change in the achievement of ultimate goals

Fig. 9.1 Bramley's cause and effect linkages. (Bramley 1991)

and yet at the same time there may be some misunderstandings, over-generalizations, and invalid assumptions (Alliger et al. 1997).

Over the period of time, since the development of the model, certain implicit assumptions within it have become more explicit in the literature. It is now common to see what Kirkpatrick termed as *steps* now being described as *levels* (Goldstein 1986). This implies that there is now a perceived integration between elements heretofore seen as independent. Since this terminology is now pervasive in the literature on evaluation, this author will use the term *levels* from this point forward. Given that these implicit assumptions exist and have been given voice, it perhaps is useful to examine to what degree they can be supported by evidence from the literature.

The first assumption is that there are causal linkages in the model. Bramley (1991) asserts that a cause and effect chain links the levels specified in these approaches (Fig. 9.1):

For pragmatic reasons it may be necessary for the training department to provide training that trainees like (otherwise trainees will not be inclined to attend for training unless forced to). However, this does not demonstrate that liking leads to learning. In fact, it may be the case that only when trainees experience challenge to the point of discomfort do they learn (Alliger and Janak 1989).

In general, it seems plausible that reactions have a relationship with the other levels of the model. There may also be some merit in positing relationships between the other levels. Learning achieved on a training course should relate to behavior since some knowledge of the subject may be a prerequisite to transfer. Similarly behavior transfer should have a relationship with results since some action is required to create an impact on the organization's metrics.

A second assumption in the literature is that the fourth level is the most significant (Aragón-Sanchéz et al. 2003; Kirkpatrick 1994). Training is an investment and companies will be interested to find out if the return from training has exceeded the investment cost (Bee and Bee 1997; Cascio 1987). This assumption has a plausibility about it that seems almost beyond question. Yet, it also seems likely that some training initiatives may not lend themselves comfortably to level four of Kirkpatrick's model. Training which is aimed at morale building or simply as an energizer may have outcomes which are either intangible or which do not sit easily in the fourth level of the model.

9.2.4 Amendments and Developments to Kirkpatrick's Model

Many evaluation models have been submitted to the literature since the 1950s. Almost without exception, each one builds on the four-level model. Where these authors differ from Kirkpatrick is in dividing the fourth level into two distinct elements thus proposing a fifth level.

Hamblin suggests a fourth level termed *organization* and a fifth level termed *ultimate value* (Hamblin 1974). Organization refers to immediate issues such as productivity or quality improvement. Ultimate value refers to profitability, survival, or growth.

Brinkerhoff adds two levels to the four levels by including formative evaluation of the training needs and training design (Brinkerhoff 1989). Kaufman and Keller (1994) also propose a five-level model. However, in this case the fifth level is the benefits to society delivered by the training.

Phillips (1995) too contributes a model with five levels. In this model the fourth level indicates the results achieved by the organization such as productivity or quality improvement and the fifth level is ROI from the training. Cascio (1999) provides a model that differs in essence from the four levels by emphasizing performance change with a dollar value estimation of that performance change.

Kirkpatrick (1994, p. 54) was still able to state that "*content has remained basically the same.*" It is difficult to argue with this assertion. Bramley (1991) also notes that the evaluation of training remains dominated by the four-level approach of reaction, learning, behavior, and results.

9.2.5 Contributions of the Kirkpatrick's Model

Kirkpatrick's four-level model has popularized the training evaluation concept (Wang et al. 2002). Its principal contribution is that it has focused attention on the issue of outcomes from training interventions (Broad and Newstrom 1992). It has also shown that single outcome measures cannot reflect the complexity of training interventions and has emphasized the importance of using multiple measures of training effectiveness (Bates and Holton 2004). The model indicates the aspects and outcomes one should examine and assess when evaluating training programs (Wang and Spitzer 2005).

Today, increasing emphasis is placed on evaluating training outcomes, and the four-level model offers the practitioner community a vocabulary for discussing the variety of training outcomes that can actually be measured. The model also offers practitioners some sophistication for assessing training interventions, especially where organizations are used to making assessments in simplistic, reaction-based terms. Furthermore, practitioners are introduced to the notion that their training programs actually do affect the strategy of the organization, offering them central and powerful roles that might be denied to them were they to be perceived merely as a support function organizing training events.

For the academic community, the Kirkpatrick's model gives a point of reference for future research. This model, in its early days, epitomized the atheoretical stage in the history of evaluation (Wang and Spitzer 2005). From its atheoretical limitations, however, many academics have found their points of departure into rich fields of research (Holton 1996; Tracey and Tews 2005).

9.2.6 Criticisms of the Kirkpatrick's Model

Although Kirkpatrick's model is dominant, its application is less than complete. In one study, some authors noted that evaluation practices have changed very little in the last 30 years for which data is available (Twitchell et al. 2000). Few companies calculate the ROI from employee training in an effective and reliable manner. Bartel (2000), in a review of the literature on ROI research, found that a lack of data and poor methodology rendered conclusions difficult.

Critics of the four-level model have attacked it for perceived flaws which include its incompleteness and the failure to establish causal linkages (Bates 2004). These criticisms are now examined.

The Kirkpatrick's model may be termed incomplete in terms of its application and scope. Firstly, it is not universally applied by practitioners. An American Society for Training and Development (ASTD) study found that 77% of the organizations surveyed used reaction measures, 38% evaluated learning, 14% measured behavior transfer, and only 7% carried out evaluations at the level of results (Van Buren and Erskine 2002). Either organizations believe that reaction measures are the most powerful (a debatable proposition) or they do not have the ability and/or the will to invest the time and effort into evaluating other criteria. Secondly, because it concentrates on outcomes, the model tends to ignore elements that gave rise to and surround the training program. Thus, there is a risk that any failure to achieve outcomes may be attributed to the intervention itself (Holton and Naquin 2005).

The term *reaction* is also used in the original model to describe a single construct (Kirkpatrick 1959a). However, it has been demonstrated that there are two elements to reaction: *affective reaction* and *utility reaction*. Affective reaction refers to liking the training, whereas utility reaction refers to perceived value of the training in helping them to do their job (Alliger et al. 1997).

There are also serious questions to be answered, such as the absence of essential elements from the model. The major intervening variables that affect learning such as trainee readiness, motivation, training design, and reinforcement of training on the job are not specified in the four levels (Holton 1996). In addition, individual differences may also affect outcomes and these are not specified in the model.

Kirkpatrick's model commenced its life as a taxonomy. In the early stages the author seemed to view it merely as a set of separate and unlinked steps to good practice in the evaluation of training programs. However, he later claimed that there were causal linkages in the model (Kirkpatrick 1994). This assertion has not been supported by the literature (Alliger and Janak 1989).

In general, reactions, either *affective* or *utility*, do not correlate with learning (Alliger and Janak 1989; Dixon 1996). Some argue that reactions should not be regarded as a primary outcome but, rather, as a moderator of the relationship between training motivation and learning (Mathieu et al. 1992). This is in direct opposition to the four-level model where trainee reactions, defined as happiness, are a primary outcome of training (Kirkpatrick 1994).

It has been argued that the four-level approach is no more than a taxonomy of outcomes (Holton 1996). This reflects (Alliger and Janak 1989; Alliger et al. 1997) who, in two comprehensive studies stated that the implied causal linkages between each level of taxonomy had not been demonstrated by research. Their literature reviews show that reported correlations between Kirkpatrick's levels have varied widely. They noted, however, that utility reaction measures related more strongly to learning and performance transfer than affective measures (Alliger et al. 1997). Counter-intuitively, they also suggested that *utility* measures are more predictive of transfer than learning measures.

Most research into relationships between the levels of the four-level model has indicated weak connections between the reaction level and other levels (Alliger 1989; Alliger et al. 1997; Dixon 1996). However, Warr et al. (1999) suggest that such conclusions are not appropriate for links between reactions and learning when more differentiated indicators of reaction are examined. Four measures of trainee reactions were taken and were found to be associated consistently with measures of learning (Warr et al. 1999).

Donald Kirkpatrick's typology was and remains the dominant framework for listing training criteria for evaluation. However, there have been criticisms and questions regarding its effectiveness as an evaluation approach (Kaufman and Keller 1994; Holton 1996). The current practice and theory of evaluation do not answer sufficiently well the questions that trainers and others have about organizations' training and development efforts (Preskill 1997).

Research into the four-level model suggests that it does not comprise the elements required to describe it as a theory. For example, various meta analyses and other research have found virtually no relationship between trainee reactions and the other levels (Dixon 1996; Alliger 1989; Alliger et al. 1997). Such studies fail to establish the direct relationship often implied by Kirkpatrick and his followers between the levels of the model, the most common being the assumption that reactions can be used as a surrogate measure for training effectiveness. However, as Tannenbaum and Yukl (1992, p. 425) suggest: "liking does not imply learning."

This model generally also fails to take account of the dynamic nature of training and development, or the important conditions that await the trainee in the workplace on his/her return from the training intervention. Kirkpatrick's approach cannot account for the reasons for choosing the intervention and the process of nomination of the trainee for that intervention. This model does not ascertain if the training process has taken place in an atmosphere conducive to the development of the right attitudes on the part of the learner. It does not ask if the learner, on returning to the workplace, will be given the required level of support and be given the opportunities to test out the new knowledge in a supportive atmosphere.

9.2.7 Conclusions and Future Research

Evaluation of training today has its roots in the United States where over the last century educators began to use learning objectives as tools of evaluating their work. Authors have noted the different stages in the development of evaluation, (a) the atheoretical stage, (b) the process-driven operations stage, and (c) the research-oriented, practice-based comprehensive stage. During the past 50 years the development of evaluation has reflected a wider debate in the social sciences in terms of epistemology from interpretivist to positivist approaches. The dominance of one particular model in the practitioner field has led to controversy.

Despite its longevity, the evaluation profession does not have a set of effective and widely used tools for practitioners and researchers (Bates 2004). It is also disturbing that a 50-year-old model, under constant attack by the academic profession and many leading practitioners, is still being promoted by the largest practitioner organization, the ASTD (Paradise 2007).

However, it can also be said that over the past 50 years the measurement and evaluation of HRD has come of age. Today, it can be described as an issue of major importance in HRD, a "topic of debate" (Phillips and Phillips 2002). The debate seems to sustain itself with continued momentum. Even today, researchers find value in durable model of the four levels of evaluation (Smidt et al. 2009). Although there does not seem to be any flagging of interest in the issue, it is less certain that HRD researchers and practitioners are clear about the direction of evaluation.

HRD needs research and new directions on evaluation criteria. The Kirkpatrick model needs to be replaced by an alternative, grounded in research but of practical use for the practitioners.

Research into its replacement has commenced and is described by Wang and Spitzer (2005) as the research-oriented, practice-based comprehensive stage. This stage heralds the introduction of context by several authors in search of approaches to supersede the Kirkpatrick model (Holton 1996; Tracey and Tews 2005; Kontoghiorghes 2004). A new vocabulary has been developed including the arrival of such terms as the *transfer climate* and *transfer system* incorporating a range of factors that help and hinder the transfer of learning from training interventions back into the workplace.

Further research needs to be conducted into the factors that affect transfer of learning. Current research has been mostly situated in America and further research in the North European situation is needed (Van der Klink et al. 2001). Research till date has also used participants' self-reports as the main estimation of transfer. More concrete measures of the effective transfer of training are required. Furthermore, transfer research till date has neglected the role of the trainer as a factor in enhancing transfer of learning. It is likely that this has a significant bearing on the effective transfer of the training.

In the next section, a key development of the Kirkpatrick model is discussed—ROI. This model of evaluation attempts to place a value on the outcomes of training as a percentage return on investment figure. It gives a focus and direction to those

who seek to demonstrate financial value to the firm of HRD. It also attracts criticism from those who believe that there are too many variables involved to isolate one particular effect of training interventions.

9.3 Measuring Return on Investment

9.3.1 Introduction

Measuring ROI from training interventions has become one of the most challenging and intriguing issues facing the HRD and performance-improvement field (Phillips 2005). It is a topic which appears on many HRD conference and convention agendas and articles appear regularly in HRD practitioner and research journals dealing with the issue. Yet, there is more to be done as others note:

> While significant improvements have been made in the evaluation of training … more work could be done at the results level. (Olsen 1998, p. 74)

In meeting this need many books and articles have also been written on the subject and many consulting firms offer services to clients in the area of calculating ROI.

The issues that are driving this increased interest are emanating from the business arena. Pressure is being exerted by clients and senior management to show results from training investment (Rowden 2005). Competitive economic pressures also are causing scrutiny of expenditures, including all training and development costs. It is already clear that organizations are "shaving every expense that does not promise a return" (Ruona et al. 2002, p. 218). Systemic initiatives such as total quality management, business re-engineering, and Six Sigma have created a renewed interest in measurement and evaluation including that of training interventions. A general trend toward accountability for all staff groups is causing some HRD departments to measure their contribution. These and other factors have created a movement toward applications of an ROI process. HRD professionals must better demonstrate bottom line impact.

9.3.2 Research on Return on Investment

ROI is one of the most intriguing issues HRD is facing today (Subramanian et al. 2012). Much of the research into ROI in training interventions has been led by ASTD. In 1994 ASTD began to collect and publish case studies in ROI. This initiative has become such a success with the practitioner community that it is now the Society's largest seller among all of its publications. The interest reflects Society's own view that the number one global trend facing HRD practitioners is developing the ROI in training (Van Buren and Erskine 2002).

Research studies continue to show the growth of interest in ROI (Matalonga and Feliu 2012). In a survey of 35 members of the International Federation of Training and Development Organizations (IFTDO), measuring ROI was consistently rated as the topic of greatest importance among members of these organizations (Phillips 1999). Perhaps the most comprehensive study in this subject in recent years was conducted by the US Corporate Leadership Council involving 278 organizations (Drimmer 2002). This study showed that 78 % of organizations saw ROI as desirable, rating it as either important or very important as a desired metric. However, only 11 % of them were using ROI as a measure of training effectiveness. These results were the same for development interventions (nontraining interventions).

Another major study attempted to determine how organizations measure the impact of corporate universities (Phillips 2000). This was a detailed benchmarking study to examine how major corporate universities are dealing with the accountability issue and ROI. It concluded that best practice sites were moving toward utilizing various techniques of evaluation including ROI. It was also concluded that these corporate universities were struggling with the problem of how to calculate ROI and what to do with the results.

One of the most visible signs of the advancement of ROI is the development of the ASTD ROI Network. Founded in 1996 by a group of practitioners, its purpose is to promote the science and practice of individual and organizational measurement and accountability. Membership is global and in 1992 it was acquired by ASTD who now operates it as an internal division. Its services are open to all members as an ASTD membership option.

The number of conferences is often a useful indicator of trends, and a variety of conference providers have concentrated on the topic of ROI in recent times. These include the International Quality and Productivity Center (IQPC) who routinely offer conferences on ROI, sometimes five per annum across the globe. ASTD ROI Network has now conducted nine annual conferences on this topic. Since 2002, ASTD has introduced the practice of having a special conference on ROI within its own International Conference and Exposition. The American Productivity and Quality Center (APQC), and the Institute for Industrial Relations (IIR) have also offered conferences in the US, Canada and Europe on ROI.

9.3.3 The Phillips' Model of ROI

The most widely known of the approaches to ROI in HRD is the Phillips' method of ROI, developed by Phillips 30 years ago. Phillips' ROI model is positivist in its approach and has gained popularity among managers.

It has been suggested that this model is an extension of the Kirkpatrick model but this has been contested in the literature as being a misconception (Wang and Wang 2005). This model has become widely accepted in the practitioner community and its strengths include the way it attempts to isolate the effects of the program from

Table 9.2 Definitions of evaluation levels in the Phillips' model

Sr. No.	Level	Brief description
1	Reaction and planned action	Participants react to the program and make plans to transfer the learning
2	Learning	This assesses changes in skills, knowledge, or attitude change
3	Application and implementation	Measures back on the job behavior change
4	Business impact	Measures tangible changes in the business as a result of the program
5	ROI	Calculates the ROI of the program including costs and benefits

other influences. The evaluation levels used in the model are broadly analogous to the steps in Kirkpatrick's taxonomy (Kirkpatrick 1994). However, there is an additional level of ROI in the Phillips's model. The definitions of the levels of Phillips' approach are shown in Table 9.2.

Level one measures the reaction of the participants to the program as does the Kirkpatrick taxonomy and others, but this model includes an action plan for implementation of changes in work practices based on the learning achieved in the program. Level two is identical to other outcomes-based evaluation models in that it purports to measure the knowledge, skills, and attitudes that have been acquired on the program. These may be tests, role plays etc. Level three, action and implementation, uses a variety of follow-up methods to determine whether participants applied on the job what they have learned. Level four is business impact, and the measurement here focuses on the metrics which the program itself was designed to change. Typical level four measures include output, quality and costs etc. Level five is described aspirationally as the "ultimate evaluation" (McArdle 2011, p. 249). This measure compares the monetary benefits of the program with the program costs.

Phillips demonstrates how to place monetary values on training's worth and calculate the ROI of a training intervention. Phillips' approach is to collect post program data, and then to isolate the effect of training from other influences and thereby attempt to estimate, in financial terms, the contribution made by the training intervention. The sequence of this method is as follows:

- Develop a baseline of performance
- Conduct the program
- Collect postprogram data
- Isolate the effects of the program
- Convert benefits to monetary value
- Calculate the ROI

9.3.4 Evaluation Planning

In the ROI model there are three specific elements of planning which are important to the success of the application of the model (purpose, feasibility, and objectives). These elements are outlined in this section.

Purpose Several distinct purposes can be identified in evaluation of HRD interventions (Phillips 2003, p. 37).

- Improve the quality of the learning and outcomes
- Determine whether a program is accomplishing its objectives
- Identify the strengths and weaknesses in the learning process
- Determine the benefits/cost analysis of an HRD program
- Assist in marketing HRD programs in the future
- Determine whether the program was appropriate for the target audience
- Establish a database, which can assist in making decisions about the programs
- Establish priorities for funding

Purposes may often determine the scope of the evaluation so these should be identified in advance of the development of the evaluation plan. When practitioners are planning an ROI evaluation, for example, the purposes include perhaps comparing the costs and benefits of the program. This purpose has significant implications for the type of data collected, the data collection methods, and the means of communicating the results.

Feasibility When planning the ROI impact study, it is necessary to decide upon the appropriate levels for evaluation. An evaluation project may stop at level three where all that is required is a report on the extent to which the staff actually uses what they have learned. Other studies need to go to level four where the consequences of staff behavior in terms of the impact on the metrics of the organization are considered. This level four study will seek to find both hard and soft measures linked to the program. In the end, if an ROI calculation is needed, then the impacts on the metrics of the organization must be converted to monetary data so that an ROI formula can be used and a percentage figure obtained. For the ROI study to be achieved, a feasibility study is usually carried out. Typical questions at this stage of assessing feasibility are as follows (Phillips 2003):

- What specific measures have been influenced with this program?
- Are those measures readily available?
- Can the effect of the program on those measures be isolated?
- Are the costs of the program readily available?
- Will it be practical, and feasible, to discuss costs?
- Can the impact data be converted to monetary value?
- Is the actual ROI needed or necessary

These questions are important to help the evaluation team decide what is possible and appropriate in terms of the levels of evaluation that can be accessed in the project.

Table 9.3 Sample data collection form. (Adapted from Phillips and Phillips 2001)

Level	Program objectives	Data collection method	Data sources	Timing	Who is responsible
1	Reaction, Satisfaction and Planned Actions Positive reaction–four out of five	Questionnaire	Trainee	End of program	Trainer
2	Learning Learn to use communication skills with customers	Observation of practice in class	Trainer	During class	Trainer
3	Application and Implementation Initial use of five simple skills 80% of trainees use all skills with all customers	Follow-up session Follow-up questionnaire	Participant Participant	3 weeks after program Three months later	Trainer Line manager
4	Business Impact Sales increase	Business data figures	Company records	Three months after end of program	Line manager
5	ROI 30%	A figure of 30% ROI gives management some comfort that ROI is planned for.			

Objectives As seen in Table 9.3, programs are evaluated at different levels. The level of evaluation achieved corresponds to the level of the objectives set for the program

- Reaction, affective, and utility objectives
- Learning objectives for knowledge, skill, and attitudes
- Application and behavior objectives
- Impact objectives
- ROI objectives

Every evaluation exercise requires that objectives be identified prior to the execution of the program. Learning objectives are traditionally developed for training programs but other levels such as application and impact levels are not, however, necessary they may be for the calculation of ROI and evaluation of results.

Objectives of the program are deeply connected to the front end-training needs analysis of the program. After the business need is determined, the analysis determines the performance that is required to deliver on this need. Different objective types link directly to a different but appropriate level of evaluation. If the application and impact objectives are not available, then they must be developed.

The next part of the planning stage of the Phillips' model is the use of planning documents (data collection plan, ROI analysis plan, and the project plan) and these are discussed next.

Data Collection Plan A data collection plan is a document for the recording of the major elements and issues in respect to the collection of data for the four evaluation levels. An example of such a plan is shown in Table 9.3 and is drawn from an evaluation project in sales training (Phillips and Phillips 2001).

In this planning document broad areas for planning are acceptable. At a later point, more specific objectives will be developed. In the measures column the specific measure is listed and in the method column the actual technique used to collect the data is also listed. The origin of the data is listed in the source column and the timing indicates the scheduling of collection. The responsibilities column indicates who will collect the data.

ROI Analysis Plan This document captures information on items that are needed to develop the ROI calculation. Table 9.4 shows a completed ROI analysis plan for the sales program which was discussed in Table 9.3.

In the first column in Table 9.4 is listed the critical data which will be used to calculate the ROI. In the second column, the method used to isolate the effects of the training in the calculation of ROI is listed next to each of the data items in the first column. The conversion column tells how the information will be converted to monetary values so that the calculation for ROI can be made. The cost categories are listed in the fourth column. Normally these will be consistent across all training courses; however, in certain circumstances, there may be cost items which are specific to a particular course and these will be noted here. In the fifth column, intangible benefits are listed which are expected from the program and this list can be generated through discussions with the various stakeholders. The targets for communications are listed in the sixth column. Out of the many targets that could be listed, Phillips lists four that are "always recommended."

- Top management group
- Line manager of trainees
- Trainees themselves
- Training and development staff

These groups are typical stakeholder groups who need to know about the results of an ROI analysis. In the final column other elements which might influence the program implementation or which might be crucial to note in the conduct of the ROI analysis are noted. Typical among these might be the degree of access to sources of data, unique analysis issues such as contact with control groups and ability issues concerning participants (Phillips 2003).

Project Plan The third planning document necessary for the ROI initiative is the project plan. This document is generic in the sense that most executives who are required to execute an organizational project would be familiar with and utilize a project plan. It comprises a description of the program, its duration, target audience, and number of participants. The timeline of the initiative will be shown also from the inception to the final communication of ROI results to the stakeholders listed earlier. A project plan is a common tool to control any given project. The critical element of time usually drives a project plan. If senior management has a specific

Table 9.4 Sample ROI analysis plan. (Phillips 2003, p. 44)

Data Items	Methods of isolating effects of the program	Methods of converting data	Cost categories	Intangible benefits	Communications targets	Other influences and issues
Weekly sales per associate	Control group analysis	Direct conversion using profit contribution	Facilitation fees	Customer satisfaction	Program participation	Job coverage during training
	Participant's estimates		Program materials	Employee satisfaction	Electronics department managers at targeted stores	Communication with control group
			Meals and refreshments		Senior store executives district, region, headquarters	Seasonal fluctuations
			Facilities		Training staff: instructors, coordinators, designers, and managers	
			Participant's salaries and benefits			
			Cost of coordination			
			Evaluation			

end date in mind, then this will be agreed and consequently all other dates in the project plan are fixed in respect of this conclusion of the project. For this purpose, a generic project planning tool will suffice.

The planning documents described above (the data collection plan, the ROI analysis plan, and the project plan) can be used as a basis for the direction of the ROI study. The documents enable the key decisions required during the planning phase

to be made. Subsequent to this, is the execution of the project but this is merely a formulaic implementation of the decisions made in the earlier phase of the initiative.

Two types of data are collected in applying the ROI methodology: hard and soft. Hard data comprise output, quality, cost, and time measures. Soft data comprise job and customer satisfaction. A variety of methods are used to collect including these:

- Questionnaires and surveys
- Simple tests
- Observation of performance on the job
- Interviews with trainees
- Focus groups
- Performance data

The collection of data will be constrained by issues such as time and budget. Nonetheless, care should be taken to select the method appropriate to the specific program and the setting.

9.3.5 Isolating the Effects of the Training

One of the difficulties in evaluating training interventions is determining or attributing causality. Given that there are so many variables which have an impact on organizational metrics, any evaluation attempt must respond to the challenging possibility that alternative explanations exist for the improved performance other than the training one. As a result, with any method it is important to address this issue, especially one such as ROI that deals with impacts on the organization which occur long after the training intervention has taken place.

The objective of this stage of the model is to determine the amount of improvement following the training that is directly related to the program itself. If this can be achieved, then the calculation of ROI becomes a more precise and accurate exercise. There are many techniques, familiar to the experienced researcher, which are utilized to address this issue.

- Control group
- Trend lines
- Forecasting model
- Participant estimate
- Supervisors of participants estimate
- Senior management estimate
- Subject matter experts

These tools may be used as a comprehensive set of techniques to answer the challenge of isolating the effect of the training on the performance metrics.

9.3.6 Converting Data to Monetary Values

An ROI calculation requires that the data collected at the impact level (level 4) is converted to a monetary figure and then compared to program costs. Thus, when the impact on the results, which is attributed to training, is established it must then be translated into monetary amounts which can then be used in the ROI formula. There are many techniques available to convert these data depending on various training situations. The principal techniques amongst these are converting the profit contribution or the cost savings into monetary value. This reminds us of the critical nature of planning, of how the training is designed to affect the business performance. If this is not decided in advance then it is difficult to see how the ROI can be calculated with confidence.

Because of its importance this step is vital. However, the size of the challenge can be underestimated especially where soft data is concerned. Using a multiple approach with these strategies can increase confidence levels in the results.

9.3.7 Tabulating Costs of the Program

Tabulating costs of the program involves first of all gaining agreement in respect of the costs to be tabulated. Once this is established, this part of the model involves monitoring or developing all of the costs of the program targeted for ROI calculation. Some sample items which may be included in a cost calculation are as follows:

- Cost of designing the program
- The costs of program materials
- Trainer costs including preparation and delivery time
- Cost of facilities, rooms, technology etc.
- Travel and subsistence costs for attendees and trainees
- Salaries and overhead charges of participants

9.3.8 Calculating the Return on Investment

The formula for ROI calculation in the Phillips' method of ROI is executed using the program benefits and costs as shown below:

$$\text{ROI} = \frac{\text{Net Program Benefits}}{\text{Program Costs}} = \frac{(\text{Benefits} - \text{Costs})}{\text{Program Costs}} \times 100. \quad (1)$$

ROI is traditionally reported in many investment situations as earnings divided by investment. ROI, as a percentage, will vary according to the specific type of program being considered. Sales, supervisory, and management training can have a high ROI (frequently over 100 %) while the same calculation for technical and operator training can be lower (Phillips 2003).

9.3.9 Criticisms of the Phillips' Model

The Phillips' method of calculating ROI which was developed during what was described as the "atheoretical phase" of the development of evaluation approaches, and subsequently formed its centerpiece, has been described as a "noteworthy milestone" (Wang and Spitzer 2005, p. 7). Many practitioners regard this ROI technique as the ultimate goal of evaluation and an addition of a fifth level to the Kirkpatrick model of evaluation.

This stage focused almost entirely on the operational processes of evaluation. This method enabled HRD professionals to derive and obtain a percentage figure reflecting the impact of the HRD intervention on their workplace.

The Phillips' method of ROI has unfortunately been associated with the Kirkpatrick model in a misconceptualization by researchers and practitioners alike. The labeling of this model as the "fifth level of evaluation" deems it to be as extension of the Kirkpatrick model, and with support from its author, has been termed the "ultimate level of evaluation" (Phillips 2003, p. 12). This does not add light to the evaluation landscape.

The Kirkpatrick model does not contain any specific techniques or step by step approaches to conduct the evaluations at each level. The implied causal linkages between the levels do not stand up to scrutiny (Alliger and Janak 1989). Thus, the Kirkpatrick model is not really a theoretical model but rather a taxonomy (Holton 1996). ROI analysis, on the other hand, by itself is a technique to measure the financial returns for HRD interventions. It is conceptually inappropriate to link the Kirkpatrick model and the Phillips' technique and adds further confusion among HRD professionals.

The rise to prominence of this method has, however, through an extensive emphasis on ROI, been significant in terms of increasing the awareness of both functional management and HRD practitioners about the importance of evaluation for HRD interventions, emphasizing the importance of HRD investment in organizations and motivating further efforts in the pursuit of credible evaluation approaches (Wang and Spitzer 2005).

The Phillips model can be criticized for an over emphasis on financial data as many training interventions are aimed at developing intangible outcomes (Wang et al. 2002). Some suggest that more qualitative factors should be given more weight (Burke and Hutchins 2007). Others bemoan the "moment in time" aspect of the ROI calculation which tends to ignore the time factor in the development of ROI.

Although ROI has been used to calculate the returns from various forms of training including software training the cost factors are usually known as the organization is usually collecting this data already (Diaz and Sligo 1997). Conversely, benefits are much more difficult to identify and there needs to be a considerable level of agreement around the accepted assumptions as to what benefits entail and which are acceptable to quantify. The Phillips model does not offer much guidance as to how this agreement may be reached. Some authors also criticize Phillips for the use of an average figure for ROI suggesting that a more subtle approach is required such as the use of statistical process control tools to measure the variation before and after the intervention (Matalonga and Feliu 2012).

9.4 Conclusions and Future Research

There is mounting evidence that the work environment and training climate has had an increasing relevance and this has moved attention toward broader and more integrative models of training evaluation which involve the transfer of learning (Holton 1996; Tracey and Tews 2005). These authors propose an alternative model involving the context surrounding the training intervention. Here, they avoid the weaknesses that were identified in the case of outcomes-based models that assumed simple relationships and causal linkages were in place.

Other writers have invoked expectancy theory to develop models of transfer that move the field beyond the outcomes-based approaches of the Kirkpatrick model; however, not all the factors which affect transfer have been identified (Kontoghiorghes 2004).

Organizations, therefore, are anxious to demonstrate that the investment in HRD is delivering reasonable returns and methods for demonstrating this value have been considered for many years. Critics have suggested that outcomes-based methods of evaluation have failed to deliver both theoretically and practically for organizations. Some authors have suggested that the transfer system may offer potential for development. To date there has been a significant degree of research into transfer of learning but some factors remain elusive. Research is needed to identify factors heretofore unrecognized and to identify the relative importance of these factors and to further ascertain to what degree context plays a role and to what degree the importance of transfer factors alters with context.

The ROI method is used as a surrogate for transfer of training from the training intervention back into the workplace. The method can provide an objective and consistent measure of the effectiveness of HRD interventions across different training programs and different business sectors. What is now required, is a means of identifying and measuring the factors which affect transfer of learning so that variations in these factors could be compared to variations in the impact of training. This topic could move the debate concerning evaluation from “does training work?” to a question of “how training works?”

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Chapter 10
Conclusions

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Generally, in the empirical studies of this volume, a need for the further development of theory-based concepts with respect to ensuring and evaluating the transfer of learning in organizations is identified:

- This is manifested on the *process level* first. Coherent transfer concepts or the entire process of ensuring and evaluating the transfer of learning, which starts before a further education or training measure and ends after a measure of that kind, must be developed.
- Secondly, on the *structural level* there is a need for a process that will integrate the factors *learner, training*, and *working environment* into each specific model to foster the transfer of learning. In this connection, it is shown that the organizational context, the *working environment*, seems to be the factor that is given the least consideration in ensuring the transfer of learning.
- Thirdly, on a *didactic level*, ensuring the transfer of learning in organizations requires concepts that are valid both from a theoretical standpoint and from the perspectives of intervention and implementation. From the theoretical perspective the relevant theory that is based on the further training measure or the training must be selected. From the intervention standpoint, the targeted theoretically substantiated measure must be specified and the implementation deals with the effectiveness of the manner in which the intervention is carried out.

Securing the transfer of learning in organizations, thus, requires a complex structure that connects the *process level*, the *structural level*, and the *didactic level* to each other.

To which new research questions does a global view of the results of the studies presented lead?

In the wake of globalization, the desire to consolidate systematic, international, comparative learning transfer research on further operational and vocational training supersedes the new research topics that are to be broached: Issues with respect

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to processes for ensuring the transfer of learning and for evaluating it in accordance with both the inhibiting and conducive learning transfer factors, must be studied from a comparative perspective. The actual states must be standardized taking the respective cultural factors into account and research must be done on the extent to which cultural factors affect measures for the transfer of learning. If, as is the case with McAdams and Pals (2006), *characteristic adaptations* as contextualized particularities of human lives, such as goals, strategies and methods, for example, are influenced by culture, it can be assumed that there are culturally influenced differences in the processes for ensuring the transfer of learning.

A comparative examination of the conducive and inhibiting learning transfer factors also sheds light on the conditions of learning transfer that are dependent on culture.

Structural factors in particular can be highlighted against the background of cultural factors. The following questions arise from the research results in the studies presented, for example: How must learning transfer structures be created, so that they are compatible with culturally influenced company environments? In what way are the structures of organizations to be formalized for the purpose of ensuring the transfer of learning, if they are correlated to culturally varying dimensions like *uncertainty avoidance* (Hofstede, 2010)? Against the background of varying forms of motives the issue of the implementation of organizational cultures that are conducive to the transfer of learning are to be raised.

By means of comparative studies a more complex perspective is to be directed to the object in order to contribute to the development of culturally sensitive measures on one hand and cross-cultural measures on the other hand to foster learning transfer in organizations that are acting more and more globally.

Finally, concepts for the evaluation of learning transfer taking different cognitive paradigms and process and output orientation into account are to be developed further even against the background of the function that evaluation of further operational training should promote the learning process and the further development of an organization.

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