

# The effects of a smartphone-application on learning transfer under the aspect of virtual leadership

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**Abstract.** Successful transfer of learning is becoming increasingly important in the field of continuing vocational training (CVT). Furthermore, the success of a company and individuals will depend on how quickly they learn, develop new, suitable ideas, and put them into practice. Therefore, CVT has to achieve corporate goals. For this reason, evaluation of learning transfer is the central task of education controlling. The origin of evaluation forms the Four-Level-Evaluation-Model developed by Kirkpatrick in 1959. It's still used in its basic features today (e.g. Feedback form to evaluate the 1<sup>st</sup> level "Reaction"). Kirkpatrick's model has often been dictated and criticised. Three relevant points of critic are: The triangulation of the Four-Level-Evaluation-Model is questioned (ALLIGER and JANAK, 1989, p. 334) (Reio et al., 2017, p. 37). And Nuisl demands a socially responsible evaluation (Marburger et al., 2016, p. 356). Social responsibility is not included in the Four-Level-Evaluation-Model. Furthermore, the motivation of the participants with regard to the learning transfer cannot be determined with this model. Motivation is a critical factor for successful learning transfer and should be considered (Sahoo and Mishra, 2017, p. 22). Kirkpatrick's model was extended by two more levels, ROI (Return on Investment) and VOI (Value on Investment). These key figures based on algorithms such as ROI or the descriptive determination of the added value VOI are not meaningful with regard to a successful learning transfer. Moreover, they are not sufficient in their meaningfulness to meet the constantly changing requirements in the areas of HRD (Human resource development) and leadership of virtual teams. The use of a smartphone or tablet application underpins a seamless communication process in CVT and increases the learning transfer. Furthermore, additional functions as Feed and Knowledge center of the app could support managers in leading virtual teams. In the app, individual objectives can be agreed and stored with corresponding routines. For the management of virtual teams, this means that team objectives can be agreed. The app's evaluation options represent a management tool for virtual teams. A quantitative study has shown that training participants who use the an application are 30.4% more likely to change their behavior (Katharina Erhardt, Prof. Dr. Götz Walter, p. 1). Quantitative studies to increase the effectiveness of the app regarding to the learning transfer are currently open.

**Keywords:** Evaluation of training, Instruments of evaluation, Continuing vocational training, Training design, Process CVT, HRD, Neocapital, Lifelong learning

## 1 Introduction

*“The great aim of education is not knowledge but action”*

*Herbert Spencer (1820 – 1903)*

This quotation from the English philosopher Herbert Spencer’s sums up in a few words the field of tension in continuing vocational training (CVT). Not only did Spencer allude to the education of children but also in a broader sense, this quote is transferable to CVT.

Coming from a background as a trainer in CVT, the author observes that the sustainability of the knowledge is imparted and its implication in everyday professional life is slow. More than half a century ago Kirkpatrick developed the basic Four-Level-Evaluation-Model. This model evaluates training on four levels: 1st Level „Reaction“, 2nd level „Learning“, 3rd level „Behavior“, 4th level „Results“. The first Level "Reaction" is the most common and frequently evaluated level (Kellner, 2006). Learning is defined as the extent to which participants change attitudes, improve knowledge, and/or increase skills as a result of attending the program (Kirkpatrick and Kirkpatrick, 2006, p. 11). The level “Reaction” normally is evaluated. The level “Learning” is generally assessed by means of learning tests at the end of the training. Change in behavior can be observed. But one needs a lot of information to evaluate this level, even more than for the level „Reaction“ or „Learning“. The last level „Results“ measures the final results that occurred because the participants attend the program. The results can for example include increased production, improved quality, decreased costs (Kirkpatrick and Kirkpatrick, 2006, p. 25). The power of Kirkpatrick’s Four-Level-Evaluation-Model is its simplicity and its ability to help people think about training evaluation criteria (ALLIGER and JANAK, 1989, p. 331).

According to critics of Kirkpatrick's approach to evaluation does not go far enough. They demand a holistic approach (Paul Donovan, 2014, p. 164). The development towards a holistic evaluation approach of training starts with the extension of Kirkpatrick’s Four-Level-Evaluation-Model by Jack Phillips to the level ROI (Return on Investment). Phillips 5-step ROI-Model provides an evaluation model that determines the ROI of training measures (Phillips, 2003, p. 22) (Phillips, 2003, p. 51).

Kellner criticizes that both, Kirkpatrick and Phillips, do not take into account that the qualitative value creation of continuing vocational training measures is usually the more important component. With the VOI-System (Value on Investment System) from ITD International this gap is closed (Kellner, 2006, p. 12).

That leads to the next point. The successful transfer of learning is becoming increasingly important in the field of continuing vocational training (M.Gessler, 2012, p. 362). Well-trained employees have become the capital value of a company (Kauffeld, 2010, p. 6). At the same time, proving that continuing vocational training (CVT) serves to achieve corporate goals becomes the central task of education controlling. So far, the attempt of linking company objectives with individual further training measures is not

always carried out (Kauffeld, 2010, p. 30). The reason for it being that the process of continuing vocational training in companies is too diverse. This for example becomes visible as many small and medium-sized companies do not have their own personnel departments, whereby personnel management is carried out by the managing director.

Research into learning transfer is a consequence of evaluation research in CVT (Paul Donovan, 2014, p. 145). They are due to the changed requirements in this area. In the future, the success of a company and individuals will depend on how quickly they learn, develop new, suitable ideas, and put them into practice (Kauffeld, 2010, p. 14). This projection describes the dilemma of CVT, which challenges all players (HR departments, personnel development departments, participants, continuing education institutes, trainers and researchers). Furthermore, at a time of low unemployment it is difficult (L Komárková, 2019, p. 94).

There are two separate lines of research in the field of learning transfer. On one hand the outcome-orientated research (e.g. Kirkpatrick and Phillips) and on the other hand the process-oriented research (e.g. Holton) (Bohlinger et al., 2015, p. 43). These research fields are based on the learning transfer definition according to Baldwin and Ford: For the transfer to have occurred, learned behavior must be generalized to the job context and maintained over a period of time on the job (BALDWIN and FORD, 1988, p. 88).

For Gessler, the appropriate term for learning transfer is transformation, because learning transfer in vocational training is more like a context-based transformation of knowledge (Bohlinger et al., 2015, p. 43).

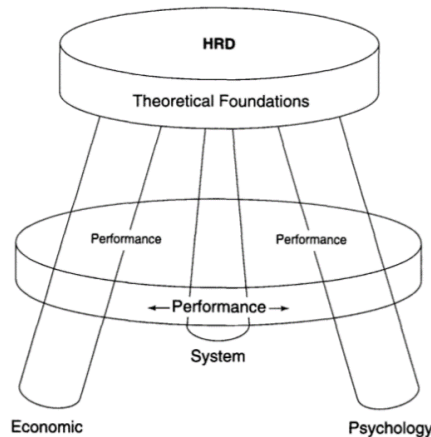
The use of an app proves to be an effective tool for learning transfer. One can choose given objectives or create objectives on his own. And regarding Gessler's proposed transformation the use of an app is an effective management tool of virtual leadership.

The evaluation of CVT measures is based on theories from other research areas (e.g. pedagogy, psychology, business administration (Wang and Spitzer, 2005, p. 9)). CVT is linked to the field of Human resource development (HRD).

To date, there is no independent science for the field of HRD (Swanson and Holton, 2001, p. 67). Moreover, the field around any definition of HRD is not clear (McGuire and Jørgensen, 2011, p. 2). The author, therefore, refers to the definition according to Vince 2003 when using the term.

HRD should be conceptualised as an approach that supports the impact that people can have on organising. The focus of HRD is on the action, on developing the capacity to act, on generating credibility through action, and on influencing and working with others in situations loaded with emotion and politics. The HRD function should be about discovering how an organisation has managed to become set in its ways, how to organise opportunities for change that can challenge a tendency to resist change, and how to imagine and deliver processes that can underpin organisational development and transformation (McGuire and Jørgensen, 2011, p. 5).

According to Swanson, the theories underlying HRD are based on learning theory, economic theory and system theory (Weinberger \*, 1998, p. 87)<sup>1</sup>.



As you can see the surrounding ring of these theories is performance. The psychological stool leg includes the theories of adult learning – organizational learning -learning organizations and the Psychological theory itself with the emphasis on learning. The system stool leg includes the system perspective. Learning does not occur in and on itself, it is rather a component of the learning resources in an organizational system (Knowles, 1985, pp. 24–25). The third stool leg economics includes the economic theory. The bottom line for any HRD investment is providing financial benefits to the organization (Weinberger \*, 1998, p. 88).

## 2 Objectives of the article

The objective of this article is to present the concept and effectiveness of an application for a smartphone and a tablet that can be used as an instrument for a successful learning transfer in the field of CVT.

The influence of the use of the application on the indicator ROI (Return on Investment) and VOI (Value on Investment) is going to be examined in a theoretical way. This influence will be confirmed under the aspect of the communication process in the course design.

The basis for the methodological work is a qualitative literature search on the following research questions:

- What instruments are available to evaluate CVT?
- What does the communication process within continuing vocational training look like?

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<sup>1</sup> McLean mentioned that the three-leg-model is not sufficient to develop a general HRD theory. The fields of anthropology, sociology and speech communication are missing. The image of an octopus illustrates the continuous search for a unifying theory (McLean (1998), p.376).

- What influence could an optimized communication process using an app have on learning transfer?
- How can an app be used as a management tool for leading virtual teams?

### 3 Material and Methods

There are three reasons for evaluating training programs. The most common reason is that evaluation can tell us how to improve future programs. The second reason is to determine whether a program should be continued or dropped. The third reason is to justify the existence of the training department (Corporate University) and its budget (Kirkpatrick and Kirkpatrick, 2006, p. 19). As already mentioned, the low unemployment rate is another reason for evaluating training programs in organizations to find suitable people for vacant positions (L Komárková, 2019, p. 94).

In the first part of the article, the author reconstructs based on qualitative literature research the development of instruments for the evaluation of continuing vocational training measures. The research findings of Donald Kirkpatrick in 1959, who identified four levels that support the evaluation of continuing vocational training measures, form the beginning. Therefore, the reconstruction of the evaluation of CVT starts with a feedback form, a common instrument for the evaluation of CVT. The extension of Kirkpatrick's Four-Level-Evaluation-Model by Phillips at a further level is the continuation of the reconstruction. The 5<sup>th</sup> level, called ROI (Return on Investment) calculates and determines this key figure in CVT. A further extension of evaluation CVT is the determination of the VOI (Value on investment). Kellner developed in 2005 a VOI-Model based on six phases to be processed.

The mentioned key figures ROI (Return on Investment) and VOI (Value on Investment) are presented as a result of the reconstruction of the development of the evaluation instruments of the CVT. These indicators are derived below.

ROI and VOI are key business figures of companies. These key figures are used to control companies. This means that these key figures are used to evaluate whether business decisions and related measures have led to the desired success.

A common calculation for the ROI is

$$ROI(\%) = \frac{\text{Net Program Benefits}}{\text{Program Costs}} \times 100 \quad (1)$$

Nonetheless, when calculating ROI several problems need to be considered. Calculating the ROI becomes more difficult if training that trains so-called soft skills are to be evaluated. An example of this is conflict training. How should improved conflict behaviour be measured in Euros? Only limited instruments are available for this purpose. Employee satisfaction can be measured, for example, by means of surveys. But, also, in this case, it is not easy to place increased employee satisfaction in a verifiable and direct context with measurable corporate success.

The above presented key figures ROI and VOI refer to the topic sustainability and successful learning transfer. The present paper examines in a theoretical way to what extent the participants can contribute to an increase in ROI or VOI.

Currently, there is a discrepancy between the feedback of the participants to the trainers and the feedback of the commissioning companies to the training institutes regarding a successful learning transfer.

Furthermore, the practical experience of trainers shows that most participants are enthusiastic about the presented instruments and want to integrate them into their daily work. If these participants take part in a further training measure again after a few months, it can be observed that the previously gained knowledge is no longer retrievable.

This means for the commissioning enterprises that the capital invested in CVT measures has generated no or only a low return. Furthermore, it means for the participant that the acquired knowledge has obviously not been integrated into the daily work.

The question of a suitable instrument for a successful learning transfer, and thus a suitable instrument to measure the success of further training, is being addressed by a wide variety of institutes and companies.

Evaluation of CVT does not have its own theory. In the second part of the article, possible theoretical approaches are presented from the perspective of the role of HR organisations as business partners.

The lack of a clear theory for the HRD field is currently proving to be an opportunity. The requirement for HR departments to assume the role of a business partner gives HR departments a direct corporate mandate. This means that achieving the strategic corporate goals is more concretely located in the field of HR.

Parallel to the demands on HR, the definition of the term capital has also changed. Storberg discusses in her article the development from the term capital to the term neocapital (Storberg, 2002, p. 468).

In the third part of the article, the training design in the field of CVT is developed under the aspect of the support possibility by an application for a smartphone or tablet.

If the application is used stringently and adequately during the training design process, a significant increase in learning transfer is achieved.

Furthermore, possible use of the app as a management tool of virtual leadership is shown.

## **4 Instruments evaluation CVT**

### **4.1 Feedback form**

The feedback form is the most commonly used evaluation instrument in practice. It requires little effort. Basically, a feedback form is used to ask questions about the organisation of the event, the trainer's competence, the comprehensibility and practicability of the content taught, and the working atmosphere.

The significance of the feedback form is to be assessed low with regard to the successful transfer of learning (Kauffeld, 2010, p. 113).

This participant satisfaction survey covers the first level of Kirkpatrick's Four-Level-Evaluation-Model.

## 4.2 Donald Kirkpatrick: Four-Level-Evaluation-Model

The author refers to one of the most well-established evaluation-model for training programs. Donald Kirkpatrick published his „Four-Level-Evaluation-Model“ in 1959 and 1960. In this time, it became more and more important to evaluate the effectiveness of training.

The responsible persons of the training program and the manager make decisions based on the results of the evaluation. For this reason, it is necessary to design, to plan, and to implement the program carefully (Kirkpatrick and Kirkpatrick, 2006, p. 3). Kirkpatrick defined ten factors to be carefully considered (Kirkpatrick and Kirkpatrick, 2006, p. 3).

From an evaluation perspective the following factors of the ten factors selected are relevant: (1) Determining needs, (2) setting objectives and (3) evaluating the program (Kauffeld, 2010, p. 26; Kirkpatrick and Kirkpatrick, 2006, p. 3). The author will focus on two central factors further below: (1.) Determining needs and (2.) setting objectives. The factor evaluating the program (3.) is linked to the central theme of the work and will not be discussed further here.

When speaking of “determining needs”, there are a lot of approaches on how to successfully determine needs. Two of the more common ones are surveying participants and their bosses and conducting a pretest to the participants before the program runs (Kirkpatrick and Kirkpatrick, 2006, pp. 6–8)<sup>2</sup>.

In order to develop a survey form for the respective company for the potential participants, Kirkpatrick suggests to answer the question:

“What are all the possible subjects that will help our people to do their best?” (Kirkpatrick and Kirkpatrick, 2006, p. 4)<sup>3</sup>

It is necessary to make the final decision on the priority of the subjects to be offered. Kirkpatrick recommends using an advisory committee of managers. Of course, the training professional should be a member of the committee too (Kirkpatrick and Kirkpatrick, 2006, p. 6).

The second factor is „Setting objectives“. The following aspects are of particular importance and should be set in the following order (Kirkpatrick and Kirkpatrick, 2006, p. 9):

1. What results are we expecting?
2. What behaviors are needed to accomplish these desired results?
3. What knowledge, skills and attitudes are necessary to achieve the desired behaviors?

After these basic comments on the Four-Level-Evaluation-Model, here is a brief overview of the four levels.

### First level: Reaction.

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<sup>2</sup> Kirkpatrick also mentioned the sixty-five-item Management Inventory on Management Change (Kirkpatrick und Kirkpatrick 2006, p. 8)

<sup>3</sup> He notes that interviews of course take a lot more time than survey forms.

This level measures how the participants react to the program. It is a kind of customer satisfaction survey.

To measure the reaction Feedback sheets are used.

### **Second level: Learning.**

Learning can be defined as the extent to which participants change their attitudes, improve knowledge or increase skill.

### **Third level: Behavior.**

At this level, the change in behaviour is recorded. Therefore, appropriate interviews will be conducted with the participants.

Kirkpatrick defines two criteria for a measurable change in behavior: Either knowledge must have been built up or a noticeable change in behavior must have occurred.

As mentioned for a change of behaviour to occur, the person concerned must have the desire to change and know what to do and how. In addition, an appropriate working atmosphere must be created and any change that has occurred must be rewarded (Kirkpatrick and Kirkpatrick, 2006, p. 8).

The rewards can be intrinsic or extrinsic. It depends on the personality of the participant.

The training professional can influence the first and second requirements by creating a positive attitude toward the desired change and by teaching the necessary knowledge and skill.

Moreover, the manager is responsible for the right climate. The participant has to be able to transfer his new knowledge into his daily routine.

### **Pre-Results**

. At the fourth level of evaluation, the results of the training are recorded. For example, an increase in production or reduction in costs.

Kirkpatrick assumes that these levels are causally linked: The participant's reaction leads to learning success. Learning success leads to behavior and behavior leads to results.

## **4.3 ROI Return on Investment**

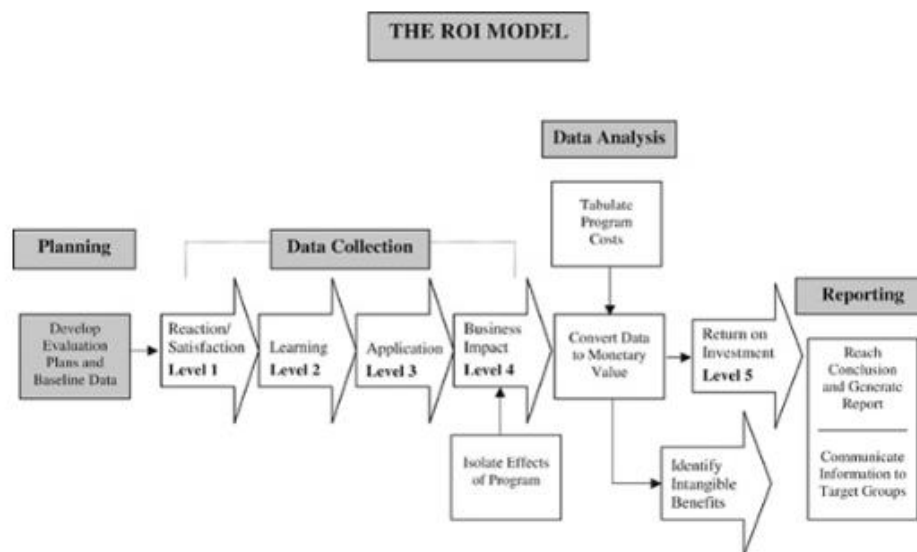
There are some reasons why ROI gained acceptance. The most common are increased budgets for continuing vocational training. Besides, a growing interest in a variety of organizational improvement can be observed. Furthermore, ROI is an added level of evaluation and enables to make the added value of training measures more tangible. The determination of the ROI supports the business mindset of managers and let them focus on economic issues within their function. In organizations all over the globe, there is a trend toward accountability. Every support function is attempting to show its worth by capturing the value it adds to the organization. Last but not least, top manager



demand the calculation of the ROI from departments and functions where they were not previously required (Phillips, 2003, p. 33).

On a micro level, this model should be used to assess the return on investment in the area of CVT.

To calculate and determine the ROI five levels, as shown in the figure below, have to be completed.



**Fig. 1.** ROI Modell (Phillips, 2003, p. 51)

From a management point of view, the five levels enable to calculate and determine the ROI of training programs. The ROI-Process consists of four blocks. 1st block “Planning”, the 2nd block “Data Collecting” is separated into two process steps. The first data collecting takes place at the beginning of the training, the second one after the training. The 3rd block is titled “Data Analysis”. In this process step, all available data are analysed and evaluated. With the “Reporting” process step, the results and necessary changes are communicated within the organization. This procedure ensures that the desired and achieved changes can have a long-term effect.

Within the data collection block, four levels of evaluation are surveyed, the ROI itself at level five in the process step “Reporting”.

**Table 2-1. Characteristics of Evaluation Levels**

Level	Chain of Impact	Measurement Focus	Value of Information	Customer Focus
1	Reaction, Satisfaction, & Planned Action	Measures participants' reaction to and satisfaction with the program and captures planned actions	Low	Consumer
2	Learning	Measures changes in knowledge, skills, and attitudes		
3	Application & Implementation	Measures changes in on-the-job behavior and progress with planned actions		
4	Business Impact	Measures changes in business impact variables		
5	Return on Investment	Compares program monetary benefits to the costs of the program	High	Client

Customers: Consumers = The customers who are actively involved in the training process.

Client = The customers who fund, support, and approve the training project.

**Fig. 2.** Characteristics of Evaluation Levels (Phillips, 2003, p. 53)

The figure above shows that the value of the information used increases with each level, while the focus shifts from the consumer to the client.

Kellner criticizes that the informative value of the ROI is not broad enough. So it is possible that the ROI of a training program is negative, but that the training program can have a high value for the organization in the long run (Kellner, 2006, p. 18). This is the case, for example, when new guidelines are rolled out in a company at great expense over a year. In this case, for example, all employees are trained in the same way to underline the relevance of the desired change. The ROI of this measure is negative, the added value for the company only becomes apparent after a longer period of time.

#### 4.4 VOI Value on Investment

In 2005 Kellner extended the ROI-Model of Philipps by a sixth level called VOI (Value on Investment). This was due to the fact that Kellner has observed that the ROI can be negative, but the corresponding training program has a high value and should therefore be continued. In contrast to ROI, the VOI is determined at a macro level.

The VOI-Model consists of six successive phases (Kellner, 2006, pp. 19–21).

**1st Phase:** With the help of the instrument *GoalNavigator* (based on a 30-question catalogue) the following areas are analysed: Requirement analysis, target description, target conditions, competencies, target reliability, and time frame.

**2nd Phase:** The answers to the 20 questions of the *QuickCheck* represent a reliable gap analysis.

**3rd Phase:** In this phase, the *Valuefinder* is used to determine the value to be achieved from 16 benefit categories and 80 benefit descriptions for employees, management, and companies.

**4th Phase:** With the *ProjectMapping* one can describe and define the details of the advanced continuing vocational training program. Relationships and dependencies of the participants and involved persons or involved departments are shown.

**5th Phase:** With the *PrecisionTraining* a benchmarking with all global quality standards is done.

**6th Phase:** Last but not least are the results documented in the *ResultTracker*.

The VOI model contains no stored algorithms. Rather, on a more abstract level than the ROI calculation described above, it provides guidance for determining the value of a training program in a structured, questioning and descriptive manner. In a broader sense, the VOI-Model prepares a successful learning transfer.

The measurement of the VOI is the result of a critical analysis of the qualitative value added and thus represents the entire spectrum of the effects of CVT (Kellner, 2006, p. 12). There is no algorithm underpinning the measurement of VOI. Rather, the VOI is determined by successive processing of checklists and questionnaires.

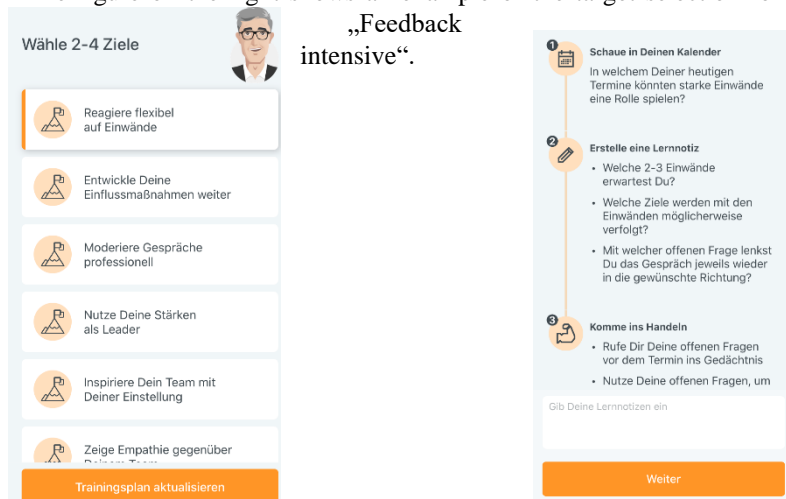
#### 4.5 Everskill Application

The examined app was developed by the company “everskill”. The company has been on the market with this app for about two years. The everskill App is a transfer program and supports the participants after their training (Katharina Erhardt, Prof. Dr. Götz Walter, p. 1). This app works in principle in such a way that the participants enter a virtual training room, in which a selection of possible targets for the learning transfer is already stored. This virtual training room is only open for the participants of the training. For each training, it is possible to create an individual virtual training room. The participants can either select goals from this room or define their own goals. The participant is instructed to create a routine similar to a course plan. It is possible to deposit photo protocols, seminar scripts or, other documents in the virtual training room.

The app reminds the participant of the routine with push-up messages from the smartphone or tablet. It is possible to evaluate the use of the app and obtain initial information about the status of the learning transfer.

A digital coach is implemented and answers individual questions of the users.

The figure on the right shows an example of the target selection for the seminar



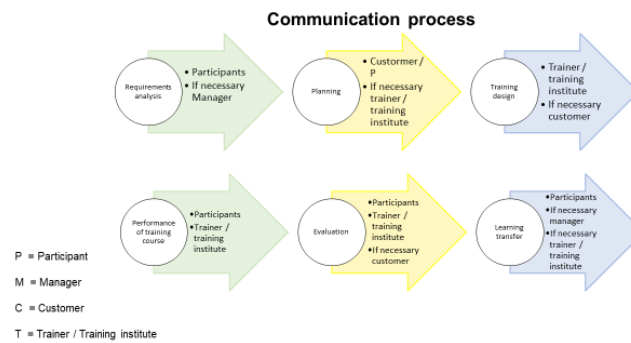
The participants have the possibility to select one of the stored objectives or to create their own. Behind each objective, a routine is defined. A routine has already been worked out for the stored targets and assigned to the respective target. The choice of objectives is the responsibility of the participant. The trainer cannot check whether the chosen objectives are suitable for a successful learning transfer. But he can support the participants in creating their objectives.

Below an example of the routine structure in the everskill app:

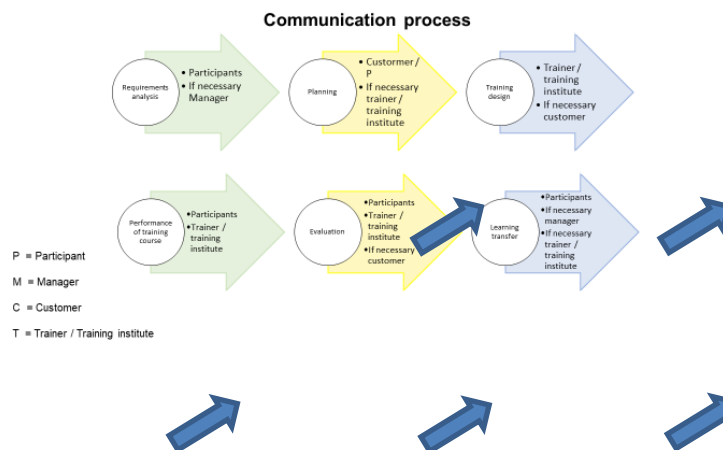
**Objective Title:** Desired state that the participant reaches through practice  
**Routine:** Repeatable action to achieve the goal  
**Instructions:** Specific instruction that describes how exactly the routine is executed Consisting of categories and steps

The app supports a successful communication process during the training design. The figure below shows schematically the communication process for continuing vocational training. If the continuing training provider is consulted as early as the planning stage of continuing vocational training, a better transfer of learning is achieved.

Fig



The following figure shows the communication process for continuing vocational training. The arrows visualize the possible field of application of the app.



## 5 Everskill Transfer Program as management tool for virtual leadership

In times of de-centralization and globalization of work processes, many organizations have responded to their dynamic environments by introducing virtual teams (Hertel et al., 2005, p. 69). There is no specific definition of virtual teams. As a minimal consensus, virtual teams consist of (a) two or more persons who (b) collaborate interactively to achieve common goals, while (c) at least one of the team members works at a different location, organization, or at a different time so that (d) communication and

coordination are predominantly based on electronic communication media (email, fax, phone, video conference, etc.) (Hertel et al., 2005, p. 71). It is important to mention that the last two criteria are a kind of dimension of virtual teams. In most virtual teams there are some members having face-to-face-contact. The author limits virtual leadership in this article to the leadership of virtual teams as defined above.

With the focus on leadership, virtual teams do have some characteristics. The manager does not have contact with each member of his team on a daily basis. This makes the central management task of developing employees more difficult.

The app is a helpful tool to underpin the communication between manager and employee. Several times a year, desired changes can be worked out and stored in the app. The app is a flexible instrument for this purpose and is not subject to the formal conditions of appraisal interviews during the year. Team goals can also be handled in the same way.

## **6 Conclusions**

In order to achieve a successful learning transfer, a seamless communication process within the training design is necessary. This means that already during the need analysis and planning of the training program all participants must be involved. It is important to define as precisely as possible how the successful learning transfer can be achieved and how it can be evaluated. The additional time required in the planning phase means that the desired training effects are closely linked to the planning and implementation of the training.

The use of an app supports the communication process sustainably. The app can be used to store training goals that are individually tailored to the organization and the training program, as well as to the participants. With the functions Feed and Knowledge center, the app also offers the possibility for participants to exchange information with each other and to store documents about the training.

The use of an app further increases the success of the learning transfer because the participants achieve a higher motivation by using the app in a self-determined way and putting what they have learned into practice in a goal-oriented manner.

The app's push-up messages regularly remind employees to pursue the agreed goals. In addition, each user can store their own goals and routines.

The evaluation of training programmes takes place on several levels. The most common instrument used to date to evaluate CVT is the feedback form. At the end of a training program, a spontaneous assessment of the participants is collected on the reaction level. The informative value is low and the added value of the training can only be read to a limited extent.

Since Kirkpatrick's research more than 50 years ago, further evaluation instruments have been developed with the ROI of Phillips or the VOI of Kellner.

The calculation of the ROI is based on algorithms. Apart from the problem of the lack of a clear definition of the variables (e.g. Program costs), the question arises, what is the significance of an ROI of 195%? From a business point of view, the ROI shows whether the benefit of the training program is higher than the investment sum. With

regard to the successful learning transfer, this value is only of limited use. The added value of a training program for organizations can only become visible at a later point in time.

The structured survey of the VOI achieves good results in this context.

Evaluation instruments such as ROI and VOI, their calculation and computation or determination require a relatively high expenditure of time and only obtain meaningfulness and relevance in connection with a clear description of the desired training goals.

In connection with the leadership of virtual teams, the app can be used as an effective management tool. The tasks of the virtual team are defined as training goals and stored in the app together with their routines. The possibility to evaluate the progress of the routines gives the management the possibility to monitor the team goals of virtual teams. In the context of annual meetings, target agreements can be stored in the app.

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