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Instructional skills for on-the-job training and experiential learning: an empirical study of Japanese firms

Makoto Matsuo¹

Despite the effectiveness of on-the-job training (OJT), few systematic empirical studies have been conducted on how OJT trainers instruct trainees in firms. The primary goal of this study was to investigate the characteristics of the trainer's instructional skills for OJT using survey data collected from 715 employees covering 22 firms. Results indicate that excellent OJT trainers use four types of instructional skills: (1) stretching trainee objectives, (2) monitoring their progress, (3) providing positive feedback, and (4) promoting reflection on results. The findings suggest that excellent OJT trainers facilitate trainees' experiential learning by promoting deliberate practice and reflective practice. Theoretical and managerial implications are also discussed.

Introduction

Based on empirical research on experiential learning (e.g. McCall et al., 1988), Lombardo and Eichinger (2010) proposed the '70/20/10 model', which states that 70 per cent of learning occurs through on-the-job experience, 20 per cent through coaching and feedback from others, and 10 per cent through formal learning and reading. The model indicates the importance of training and learning in the workplace in developing human resources in firms.

On-the-job training (OJT) is one of the important aspects of learning organizations because learning that is clearly relevant to the organizational needs is more likely to occur in an OJT setting (Aik, 2005). Past research has reported that OJT enhances the

¹ Makoto Matsuo, Professor of Management, Graduate School of Economics and Business Administration, Hokkaido University, Kita9 Nishi7, Kita-ku, Sapporo City, Hokkaido, Japan.
Email: mmatsuo@econ.hokudai.ac.jp

employees' organizational commitment, boosts their wage growth, increases productivity of firms and increases staff retention (e.g. Barron et al., 1999; Benson, 2006; Finegold et al., 2005). In particular, structured OJT, or the planned process of developing competence on units of work, has been shown to be more effective than unstructured OJT (Jacobs, 2003).

Despite the effectiveness of OJT for individuals and organizations, few studies have investigated how excellent OJT trainers instruct less experienced employees, although research on trainer effectiveness in classroom training exists (e.g. Williams, 2001). Knowing instructional skills for OJT is critical to developing OJT systems, because a number of experienced trainers are needed for implementing OJT in an organization (Aik, 2005). Another limitation of prior research is that OJT researchers have focused primarily on near transfer of training in which specific skills in a small part of the job are transferred from an expert to a novice (Kim & Lee, 2001). Considering that the nature of work is becoming more ill-defined and complex in today's business environment, it is important for managers to emphasize inductive OJT in which advanced problem-solving and independent learning skills for the whole job are transferred (Lohman, 2001).

The primary goal of this research was to clarify the characteristics of instructional skills for OJT in a broader context by comparing excellent and non-excellent supervisors using survey data from Japanese firms. This study contributes to the existing literature by examining instructional skills of excellent OJT trainers in terms of the experiential learning model (Kolb, 1984) and expertise research (Dreyfus & Dreyfus, 2005; Ericsson, 1996) in an exploratory way. Theoretical understanding of and empirical support for factors contributing to effective employee learning are critical levers for ensuring the effectiveness of training programs (Chen & Klimoski, 2007): because of this, the results of the present research may provide managers with insights on effective skills for OJT.

This article is organized as follows. First, the literature on OJT, training within industry (TWI), apprenticeships, experiential learning, reflective practices and the developmental model of expertise are reviewed. Next, research questions are proposed, based on the literature review. This is followed by research involving the survey. Finally, results are presented and discussed from theoretical and managerial viewpoints.

Theoretical background

OJT

OJT is generally defined as a form of training that occurs at the workplace during the performance of a job (Jacobs & Jones, 1995; Rothwell & Kazanas, 2004), usually involving one-on-one instruction (van Zolingen et al., 2000). Advantages of OJT include that: (1) there is a strong link between training and practice; (2) skills acquired on the job are learned more effectively; (3) it is cost-effective; (4) it can be delivered just in time; and (5) the transfer problem is minimized because training is given at the site where the employee will work (van Zolingen et al., 2000). OJT can also be a method that makes the employees' skills and knowledge less transient and more company specific, and thus cannot be used as readily in other companies (Ortenblad, 2006).

OJT can use a novice-to-expert approach in which the required skills are identified, the novice and expert are paired, and a way to move the novice closer to the level of expert is determined (Aik, 2005). Organizational socialization literature assumes that the interaction between newcomers and their supervisors plays an important role in newcomers' socialization and related adjustment to work (Jokisaari & Nurmi, 2009). For example, informal OJT is encouraged as a means of acquiring basic banking skills in UK retail banks (Antonacopoulou, 2006), whereas employees' OJT experiences have positive impact on the perception of job competencies in Chinese firms (Xiao, 2006). Jordan et al. (2009) suggested that continuous job rotation and OJT encourage novices to learn to adapt to various and varying teams, tasks, and environments. Benson (2006) also found that OJT enhanced employee's organizational commitment and lowered staff turnover.

Although there is limited research in this field (van der Klink & Streumer, 2002), the nature of OJT can be summarized in the following way. First, Jacobs (2003) distinguished structured and unstructured OJT. Structured OJT refers to the planned process of developing competence on units of work by having an experienced employee train a novice employee in the work setting or a location that closely resembles the work setting (pp. 28–29). Although structured OJT differs from unstructured OJT in making use of a planned process, most OJT has been relatively unstructured or unplanned (Jacobs & Osman-Gani, 1999). Mafi (2001) asserted that structured OJT has largely focused on technical training, rather than managerial training that provides individuals the ability to plan, organize, schedule and facilitate how work gets done.

Second, OJT has multiple forms, each of which can be structured to a lesser or

greater extent by prescribing and supporting the activities of trainees and their coaches (De Jong & Versloot, 1999). De Jong and Versloot (1999) focused on the relationship between trainers and trainees, and distinguished 'on-site instruction' in which a trainer demonstrates, explains and gradually hands over the tasks from 'on-site study' where the trainees actively explore and attempts the tasks that are to be carried out.

Third, the nature of OJT is determined by the transfer of training, or the extent to which individuals can apply what they have learned in one situation to another (Kim & Lee, 2001). Near transfer requires a close match between training and task content, a close match between the training and task outcomes, and an emphasis on specific concepts and skills; whereas far transfer requires an approximate match between training and task content, an approximate match between training and task outcomes, and an emphasis on the general concepts and skills (Kim & Lee, 2001). Kim and Lee (2001) argued that structured OJT has been used to achieve near transfer of training situations only because it does not involve an entire job.

Similarly, Lohman (2001) distinguished deductive from inductive OJT. In deductive training, strategy, new concepts, rules and procedures are presented to trainees, and then trainees receive guidance as they practice applying their new learning to a variety of job situations. In contrast, an inductive training strategy allows the trainer to lead the trainees through the process of solving an ill-structured problem in which trainees gather and analyze information about the problem situation, produce hypotheses about problem causes and solutions, and test hypotheses by applying them to new situations (Lohman, 2001).

TWI and apprenticeship

According to Jacobs (2003), many of the fundamental concepts of contemporary structured OJT come from TWI. TWI programs were developed in 1940 in the United States to support the World War II production effort, specifically for training the millions of people hired with no experience to replace workers who had entered the army (Wagner, 2009). Although TWI was very successful, it largely faded away after the war and is hardly used or even known about in the United States (Robinson & Schroeder, 1993). However, TWI is gaining renewed life among lean aficionados in the United States because TWI has been followed in Japanese manufacturing firms, including Toyota since the war, and became the basis of lean production systems (Usko, 2008).

TWI established the Job Instruction Training program, focusing primarily on the delivery of technical skills using the Job Instruction card based on the four-step

instruction model developed by Charles R. 'Skipper' Allen who had experiences as a vocational educator in shipbuilding during World War I (Jacobs, 2003). The four basic steps are as follows: (1) preparation (show: demonstrate to learners what they should do); (2) presentation (tell: explain to learners what they should do, and why they should do it); (3) application (do: allow learners to attempt the work); and (4) inspection (check: follow up with learners, providing praise for what they do right and specific feedback about what they should improve) (Dooley, 2001; Rothwell & Kazanas, 2004).

Based on this model, Channing R. Dooley, who was responsible for creating TWI, developed a seven-step training process (Jacobs, 2003): (1) show them how to do a task; (2) explain the key points; (3) let them watch you do it again; (4) have them do the simple parts of the job; (5) help them do the whole job; (6) have them do the whole job alone, but observe the work; and (7) put them on their own. Dooley believed that learning by doing was effective only when a highly involved trainer was on hand to guide the trainee, and that the intimate presence of another person was required to give the learning experience additional meaning (Jacobs, 2002).

TWI is closely related to the coaching method used in apprenticeships, consisting of modeling, scaffolding and fading (Collins et al., 1989). Apprenticeship still thrives all around the world as a key method for passing down professional crafts and skills from one generation to the next (Backus et al., 2010). In an apprenticeship, the apprentice repeatedly observes the master executing the target process (modeling), the master provides suggestions and helps the apprentice to carry out the entire composite of skills (scaffolding), and reduces participation and support until the apprentice is working on his/her own (fading). The interplay between modeling, scaffolding and fading aids the apprentice in integrating the skills and conceptual knowledge needed to advance toward expertise (Collins et al., 1989). The four stages of preparation, presentation, application and inspection in the TWI correspond to modeling, scaffolding and fading in the apprenticeship model.

The models of TWI and apprenticeship suggest that the trainer's instructional skills are essential for an effective OJT program. Van Zolingen et al. (2000) reported that the mentors' performance influenced successful implementation of the OJT program. They argued that mentors are expected to serve as a behavioral model, to provide feedback, arrange an adequate environment for self-study, motivate trainees for self-study and evaluate trainees' progress on a regular basis. Van der Klink and Streumer (2002) also identified that managerial support experienced during OJT is one of the most powerful predictors for training effectiveness. Additionally, Ericsson et al. (2007) argued that a capable coach who gives constructive feedback is essential for development of expertise,

whereas learners are frustrated and give up trying to improve if a coach pushes trainees too fast or too hard. The findings indicate that excellent trainers have effective instructional skills compared with non-excellent trainers. Thus, in this study, I propose the following research question:

RQ 1: How do the instructional skills of excellent OJT trainers differ from those of non-excellent OJT trainers.

Developmental model of expertise

Expertise research is crucial to investigate instructional skills because OJT is intended to transfer skills and knowledge from the expert to the novice. Past research on expertise has shown that a person needs at least 10 years of active involvement on a job to attain a reasonably good performance level (Ericsson, 1996; Simon & Chase, 1973). Ericsson (1996) called this phenomenon ‘the 10-year rule’ of necessary preparation. However, 10 years of work experience does not necessarily guarantee achievement of good performance. Ericsson et al. (1993) argued that deliberate practice is needed to achieve good performance outcomes. Deliberate practice refers to structured training activities that include well-defined tasks with a certain level of difficulty, informative feedback, and opportunities for repetition and error correction (Ericsson, 1996).

In describing the process of how a novice becomes an expert, Dreyfus and Dreyfus (1986, 2005) proposed a five-step model: novice, advanced beginner, competent, proficient and expert. The novice would start with no knowledge, to being able to make a reasonable attempt at performing the skill, whereas an expert has a deep understanding on both the task situations and responses. Cicmil (2006) applied Dreyfus and Dreyfus’s (1986) model to explain that: (1) the novice learns generalized rules through a given problem and situation; (2) advanced beginners understand the importance of the situation context; (3) competent performers can prioritize elements of the situation by learning from their own experience and from others; (4) proficient performers understand the interpretation and judgment involved in decision-making in addition to performing logical and analytical problem solving; and (5) an expert understands the situation intuitively and holistically.

Regarding the development of teachers, Berliner (1988) stated that it takes 2 or 3 years experience to become an advanced beginner, 3 or 4 years to become competent, and more than 5 years to become proficient. Similarly, Benner (2001) argued that 2 or 3 years were required to become a competent nurse, and 3 to 5 years to become a proficient nurse. Based on these insights, our study focused on employees with less than

5 years experience, who need OJT to become competent or proficient performers. It was assumed that employees with less than 1 year experience are at the novice level, whereas employees with 1–5 years experience are at the advanced beginner–proficient level.

Because the contents and methods of OJT may depend on the expertise level of trainees, it is predicted that OJT trainers use different skills for employees with different levels of experience. Thus, the following research question was proposed:

RQ 2: How do OJT trainer instructional skills for newcomers with experience of less than 1 year differ from those for employees with 1–5 years experience.

Experiential learning

Although systematic research is limited, OJT has recently received renewed interest under the label of ‘workplace learning’ from both practitioners and researchers (Riding & Mortimer, 2000). Considering the importance of work experience for adult development, instructional skills for OJT should be investigated in terms of the experiential learning process.

Kolb (1984) defines learning as the process whereby knowledge is created through the transformation of experience, and proposed a four-stage cyclical model: (1) concrete experience, (2) reflective observation, (3) abstract conceptualization and (4) active experimentation. This suggests that immediate personal experience is the basis for observation and reflection, and these are assimilated into abstract hypotheses or concepts. Next, these hypotheses or concepts guide learners to create new experiences. Experiential learning is a process described as an idealized learning cycle where the learner touches all the stages in a recursive process that is responsive to the learning situation (Kolb & Kolb, 2005).

The Kolb model is one of the most influential models in management learning, and has received a large amount of empirical support (Kayes, 2002; Mainemelis et al., 2002; Meyer, 2003; Ng et al., 2009; Vince, 1998). Empirical research conducted at the Center for Creative Leadership has shown that experiential learning is most profound when it stretches people’s boundaries and takes them to the edge of their comfort zones (McCauley et al. 1998; Mirvis, 2008). The experiential learning model has been applied to the field of training and development (e.g. Armstrong & Mahmud, 2008; DeGeest & Brown, 2011; McAndrew & Phillips, 2005; Mirvis, 2008).

This model implies that the reflective practice proposed by Schön (1983) plays an important role in experiential learning. Reflective practice includes not only

ex-postfacto reflection, in which one looks back and thinks about the day or the situation at hand but also reflection within the immediacy of practice (Raelin, 2002; Yanow, 2009). Schön (1983) called the latter type 'reflection in action', or on-the-spot surfacing, criticizing, restructuring and testing of intuitive understandings of experienced phenomena. The reflective practitioner explores other ways of seeing and adopts an attitude of inquiry rather than determining answers based solely on positional authority (Yanow & Tsoukas, 2009). Consequently, experiential learning with reflective practice urges us to convert tacit experience into explicit knowledge, leading to an understanding of experiences that may have been overlooked in practice, allowing us to critique our taken-for-granted assumptions, and receive alternative ways of reasoning and behaving (DeFillippi, 2001; Gray, 2007; Raelin, 1997).

Some empirical studies have demonstrated the importance of reflective practice in facilitating learning in the workplace. For example, Edmondson et al. (2001) studied 16 hospitals implementing an innovative technology for cardiac surgery, and reported that successful implementers promoted shared meaning and process improvement through reflective practice. Peltier et al. (2005) also found that MBA students' reflection and intensive reflection were positively correlated with their program outcomes.

As reviewed above, experiential learning is essential for personal growth. Thus, the following research question was proposed:

RQ 3: How do excellent OJT trainers promote experiential learning of trainees?

Research framework

In the existing training literature, the coaching design elements (e.g. trainee-to-trainer ratio, feedback delivery, amount of time devoted to training and general training methods) have been examined (Day et al., 2006). However, little study has been conducted on the instructional skills for OJT trainers.

In investigating instructional skills for OJT, the present research proposed the framework shown in Figure 1. This framework is based primarily on Kolb's (1984) experiential learning model and PDCA cycle, which are closely linked to each other. Specifically, the four steps of PDCA correspond to those of Kolb's (1984) model: concrete experience (Do), reflective observation (Check), abstract conceptualization (Act) and active experimentation (Plan). The experiential learning model was incorporated into the framework because work experience is a major determinant of adult development, as reported in previous empirical studies (McCall et al., 1988; Morrison & Brantner, 1992; Morrison & Hoch, 1986).

The PDCA cycle was adopted in establishing the framework because this study focuses on OJT not only for specific skills but also for general skills that can be used for solving problems in the workplace. The PDCA cycle developed by Shewhart (1931, 1939) is commonly applied as a problem-solving model in the context of the management of quality (Choo et al., 2007a, 2007b; Deming, 2000), which is widely applied in the workplace of many firms. In the PDCA cycle, quality improvement will be effective if improvements start with a good plan (Plan), activities necessary to achieve the plan are implemented (Do), results are checked (Check) to understand the causes of the results and actions (Act) are taken to improve the processes (Dahlgaard & Kanji, 1995). The PDCA model has been applied not only in quality management but also in security (Tang, 2008) and project management efforts (Srivannaboon, 2009).

Drawing from the literature of the PDCA cycle, experiential learning and problem solving, this study developed the framework of an OJT process consisting of seven steps: Goal setting (P), action planning (Plan), implementing tasks (Do), dealing with problems (Do), assessing the results (Check), extracting lessons (Act) and setting next goals (Act). The present research measured instructional skills based on the seven-step OJT process shown in Figure 1.

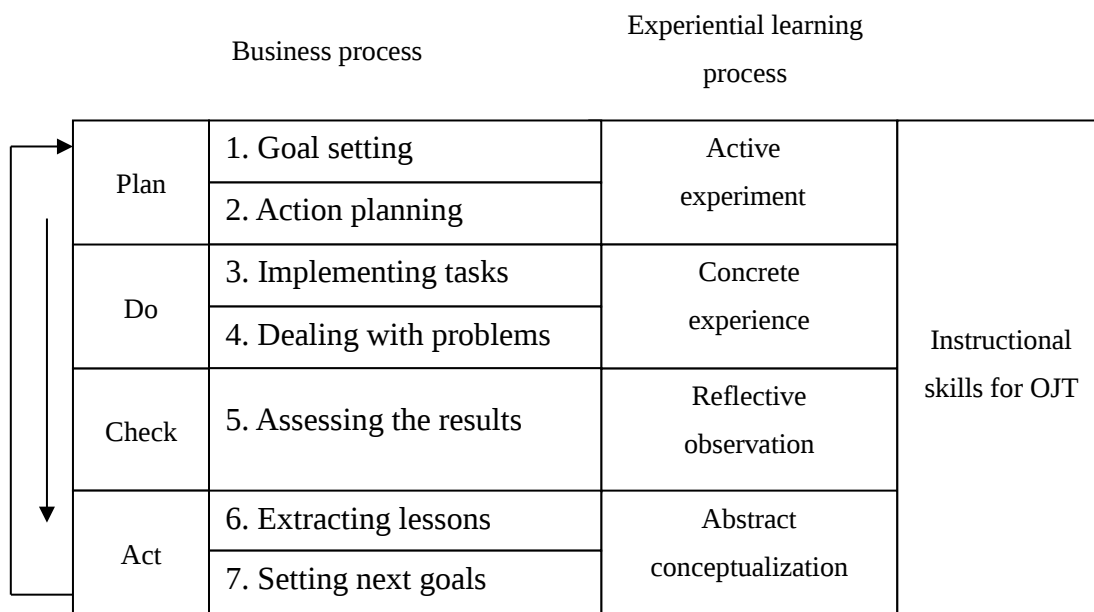


Figure 1: Framework for OJT process.

One advantage of this framework is it overcomes the limitations of Kolb's (1984) experiential learning model. As suggested earlier, Kolb's (1984) model has been

criticized because of its emphasis on the centrality of individual experience at the expense of psychodynamic, social and institutional aspects of learning (Kayes, 2002). Applying Kolb's learning model to OJT research, it may help in clarifying social aspects of the experiential learning process.

Methodology

Preliminary research

To collect data on instructional skills for OJT, an open-ended questionnaire and interviews were conducted on 18 employees who have a reputation for being excellent OJT trainers in seven large-scaled organizations in insurance, real estate, publishing, consulting, mobile phone, retail and manufacturing firms. The questionnaire asked them to describe their coaching behaviors or methods, based on the framework of the seven step OJT process. To collect more detailed information, interviews were then conducted on how they instructed less experienced employees. All interviews were recorded and transcribed. The length of the interviews varied from 1 to 2 h; a typical interview was 80 min. From the open-ended questionnaires and interview data, 141 items of instructional skills were extracted. Based on this preliminary research, a quantitative questionnaire for measuring instructional skills was developed.

Sample

Using the questionnaire developed during the preliminary research, surveys were conducted in employees who were nominated as OJT trainers for young employees (less than 5 years experience) in 22 medium and large firms. The firms included manufacturers (73.1 per cent; industrial goods, consumer goods) and non manufactures (19.6 per cent; retail, financial, information technology, service, others). The human resource management (HRM) departments of the firms were asked to select OJT trainers to respond to questionnaires posted on a designated website. From the 738 questionnaires completed, 715 questionnaires were considered usable after removing missing answers.

Of the participants, 91.7 per cent were men and 8.3 per cent were women. The average age of the participants was 37.7 years old [standard deviation (SD) = 7.2], and the average tenure was 14.1 (SD = 8.4). The participants belonged to the following departments: sales and marketing (37.0 per cent), production (18.6 per cent), R&D (17.4 per cent), HRM and accounting (6.5 per cent), IT (3.4 per cent), and others (17.1 per cent). In the questionnaire, participants were required to assess their own instructional

skills for OJT. To obtain data on their coaching capabilities as OJT trainers, the surveys were also completed by their superiors. The average age of the superiors was 45.6 years old (SD = 5.6).

Measures

The superiors of the OJT trainers were asked to assess coaching capabilities of the trainers covering the following two questions: 'Does the individual have a reputation for providing good instruction in the workplace?' and 'Does the individual have a reputation for training subordinates/juniors?' The responses to these questions were measured using a seven-point Likert scale (1 = strongly disagree, 7 = strongly agree). The average score for the construct was used in the analyses. The Cronbach's alpha for the variable was 0.93. Based on the assessment of coaching capabilities, the trainers were grouped into excellent trainers (rating 6 or 7; $n = 544$) and non-excellent trainers (rating below 6.0; $n = 171$).

OJT trainers were asked to rate the experience of the trainees. Based on these data, OJT trainers were grouped into those who instruct newcomers with less than 1 year of experience ($n = 385$, 53.8 per cent) and those who instruct employees with 1–5 years experience ($n = 330$, 46.2 per cent).

OJT trainers were asked to assess their instructional skills on a seven-point Likert scale (1 = strongly disagree, 7 = strongly agree). From the preliminary research, 141 items of instructional skills were extracted. The procedure and results of scale development are described in the next section.

Results

In developing measurement scales of instructional skills, a procedure based partly on Churchill's (1979) scale-development paradigm was adopted. First, a correlation analysis was conducted between each of the coaching skill items identified in the preliminary research (141 items) and the coaching capabilities (an average of the two items). Second, coaching skill items that were significantly correlated with coaching capabilities were selected ($p < 0.01$). Third, factor analyses (principal factors method with oblique rotation) were conducted with the remaining instructional skills items. Items were eliminated when loadings fell below 0.40 on a specific dimension, and when the Cronbach's alpha of a dimension increased if the item was deleted. The face validity of the dimension was also examined in selecting items. This procedure was repeated until the Cronbach's alphas of all factors were above 0.70.

By this procedure, four dimensions containing 23 items were extracted: 'promoting

reflection of results', 'monitoring progress', 'providing positive feedback' and 'stretching objectives' (Table 1). The four dimensions identified are closely related to the model of experiential learning and the PDCA cycle as follows: stretching objectives (active experimentation, Plan), monitoring progress (concrete experience, Do), promoting reflection of results (reflective observation, Check and Act) and providing positive feedback (abstract conceptualization, Check and Act). Items at the stage of 'action planning' and 'dealing with problems' were not included in the dimensions.

The internal consistency of the constructs was evaluated by the alpha coefficient (Table 2). The Cronbach's alpha for these dimensions ranged from 0.83 to 0.91, which met the recommended reliability coefficient of 0.7 (Nunnally, 1978).

To evaluate the convergent validity of the model constructs, a confirmatory factor analysis with latent constructs of instructional skills and coaching capabilities (a total of 25 measures) was conducted. The results showed that all items significantly loaded on the respective constructs ($p < 0.001$), and the goodness-of-fit statistics for the model were as follows: $\chi^2 = 972.4$ ($p < 0.001$), degrees of freedom = 265, goodness of fit index = 0.90, comparative fit index = 0.92, root mean square error of approximation = 0.06 and Tucker–Lewis index = 0.92. All these statistics were within acceptable ranges, indicating a good model fit. The results provide evidence of convergent validity. The average score for the construct was used in the following analyses.

To examine the research questions, a multivariate analysis of variance (MANOVA) was used to control for Type I errors because of the significant correlations at $p < 0.01$, ranging from 0.49 to 0.67, among the dependent variables. The MANOVA allowed testing results for the four factors of instructional skills as a whole. A two-way MANOVA with coaching capabilities of trainers (excellent, non-excellent) and the experience of trainees (less than 1 year, 1–5 years) as the independent variables and the four dimensions of instructional skills as dependent variables was conducted.

Results indicated that the main effects of the coaching capabilities of trainers and the experience of trainees were both significant ($F(4, 708) = 3.48$, $p < 0.01$, and $F(4, 708) = 4.54$, $p < 0.01$, respectively). No significant interaction effect of coaching capabilities of trainers and the experience of trainees was found ($F(4, 708) = 0.90$, ns).

To determine the specific nature of the main effects, two-way analyses of variance with coaching capabilities of trainers (excellent, non-excellent) and the experience of trainees (less than 1 year, 1–5 years) as independent variables were undertaken. Table 3 shows the averaged scores of four types of instructional skills between excellent and non-excellent trainers, as well as between newcomers with less than 1 year of experience and young employees with 1–5 years experience. Table 3 indicates that

excellent trainers use all four dimensions of instructional skills more frequently than non-excellent trainers, and that trainers for newcomers ‘promote reflection of results’ and ‘stretch objectives’ less frequently and ‘monitor progress’ more frequently than trainers for young employees with 1–5 years experience.

Table 1: Instructional skills for on-the-job training Instructional skills Factor

Instructional skills	Factor loadings	Business process
F1: Promoting reflection of results		
Get the trainee to recognize the patterns of both success and failure in order to establish an awareness of these patterns	0.77	6
Get the trainee to consider the reasons for success or failure regardless of the result	0.75	6
Get the trainee to think about a more efficient way of performing the task even if the outcome was successful	0.73	5
Instruct and assess the trainee in such a way that he/she does not become complacent about his/her current ability	0.72	5
Pay attention to whether the trainee has set targets and objectives based on a correct understanding of the reasons for previous success or failure	0.66	7
Guide the trainee to self-reflect and fully understand the reasons for success or failure	0.61	5
Get the trainee to consider measures through which to accomplish tasks which he/she was not able to do	0.56	6
Get the trainee to explain in his or her own words the actions and policies through which to achieve the results	0.52	5
F2: Monitoring progress		
Check the trainee’s work progress	0.82	3
yourself	0.74	3
Create an environment that allows for trainee efforts to become visible by allocating enough time for the trainee to report on work progress	0.69	3
Hold regular, individual meetings to find out about the trainee’s progress	0.57	3
F3: Providing positive feedback		
Praise the trainee first and then convey what needs to be improved	0.82	5
Even when pointing out problems, finish the meeting with a positive assessment	0.71	5
itself	0.70	5
Praise the trainee’s efforts regardless of the result	0.69	5
When you have identified an aspect of the trainee’s everyday tasks where you think he/she has shown improvement, immediately inform the trainee of this	0.42	6
F4: Stretching objectives		
Get the trainee to set and balance different levels of objectives (those he/she can attain at the current skill level, and those he/she can attain with some extra effort)	0.72	1
Get the trainee to stretch his/her objectives if they are limited	0.70	1
currently has	0.68	1
Get the trainee to understand what kind of skills can be acquired by performing tasks	0.62	1
Inform the trainee that you expect him/her to improve his/her skills by performing the current task	0.60	1
Get the trainee to consider long-term objectives in addition to short-term goals	0.55	1

Note1: Principal factors method with oblique rotation

Note2: 1=Goal setting; 2= Action planning; 3=Implementing tasks; 4=Dealing with problems; 5=Assessing the results; 6=Extracting lessons; 7=Setting next goals

Table 2: Descriptive statistics and correlations

Variables	Number of items	Mean	SD	Coefficient alpha	1	2	3	4	5
1. Instructional capabilities of trainers	2	4.78	1.09	.93					
2. Experience of trainees	1	1.46	0.50	-	-.22 **				
3. Promoting reflection of results	8	4.71	1.10	.91	.08 *	.04			
4. Monitoring progress	4	4.97	1.27	.83	.13 **	-.10 **	.55 **		
5. Providing positive feedback	5	4.90	1.13	.85	.11 **	-.02	.66 **	.49 **	
6. Stretching objectives	6	4.77	1.08	.83	.09 *	.03	.67 **	.53 **	.54 **

Note1: n=715.

Note2: Experience of trainees (1= first year; 2= 2nd-5th years)

Table 3: Comparison of instructional skills for OJT

Instructional skills	Instructional		F	Experience of trainees		
	Excellent	Non-excellent		Less than 1 year	1-5 years	F
Promoting reflection of	4.90	4.66	5.68 *	4.70	4.87	2.75 +
Monitoring progress	5.28	4.86	13.28 ***	5.18	4.97	3.36 +
Providing positive feedback	5.08	4.84	5.71 *	4.97	4.96	0.01
Stretching objectives	4.96	4.71	6.38 *	4.76	4.93	3.00 +

Note: + p <.10; * p <.05; ** p <.01; *** p <.001

Discussion and conclusions

The primary goal of this article was to clarify the characteristics of instructional skills of excellent OJT trainers. The results revealed that excellent OJT trainers facilitate trainee's experiential learning by stretching trainees' objectives, monitoring their progress, providing positive feedback and promoting reflection of results more frequently than non-excellent trainers.

Theoretical implications

A major finding of this study is to clarify the dimensions of instructional skills for OJT in terms of experiential learning theory (Kolb, 1984; Kolb & Kolb, 2005) as well as the PDCA cycle (Deming, 2000; Shewhart, 1931, 1939). Figure 2 shows a model of instructional skills for OJT, suggesting that four dimensions of instructional skills facilitate experiential learning by trainees. Specifically, OJT trainer skills of stretching objectives, monitoring progress, promoting reflection of results and providing positive feedback promote the experiential learning cycle.

The theoretical contribution of this study to the OJT literature can be summarized as follows. First, deliberate practice (Ericsson et al., 1993; Keith & Ericsson, 2007) plays

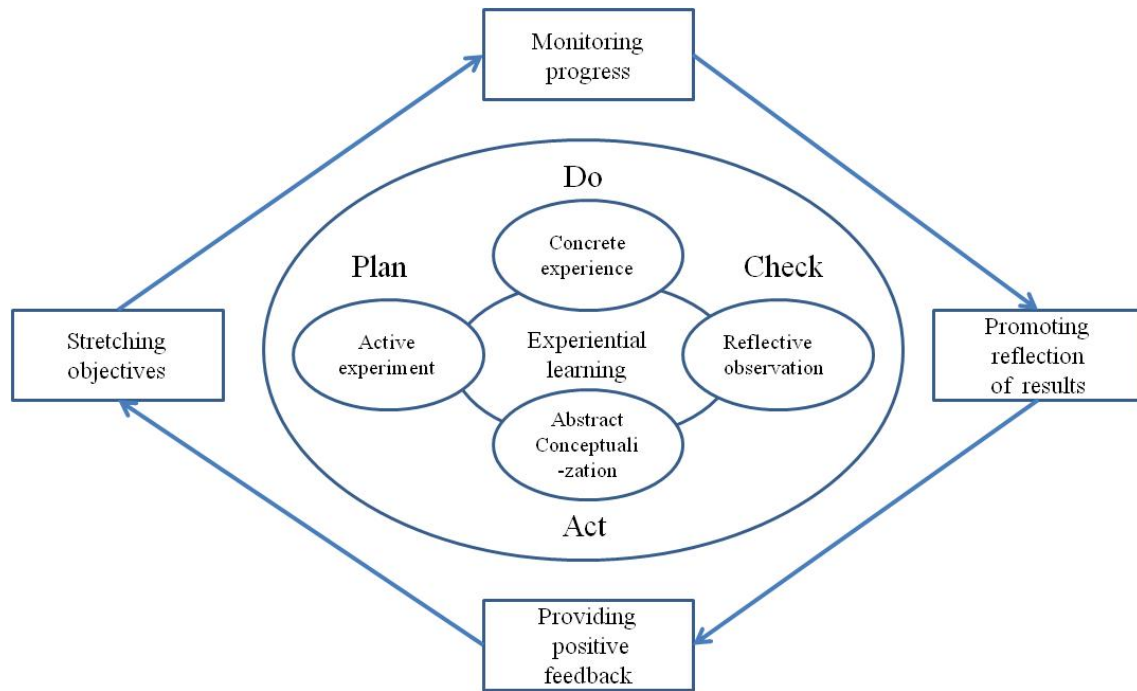


Figure 2: Model of instructional skills for OJT.

an important role in facilitating a trainee's experiential learning in the OJT setting. Deliberate practice includes: (1) well-defined tasks with a certain level of difficulty, (2) informative feedback, and (3) opportunities for repetition and error correction (Ericsson, 1996). The model of this article indicates that excellent OJT trainers help trainees to engage in tasks with a certain level of difficulty by stretching the trainee's goals, giving them informative feedback, monitoring progress and providing positive comments, and correcting their errors by encouraging them to reflect on their results. Although past empirical work reported positive effect of deliberate practice on individual performance in several fields, such as sports (e.g., Hodges et al., 2004), music (e.g., Ericsson et al., 1993) and insurance agents (Sonnentag & Kleine, 2000), this study may be the first reported research examining deliberate practices in the OJT setting.

Second, this paper demonstrates the importance of reflective practice (Schön, 1983) in facilitating trainees learning from their experiences. A dimension 'promoting reflection of results' refers to instructional skills that urges trainees to think about the reasons for successes or failures and to set the next goals. This may correspond with 'reflection on action', in which one sits back and thinks about the day or the situation at hand (Schön, 1983; Yanow, 2009). By promoting the trainee's reflection on results, trainers may help trainees to explore other ways of seeing and adopting an attitude of

inquiry from past experience (Yanow & Tsoukas, 2009).

Third, this study highlights the need for positive feedback in facilitating experiential learning. The scale of 'providing positive feedback' developed in this study indicates that excellent trainers try to find good points even when pointing out problems. This can be interpreted as positive feedback promoting the trainee's learning by enhancing self-efficacy (Bandura, 1997) and intrinsic motivation (Ryan & Deci, 2000). Past studies in educational psychology found that positive feedback, such as verbal praise or positive evaluations, by teachers is beneficial to intrinsic motivation and self-efficacy when it encourages performance attributions to controllable causes and promotes autonomy and self-regulation (Cameron & Pierce, 1994; Hattie & Timperley, 2007; Henderlong & Lepper, 2002). The results indicate that positive feedback is crucial not only for school education but also in adult learning.

Fourth, this research provides evidence that skills of excellent OJT trainers are different from those used in TWI (Dooley, 2001) and apprenticeships (Collins et al., 1989). Specifically, the model of TWI (preparation, presentation, application and inspection) and apprenticeship (modeling, scaffolding and fading) emphasize attentive coaching methods, such as showing trainees how to do a task and helping them do the job, whereas the OJT trainers examined in this study do not transfer specific work skills. This may be because the main purpose of TWI and apprenticeship is to transfer specific skills and knowledge to trainees, whereas OJT trainers for white collar workers emphasize transferring general skills and knowledge, such as problem-solving skills. The findings suggest that OJT trainers in the present research may adopt an inductive training strategy, in which the trainer leads the trainees through the process of solving an ill-structured problem, and urges them to develop hypotheses about problems' causes and solutions, and to test hypotheses by applying them to new situations (Lohman, 2001).

Fifth, the results revealed that the learner's career stage influenced the methods of instruction. Trainers who instruct newcomers with less than 1 year of experience emphasized monitoring progress while they restrained promoting reflection of the results and stretching objectives. Specifically, this can be interpreted as OJT trainers reducing pressure or stress on newcomers who cannot fully understand the situations, whereas trainers encourage trainees with some experience to set higher objectives and to reflect the causes of success or failure. This suggests that OJT trainers may consider the stage of expertise (Dreyfus & Dreyfus, 1986, 2005) in instructing less experienced employees.

Finally, the present research contributes to the experiential learning literature by

expanding its research context from individual learning to workplace learning in which trainees learn from experience under the supervision of trainers. Despite its popularity, Kolb's (1984) experiential learning model has been criticized because it focuses heavily on an individualized perspective at the expense of social influences (Holman et al., 1997; Kayes, 2002; Reynolds, 1999). The model of this study provides a framework that examines experiential learning from the viewpoint of OJT.

Managerial implications

The present research has some managerial implications. First, HRD managers should design OJT programs or systems based on experiential learning theory. OJT trainers can support trainees to learn from their experience in line with the four-stage learning cycle: concrete experience, reflective observation, abstract conceptualization and active experimentation. Because the experiential learning cycle is closely interrelated with PDCA, it may be easier for HRD managers and trainers to understand the experiential learning process in terms of PDCA as it may be more familiar to practitioners.

Second, the model developed in this study may be useful for establishing the competency model for OJT in firms. Although OJT is a frequently used training method in firms because of its advantages, it is also one of the most poorly implemented (Sullivan & Miklas, 1985). To provide effective OJT, trainers should note the competency that consists of goal setting, monitoring, positive feedback and reflection, which are combined to promote trainees' experiential learning. Additionally, it is essential for OJT trainers to understand the importance of deliberate practice or reflective practice as a principle of OJT.

Finally, the measurement scales of instructional skills for OJT can be used as a manual by which trainers learn instructional skills in formal training programs or in the workplace. Because trainers usually instruct only one person at a time, a large number of experienced trainers is needed for OJT (Aik, 2005). The training manual based on this scale may provide trainers with a standard by which effective OJT can be implemented.

Limitations and future research

The limitations of this study should be acknowledged. First, because this study investigated instructional skills in an exploratory way, further research is needed to test the relationship between the four dimensions of instructional skills and other related concepts. In particular, the effects of instructional skills on deliberate practice, reflective practice and experiential learning style should be examined in future research.

Second, although this study was based on a large survey, the data were limited to employees of some Japanese firms. To ensure the generalizability of the findings, data from other countries are necessary, and it would be particularly interesting to examine the possible effects of national culture on instructional skills.

Third, coaching capabilities of trainers were measured using data collected from their supervisors in this study. It would be useful to include multiple assessments from other managers or colleagues that would enhance measurement validity.

Finally, the present research examined instructional skills based on quantitative surveys. It would be interesting to analyze how OJT instructors facilitate experiential learning of trainees with qualitative studies.

Despite these limitations, the empirical evidence reported here may stimulate studies on OJT and experiential learning. This study revealed four dimensions of instructional skills that may facilitate experiential learning. Continued research into the mechanism should advance our understanding of successful OJT within organizations.

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