International Education Studies; Vol. 10, No. 1; 2017
ISSN 1913-9020 E-ISSN 1913-9039
Published by Canadian Center of Science and Education

Design, Explanation, and Evaluation of Training Model Structures Based on Learning Organization—In the Cement Industry with a Nominal Production Capacity of Ten Thousand Tons

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Received: May 27, 2016 Accepted: June 30, 2016 Online Published: December 26, 2016

doi:10.5539/ies.v10n1p163 URL: http://dx.doi.org/10.5539/ies.v10n1p163

Abstract

This research aims to determine the effectiveness of training based on learning organization in the staff of cement industry with production capacity over ten thousand tons. The purpose of this study is to propose a training model based on learning organization. For this purpose, the factors of organizational learning were introduced by qualitative research in the form of open codes, axial codes, selective codes and the resulted observations, and then the final model was obtained by structural equation model. The data were collected from the staff of three cement companies of Abyek, Tehran, and Sepahan, with a statistical population of 1719 staff of cement industry. The qualitative research sample included 29 experienced experts in the field of cement industry, and the quantitative research sample included 326 staff and experts, who were selected by multi-stage cluster sampling. A self-made questionnaire consisting of 72 questions was used to measure quantitative variables. The reliability of the questionnaire was 0.93 and its content and face validity was determined by expert colleagues and professors, the structural equation model and regression was used to analyze the quantitative data. The results showed that the status of learning organization in cement companies is in average level. Finally, the obtained model consisted of both individual and organizational factors. The individual factors affecting organizational learning include teaching scientific content, perception, trust, and self-efficacy of training. The organizational factors affecting organizational learning include organizational culture, forming the structure, the method of management and leadership, preparing human resource (identity), adaption to the environment, policies, rules, and regulations, and achieving a viable product. The share of individual factors on learning organization is higher than the effect organizational factors; the share of each factor is also determined.

Keywords: learning organization, organizational learning, individual factors affecting learning organization, organizational factors affecting learning organization, training model

1. Introduction

Organizations have always faced many changes in different environmental and technological aspects, so they need to learn and implement the new science and technology in order to adapt to these changes and survival. This has increased the dependence of organization on knowledge as a competitive advantage. Continues learning and development is ongoing need for all staff.

The necessity of gaining knowledge and continues learning, as key elements of success in the new economy for transition from industrial society to a knowledge-based society, and acquiring critical elements of competition and implementing knowledge management as a process through which an organization can produce value for its assets based on the knowledge of modern business, has forced organization to pay attention to the importance of training as a key issue to achieve sustainable competitive advantage by modernizing their trainings, so that elimination of barriers to organizational learning process becomes a priority (Zunic et al., 2012). Training focuses on the result and output of learning process, and a learning organization focuses on the learning process. The learning organization acts as the learning process for organizational learning. In fact, it is something more than mere training and focuses on higher levels. Training can be a sub-system of learning organization, and it has a significant effect on learning organization (Ojestem, 2006). Measuring the amount of learning in an organization is one of concerns of its managers, and the productivity increases by increasing production

technical knowledge. Therefore, there is a need to investigate learning status in the organization and identify the effective factors and their share.

2. The Framework of Learning Organization and Training Process

Argris and Schon (1978) introduced the concept of organizational learning for the first time in 1978 and believed that like human, an organization is capable of learning. Senge (2006) confirmed this concept and was one of the main drafters of it. Garvin (1993), Karash (1995), Warel (1995), Fenowic and Steins (1999), Weber (2000), and Farman (1996) are some scholars and experts in this fiels. In a research about learning organizations, Kashing showed that in order to meet various demands of the customers, an organization has to proceed to a learning organization, and its manager has to provide means for progress staff and enhancing team learnings in the organization. In addition, he has to create and environment in the organization that induces learning. In an experimental research entitled *investigating the relationship between learning organization and changing adaption and innovation in organizational performance*, Kontoghiorhes et al. (2004) found that the aspects of the learning organization are the most powerful predictors of quick adaption to changes, production with rapid service delivery and organizational performance in the context of operation. These aspects are: open communication and exchanging information, improving risk-taking and new ideas, the availability of information and facts, time and resources to accomplish a professional job (Kontoghiorhes et al., 2004). In the study of work-based learning, Velzen et al. (2012) studied the research participants of this approach and its components as a suitable tool for directed work-based learning. In his research, Ojestem introduces knowledge management as the sub-system of learning organization. Marquard (2002) provides a more accurate description of the role of knowledge management, as a sub-system of learning organization, in the effectiveness of learning organization. Krikor et al. (2013) state that learning organization and learning process have separate and different levels in concentration and goal. Therefore, the order of changes in knowledge would result in some changes in the organization and vice versa, because knowledge is effective on improvement of the learning organization. The strong relationship between these two concepts is absolutely clear, and the process of transforming an organization into a learning organization must include training management. In their research entitled *identifying the high potential talent in organizations*, Lombardo, Eichinger, and Capretta (2010) confirmed that the role of organization managers get more complicated and people need to become flexible, adaptive and capable of learning from experience. Management potential is a function based on the ability to learn from experience, and identification of leadership talent depends on the ability to learn and adapting to the new demands of individuals' roles rather than the former performance of them in their roles.

Different approaches have been proposed to measure learning in a learning organization. Michenson (2012) emphasizes on behavior based on cognition. So, learning in a learning organization is mainly measured practically by observable behavior. Some advantages of this measurement approach are facilitation and ease of use by the organization. In addition, since the behaviors are easily observable, the behavioral statements can be evaluated by the individual's and colleagues' goals. This capacity is useful for both organizations and individuals. Behavioral feedbacks leads to specific actions which help organization staff in organizational learning. Learning is conducted in individual, team, and organizational levels and although it doesn't guarantee staff's organizational learning, organizational learning wouldn't be achieved without it. In other words, individual learning is necessary, but not enough for organizational learning.

Peter Senge believes that learning is a process through which the capacity of members are extended and aligned, so that its results are something every body truly wanted. Organizational learning is achieved by sharing knowledge, experience, and intellectual models of organization members. Individual factors emphasizing utilizing books and other documents, mentoring by others, interpretation of the learning experiences, self-learning, learning from computer, etc. in terms of personal development program, along with organizational factors focusing on sharing this knowledge and experiences, altogether acknowledging the importance of studying these factors is the learning organization. Cyclic and repetitive structure of this approach, group discussion and lesson planning were some of the significant features of a learning organization. Valuation for expertise of consultants, which is the basis of this approach, is the next important feature. Individual conditions included willingness to discuss and explain the actual teaching and learning from each other. Time was one of the important organizational conditions which were regarded as the supporter of cooperation with school teachers. Although some aspects of a learning organization (aspects related to individual factors) cannot be easily changed, some of its aspects can be extended and promoted. Generally, staff who possess features such as tolerance, ability to learn from experience, willingness to change, proper reaction to quit habitats and routines, and a strong need for development show a higher level of organizational learning (Rego, 2010). There are some methods to develop these features in the staff who don't have the necessary skills to develop organizational

learning, which are described below:

1) By developed knowledge, including books, classes, and practical trainings useful for acquiring proper information.
2) By peer learning, such as using information from mentors and experienced people who can encourage others to analyze different beliefs and challenge attitudes.
3) Direct experience or try and error, which helps people by searching first hand results to develop a clear picture of how events will occur.
4) Thinking about past experiences, which aim to visualize insights from previous experiences by providing a suitable background.

3. Assumptions

H1. Training based on this model enables the realization of the learning organization.

H2. Training based on this model increases the effectiveness of training.

H3. There is a significant relationship between organizational culture and training effectiveness.

H4. There is a significant relationship between forming the organizational structure and training effectiveness.

H5. There is a significant relationship between management and leadership style and training effectiveness.

H6. There is a significant relationship between preparing of human resources (identity) and training effectiveness.

H7. There is a significant relationship between adaptation to the environment and training effectiveness.

H8. There is a significant relationship between policies, rules, and regulations and training effectiveness.

H9. There is a significant relationship between achieving a viable product and training effectiveness.

H10. There is a significant relationship between organizational learning and the training provided.

4. Methodology

The mixed approach (qualitative and quantitative research) was used to carry out the research operations and data analysis.

The statistical population of this research was over 1719 staff of cement industry (three companies) with the production capacity above ten thousand tons. The Research community consisted of the technicians, experts and specialist managers. By specialist, we mean people with more than five years' experience, who have implicitly recorded their experience and knowledge or have some papers in the industry. 326 samples were selected from three companies participating in the research by cluster sampling. First, those technicians and experts who had experiences in the context of training and documented knowledge were randomly selected for the interview by multi-stage cluster sampling. Then, based on theoretical sampling, each interviewee was asked to introduce experts and specialized engineers who they think can be helpful for this research. The number of interviewed samples was determined according to the principle of saturation in sample volume (Glaser & Strauss, 1967; Strauss & Corbin, 1998). According to this principle, when the researcher finds out that further interviews don't provide additional information and are merely a repetition of previous information, they will stop gathering information. The interview process included 29 persons (16 technicians, 9 experts, 4 managers) from three cement companies of Abyek, Tehran, and Sepahan, which consisted of 4 women and 24 men.

4.1 Research Tools

In this research, interviews and questionnaires were used to collect information. Semi structure interview was performed on 29 technicians and experts. The procedure of doing so was to elaborate the interview subject and purpose of this research, prior to conducting the interview, via e-mail, phone call, or meeting. The duration of each interview was approximately 35 minutes to 60 minutes.

Designing the questions of interview is important in the Grounded Theory approach. For this purpose, the researcher designed the interview questions according to the research goals (since the interview were semi structured, further questions were asked during the interview to elaborate different aspects a question in case it was necessary). The number of questions in the interview was seven, the first three of which were designed to find out about the components of a learning organization, and the next four questions were designed to determine the factors affecting the learning organization by training. The questions asked in the interview were: (1) How do you thick a learning organization can be realized? (2) What are the components of a learning organization? (3)

What are the characteristics of a learning organization? (4) What are the primary conditions or antecedents that may cause emergence of the learning organization? (5) What underlying conditions and environment can affect creation of the learning organization? (6) What are the intermediate components in achieving the learning organization through training staff? (7) What are the strategies to smooth realization of the Learning Organization?

4.2 Validity

The opinion of experts regarding the integration of measurement tool and research goals was used to evaluate content validity in the qualitative and interview sections.

In the quantitative section, the credibility of content was used to evaluate the validity of questionnaire. The questionnaire was self-reported, containing 72 questions with five point Likert scale, which itself consisted of two sub-scales: individual factors and organizational factors. The number of questions related to individual factors and organizational factors were 18 and 47, respectively. The reason of including more questions in the field of organizational factors might be using numerous research and literature available in this context. In the final evaluation of this study, Cronbach's alpha was used to estimate the reliability of measurement tools, which was equal to 0.93.

5. Discussion

According to the Grounded Theory of the systematic design, three types of coding, including open coding, axial coding, and selective coding, were carried out to analyze the data (Strauss & Corbin, 1998, p. 55). In the first stage (open coding), the researcher reviews the collected data for consecutive times and considers them from various perspectives. In this stage, the researcher tries to discover the hidden concepts in the interviews and collected information by reviewing the collected datasets, and to apply them in the form of significant concepts as the effective factors on organizational learning. The purpose of open coding is to break down the collected datasets into the smallest possible components (Charmars, 2010). In order to prevent disturbance of the obtained codes and determine a clear path to carry put other stages of coding, efforts have been made to classify the open codes based on 5 fundamental questions: (A) What is the status of organizational learning in the cement industry? (B) What is the status of organizational learning among colleagues and specialized technical units? (C) What are training methods in cement industry? (D) What are the barriers of training and organizational learning in the cement industry? (E) What are the facilitating ways to realize the learning organization in the cement industry?

Data classification is done in axial coding stage. In axial coding, the allocation of code to the concepts within the data comes out of the form of fully open mode and takes a selective form. In this stage, the researcher specifies the main axes in the datasets, and then performs coding around these axes. The axial codes will form using the obtained open codes, and eventually the selective codes will be expressed according to the interpretation and explanation of these codes. The point is that the researcher has to express the reality from the perspective of participants according to the theory used in this study, which is based on the Charmars's proposed framework (2010). In selective coding, one of the categories will be selected as the main category of investigation process, and other categories will be theoretically related to it based on the Grounded Theory in order to design a paradigmatic pattern. The paradigmatic pattern includes six components in the Grounded Theory approach, using which can help to think regularly about the data and intricately link them to each other. Learning based on learning organization was selected as the main category and other categories were linked to it in the form of 5 other components of the Grounded Theory paradigmatic pattern. In this case, the categories of training effectiveness (as the primary conditions), social-environmental-cultural conditions (as the underlying conditions), individual and organizational factors (as intermediate categories), competencies (as the strategies), and the realization of learning organization (as the consequence) were selected. The process of coding and data reduction is shown in Figure 1.

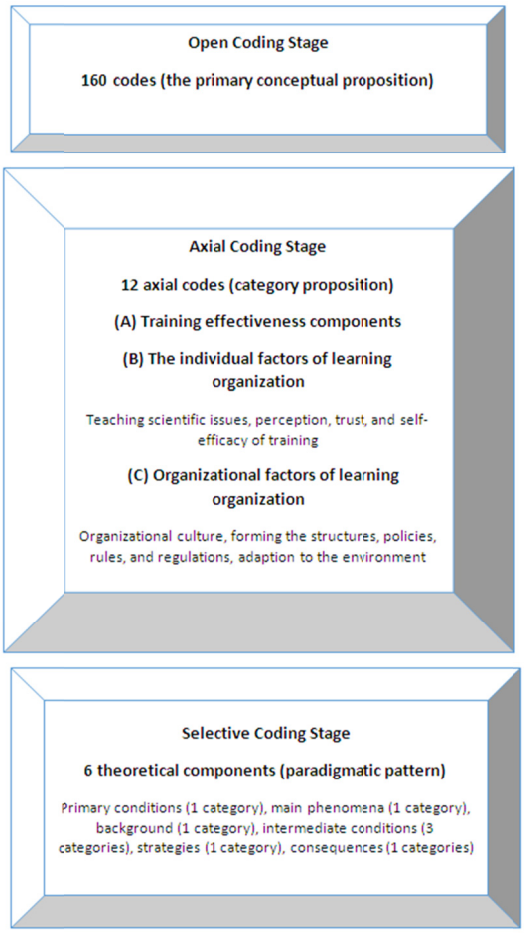

Figure 1. The process of coding and data reduction based on the Grounded Theory

6. Analysis and Results

The findings of qualitative research about the first question, i.e., the status of learning organization in cement companies, showed that the situation is not favorable and suitable. The findings of qualitative research revealed that open coding methods of organizational learning, including the theory of supervisors in acquiring skills, team work and group work, holding seminars, communications and scientific missions, papers, specialized meetings, specialized publications of the organization, and new technologies are more frequent than the other categories related to organizational learning. The findings of qualitative research to answer the second question also illustrated the factors affecting organizational learning, including managers' supportive policies, scientific knowledge – skills of the colleagues, qualitative development of information sources, IT, trust among staff, exchange of information, and the proper organizational structure. Absence of trust among staff, lack of perception and understanding regarding the dissemination of knowledge and learning in the organization, lack of suitable social behavior, and poor IT structure are the main barriers of learning organization. The quantitative findings of the first research question showed that organizational learning is in an intermediate level from the perspective of cement industry staff. According to the fact that the training effectiveness component includes seven questions in the questionnaire, reviewing the tables of descriptive index showed that the average mark of respondents in the 5 point Likert scale was more than 3 for the 7 questions. The highest average mark was related to the training effectiveness and staff experiences, which was 3.96, and the lowest average mark was related to the projects informing, which was 3.43. The standard operating charges related to the 7 questions was equal to 0.5, which indicates the significance of importance and desirability of questions in introducing the training effectiveness, and eventually organizational learning. The findings of the second research question using quantitative research showed that individual factors affecting organizational learning are identified in the form of open codes, axial codes, and selective codes related to the facilitating ways and barriers of learning organization. The effective individual factors on organizational learning are professional scientific trainings, self-efficacy of

training, perception and trust, while the effective organizational factors include organizational culture, forming the structure, management and leadership style, preparing human resources (identity), adaption to the environment, policies, rules, and regulations, and achieving a viable product. The findings of testing H1 showed that learning based on this model enables the realization of learning organization, and also showed that there is a significant relationship between organizational effectiveness and organizational factors. The findings of testing H1 revealed that the share of specialized technical trainings in organizational learning has the highest operational charge among all individual factors, while the lowest operational charge is for self-efficacy of training. The findings of testing H3-H9 indicated that organizational culture and adaptation to the environment have the highest operational charge among all organizational factors, while preparing human resource (identity) is of the lowest operational charge. Therefore, there is a significant relationship between organizational culture and adaptation to environment, management and leadership style, preparing human resource (identity), forming the structure, policies, rules, and regulations, achieving a viable product, and organizational effectiveness. The findings of testing H10 showed that there is a significant relationship between organizational learning and the trainings provided. The following model (Figure 2) is proposed based on the individual and organizational factors affecting the learning organization and share of each factor.

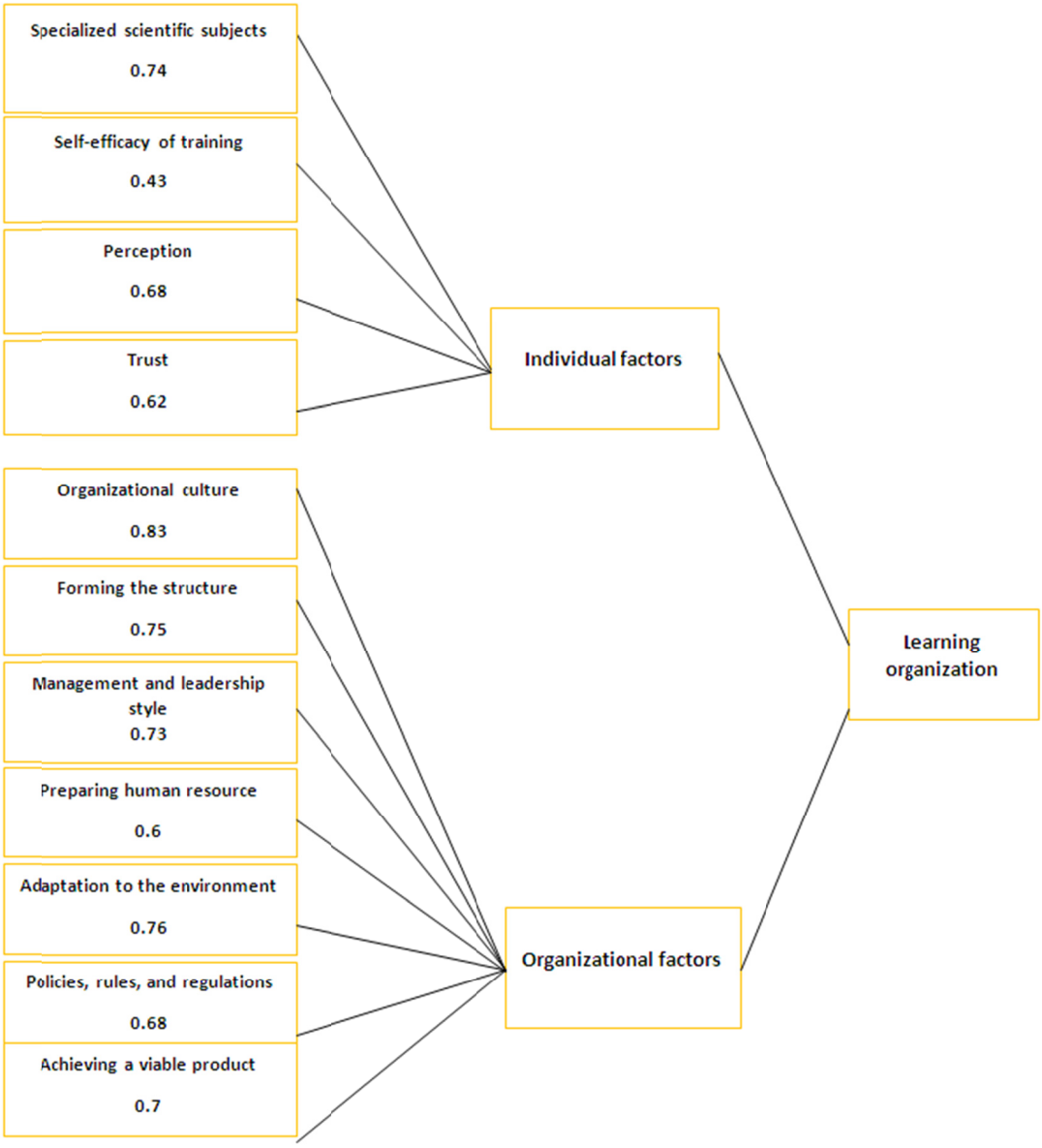

Figure 2. The learning organization model based on individual and organizational factors

7. Conclusion

In designing the learning model based on learning organization, a combined pattern of individual and organizational factors was used in qualitative and quantitative forms. Various theories were also utilized to provide a comprehensive and practical model. Reviewing literature and conducting interviews specified the individual factors affecting organizational learning: specialized-technical trainings, self-efficacy of training, perception, and trust.

The findings of this study showed that the staff can induce positive attitudes in others towards themselves when they feel that they have a fundamental and key role in training, and that they are considered important. Increasing expertise and skill in providing training and transferring it to others enhances the positive attitude towards comprehensive training in the organization.

Furthermore, the results showed that teaching others about difficult and challenging issues was associated with the desire and willingness of people, as well as a sense of voluntary participation. Thereupon, an intrinsic motivation to improve teaching and transferring knowledge to others will form.

During the interviews with experts and managers, people's habit to this method simultaneously affects their desire to increase knowledge, information, and transferring the findings in the organization, so that the staff subconsciously participates in training and exchanging their findings to other colleagues.

Organizational learning culture in training units of the industry directly depends on the attitude of its staff. It would be much difficult to force people to move in the direction of organizational learning by incentive systems or organizational requirements if the staff doesn't have the intrinsic desire to exchange their findings and scientific trainings. Perception of the staff regarding training culture might depend on individual factors. Moreover, training materials and technology to support training must positively direct to organizational learning.

So, the environment of interaction and exchanging knowledge and providing trainings has to be intimate and viable, so that the process of organizational learning leads the organization into excellence. Familiarity of experts and managers with new technologies and entering futurology can improve the environment of exchanging thoughts and training and realize the learning organization.

If the resources, content, and training subjects provide the information and knowledge for the staff through self-efficient training in the form of class presentations, seminar, conference, scientific visits, field trips, discussions and documents of strategic committees and experts, library resources, internet searches, data banks, and software systems, the spirit of research, development, and research-orientation will be stablished in the staff and organizational learning will be realized, interactive and challenging atmosphere will be created among the staff and their job, thus the richness of job will increase and the competency matrix will be provided for succession planning and talent management.

Some experts believed that people with more experience in their job can better understand how much their job is related to their field of study, i.e., they are more productive. These people are certainly more successful in training others, because they have more experience and their experience is related to their field of study. In fact, their job has been a research workshop and an opportunity to create knowledge. These people more willingly provide useful advices and consults for the colleagues and subordinates.

Many staff stated that providing a research environment, safe and convenient atmosphere, and working with mature employees and team gives a unique feeling to improve their own capabilities as a member of the organization. They also said that providing such environment and reliable atmosphere expands training to all learning levels.

Therefore, integrity of research units of human resource, training, research and development (R&D), and teams have to be enforced to provide a path for comprehensive learning. Integrity is the base of creating innovation and competition in organizational units. First, the researches have to be supported and guaranteed by the organization, so that the sense of cooperation among staff and activation in research teams would dominate in any environment.

Creating a sense of self-esteem in the staff was another opinion of the interviewees. This study confirms that the sense of self-esteem has a positive impact on the desire to learn and teach. The staff with higher self-esteem consider the goals of organization as the purpose and path of their own life, and have a highly interested in learning and teaching.

It is difficult to judge what kind of training is helpful for others. Some trainings are general, some are the result of personal impressions, and some are based on the experience of a particular person in a particular situation. Is

learning and transferring them helpful for others? Davenport (2005) believes that teaching and learning reduces the exclusiveness of skills and knowledge to a special person and might lose its security and knowledge by transferring to others. In fact, the statement "knowledge in power" indicates a superior position. It mean that skilled people are not willing or don't need to train others and transfer their knowledge to them, especially when their security, job status, power, and position is threatened or weakened. Many staff participate in training others only when they have a motivation for personal and career development or when they see themselves under the support of their managers and organization.

An organizational environment lacking trust among the staff is one of the reasons of unwillingness to learn knowledge and transfer it to others. The findings of this study indicate that learning knowledge and transferring it to others is affected by working environment with intimate atmosphere, positive attitude towards fair allocation of resources, and developing transparent and non-discriminatory methods.

Based on the answers to the second research question, when the staff comes to the conclusion that they can teach their skills and experiences to each other in a cooperative environment filled with trust, the willingness and positive attitude towards learning and teaching will certainly improve in them, thereupon, they will become the pioneer of learning and teaching to others.

Another important issue is to have the required and valuable expertise from the staff to train others. The quality, extensiveness, and richness of training environment increases by more expert and skilled staff, and this interactive and involving environment to acquire knowledge stimulate and develops the training.

Some staff stated in the interviews that the ability of staff to train others depends on their communication skills. Taylor and Wright (2004) conducted a research in this context with a focus on individual factors affecting staff training.

It was illustrated in this research that forming the structure of cement industry has a positive effect of organizational culture and the level of preparing human resource, so that as the roles and responsibilities in an organizational structure facilitate learning knowledge and transferring it, more identity and interaction will be created among the staff.

Support of organizations and equipping training units is the base of learning knowledge and transferring it. Creasing special spaces for learning, i.e., classrooms, establishing various exchanges, providing sufficient time to deliver training and exchange ideas, and creating communication networks and internet are some examples of organization infrastructures to realize organizational learning. Here, the organizational support to encourage and develop training by the staff provides a favorable environment to learn knowledge and skill and transfer it to others.

Another finding of this research was that using information technology in organizations has a positive effect on cooperative learning environment. So, the role of information technology in training is to facilitate people's interactions by personal weblogs, participation in internet competition, etc.

Existence of extensive organizational hierarchy, heavy and non-agile organizational structure, political jobs, job discrimination, absence of competency matrix, lack of interaction and social network, and lack of sense of cooperation to improve intellectual capital of the organization are some barriers of organizational learning.

Sun and Scott (2005) believed that sometimes these barriers are those individual factors appearing in management level. They usually appear because of political nature of the organization, therefore, it is important to examine Organization environment, organizational communication and organization structures, since open and flexible organizational structures facilitate learning and transferring knowledge.

Training strategies and activities of this unit has a direct relationship with the organization's strategies, so that success of failure of a strategy depends on the integrity of trainings provided and organization's goals, and the organization management is the main driver for successful learning in the entire organization. The support of senior managers includes stimulation, crating learning areas, and developing learning skills in staff (Mayo, 1998). If the senior managers provide sufficient supports, the staff will increase their efforts to teach their skills and knowledge to others.

Determining a prospect and clear goals, providing open training environments, and valuation regarding organizational learning encourage the staff to learn, improve group dynamics, and enables transferring knowledge. Such culture results in a deep insight which is the basis of all active interactions among the staff.

References

Argris, C., & Schon, D. (1978). *Organizational learning: A theory of action perspective*. Addison, Wesley, MA.

Davenport, T. H. (2005). *Thinking for a living: How to get a better performance and results from knowledge worker*. Harward business school press, Boston, Massachusetts.

Glaser, B., & Strauss, A. (1967). *The Discovery of Grounded Theory*.

Glenn, D. (1987). *A studies of faculty development programs in American Association of Bible*. Colleges Member Intuition (A Dissertation Doctor of Philosophy, Kansas State University).

Kontoghiorhes, C. Awbrey, S., & Feuring, P. (2004). Examining the relationship between learning organization dimension and change adaptation, innovation, as well as organizational performance. *The learning organization, 10*(2).

Krikor, S., Karkoulian. L. Canaan, M., & McCarthy, R. (2013). The intriguing art of knowledge management and its relation to learning organizations. *Journal of knowledge management, 17*(4).

Lombardo, M. M., Eichinger, R., & Capretta, C. C. (2010). *FYI FOR LEARNING AGILITY*. Minneapolis: Lominger international: A Korn/Ferry company.

Marquard, M. (2002). *Building the learning organization: Mastering the 5 elements for corporate learning*. McGraw-Hill, New York.

Mayo, A. (1998). Memory bankers. *People Management, 4*(2), 8-34.

Rego, L. (2011). *Expanding the Learning Curve, Business world*. Retrieved from http://www.businessworld.in/businessworld/bisinessworld/content/Expanding-learning-curve.html

Strauss, A., & Corbin, J. (1998). *Basics of Qualitative Research; Grounded Theory procedures and Techniques* (2nd ed.). Thousand Oaks, CA: Sage.

Sun, P. Y., & Scott, J. L. (2005). An investigation of berries of knowledge transfer. *Journal of Knowledge Management, 9*(2), 75-90. https://doi.org/10.1108/13673270510590236

Taylor, W., & Wright, G. (2004). Organizational readiness for successful knowledge sharing: Challenges for public sector managers. *Information Resources Management Journal, 17*(2), 22-37. https://doi.org/10.4018/irmj.2004040102

Velzen, C. V., Wolman, M., Brekelmans, M., & White, S. (2012). Guided work-based learning: sharing practical teaching knowledge with student teachers. *Teaching and teacher education, 28*, 229-239. https://doi.org/10.1016/j.tate.2011.09.011

Zunic, M., Jelena, D., Djordjevic, B., & Subotic, J. (2012). *The important of concept of knowledge management and learning organization in managing the knowledge-flow*. In organization of knowledge management and learning organization, management, knowledge and learning international conference.