Management Components of Virtual In-Service Training of Employees

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Abstract
The present study aimed to present a plan for the virtual in-service training of employees. This study first defines in-service and virtual training and then discusses a classified summary of the characteristics of virtual training environments. A review of the previous models suggested they first described Gween Dassamy's virtual training pattern, then discussed Siemens' virtual training pattern, virtual training environments model, electronic training model, and guiding or teaching characteristics. A proposed model of virtual in-service training for employees is presented following the virtual training patterns. The proposed model has such assumptions as environmental, infrastructure, technical, cultural and financial personnel readiness, affecting the employees' computer experience and learning motives. The virtual training process also involves such components as designing a training program, content production, curricula, teaching quality, assessment, and feedback. The components of this system should interact with each other to produce a desirable learning performance for the employees within the in-service training framework.

Keywords: in-service, virtual training, employees, technology

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Introduction

Training is one of the factors that affect manpower efficiency. Training refers to a learning-based experience acquired to create almost-lasting changes in the individual, so s/he would be able to improve his/her abilities to do the job. Training is commonly said to involve changing skills, knowledge, attitudes and social behavior. Training can denote changes to people's knowledge, working style, attitudes and beliefs about their work or interaction with colleagues and employers (Schultz, D. 1998). With the introduction of information technology, especially Web-based technologies, in 1990, remote training increasingly began to develop a new type of information process within the framework of training and learning, as well as lifelong training activities (Whang & Liu, 2003). Information and Communication Technologies brought about new opportunities to transform the learning setting regardless of time and place and opened a new horizon ahead for remote training programs in the education arena; these technologies also have diversified the use and development of training content to transform the remote educational system and to present a new form of the training (E'tezadi et al. 2008). In other words, using technology in remote education can help utilize appropriate content in the form of information technologies so that learning is easy and timely feedback is provided (Carnevale, 2003).

In this regard, Frand and Broesamle (2006) emphasize that Internet-based classroom education can increase learners' support for learning. The development of information and communication technologies in education programs serves as an effective and lasting step that would qualitatively transform the goals, programs, methods, and styles, thus, increasing education efficacy. In this connection, virtual training as an innovative approach to education lays the ground for learning in all places and times, alluding to the Hadith, "Seek knowledge from the cradle to the grave" (E'tezadi et al. 2010). In traditional education, the approach is aimed at individual training and skills, while in virtual education, the approach is aimed at developing social skills. Traditional education creates a spirit of competition among students, as this spirit is sometimes turned into jealousy, which entails social outcomes. However, in virtual education, like electronic education, the spirit of participation and teamwork can be easily created in the students because of the interaction set. This is due to the presence of an immense repertoire (the Internet) that is easily provided to students, allowing them to do any research work collectively. Any changes or movement towards using virtual education requires assessment and analysis, as well as a deep investigation of factors affecting this education, or generally requires utilizing an effective plan for the employee's in-service training. Because of the growing importance of in-service training, specifically at present, and the critical role of this training in improving the employees' performance, the quality of this training has not yet reached a desirable level, with the virtual training courses not taking place based on scientific methodologies. Thus, researching this connection and presenting an appropriate pattern can help improve the status quo. The goal of this present study was to present a plan for the virtual in-service training of the employees.

In-service Training

In-service training systematically and continuously improves employee performance and increases their knowledge, skills and behaviors, which would lead to their sense of security at the organization; thus, it is suggested that the in-service training be aimed at creating more abilities to produce and increase efficiency at the current profession and to gain better conditions to qualify for higher levels (Fathi-Vajargah,1997). In-service training refers to a set of need-assessed and planned activities aimed at reforming or increasing the organizational members' knowledge, skills, attitudes and behaviors to do their specifically assigned organizational tasks (Mirkamalil 1999). Researchers argue that any educational program providing learning opportunities for employee performance improvement are called in-service training (Gayeski, 2002).

Pear and Ghater defined in-service training as systematic attempts at coordinating the desires, interests and future needs of people or organizations in the form of tasks expected of people (Quoted by Fathi-Vajargah, 1997). It also denotes attempts at improving the professional's performance concerning task performance and pertinent tools (Jazani, 1996). In-service training involves all measures aimed at promoting knowledge and awareness, technical, professional and occupational skills, and creating desirable behaviors in employees of an organization that help them

ready for their professional tasks (Abtahi, 1996). It also refers to the systematic gaining of skills, rules, concepts and attitudes that improve performance in another environment (working setting).

Virtual Training

This method which is the best and most effective electronic training method, is founded on video conference technologies. Accordingly, the teacher and the student see each other and exchange views. This environment can support learning and teaching and includes administrative guidelines from enrolment and assessment to the declaration of the results and instructions. Library amenities, including books, papers and journals, speech amphitheaters, seminars, and counseling centers for learners and tests, can be provided for students through virtual training environments. Using passwords, students can gain information about the educational curricula, like libraries, papers, electronic emails and the Internet, bookstores and their scores. They can also be assessed online, all made possible via a password and virtual lines. Space itself can help provide students with curricular materials. All this can be achieved without the intervention of teachers or even computer experts. Thus, the teacher can determine the type of the assignments, level and times of the students' access to those assignments and homework (Jafari, 2002). Agger (2002) has given a classified summary of the virtual training environments:

1. Classrooms under such environments do not practically exist as such, and students use their PCs to connect to the Internet to work with the University and the class and to learn materials needed.
2. According to the new Collaborative (Collective) Learning Theory, communication with other classmates is also one of the factors affecting learning which is fully made possible in a virtual learning environment, as this will also help resolve the crowdedness of the streets, thereby saving natural and human resources greatly (Gerhad, 2002).
3. There is no limitation as to the number of students in each class. An indefinite number of students can use the curricula.
4. The learner can access other professors of the same class at the same University or other universities across the world, in addition to using the material taught by his/her professor; thus, compensating for possible shortages and comparing their teaching styles and materials.
5. The role of a professor in this environment changes from a provider of information to a facilitator of information on the Internet, as they are also provided with appropriate research opportunities.
6. It is possible to hold tests through the Internet with four-option questions. In this state, since the papers are corrected automatically, the teachers will have their time saved.
7. More cooperation will be made between different professors of different universities.

Virtual Training Patterns

Gween Dassamy's Virtual Training Patterns (2002)

To be successfully implemented, electronic learning should be founded on solid principles; this pattern relies on those principles and is investigated in five categories: content production,

development of content, storage and management of content, packaging and presentation of content, student support, and assessment.

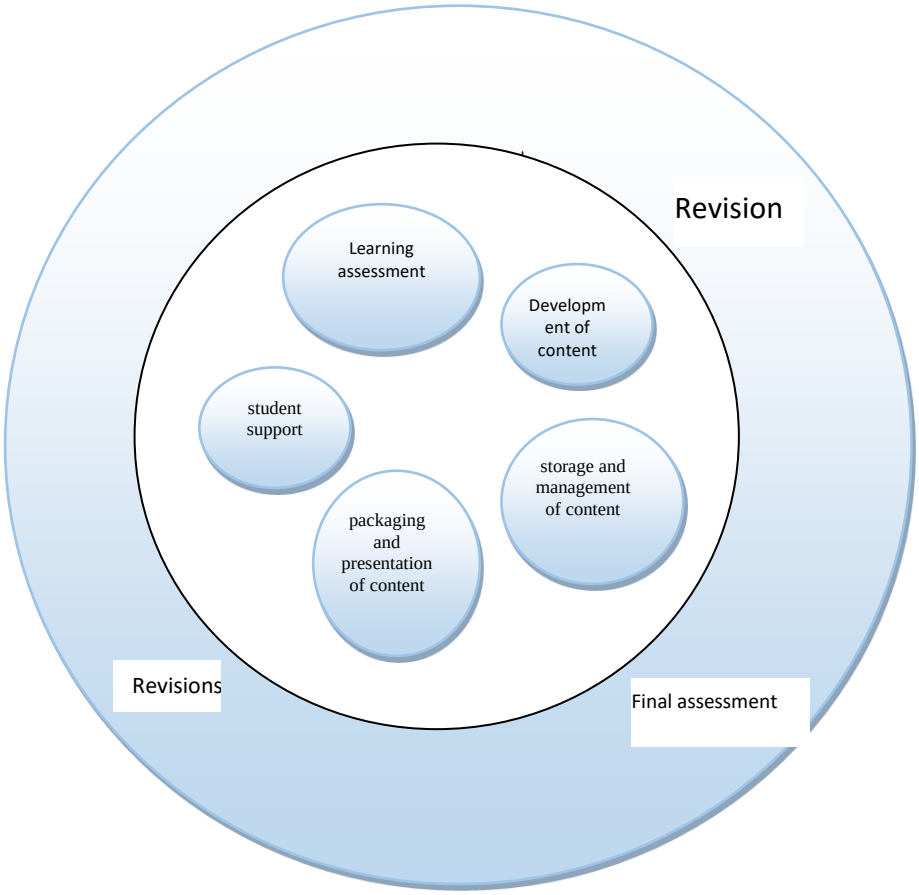


Figure 1: Gween Dassamy's Virtual Training Patterns (2002)

Development of Content

Implementing electronic learning in every organization suggests consistency of tasks by the faculty members of that organization. In most cases, professors are expected to develop electronic learning content, with the faculty members playing the roles of content experts, educational plans, graphics, media producers, programmers and teachers. Electronic learning content should be designed in smaller controllable parts as educational objectives. Educational objectives refer to small educational units that can be considered independent, even when not included in large content structures (Gween Dssamy, 2002).

Storage and Management of Content

An electronic learning system should manage the content production flow and make the content producer aware that the learning objectives should have a longer life. Overall, learning objectives should be entrusted to a board for being reviewed, modified and updated, and then returned to a storage repertoire for starting the next cycle. Cloud data should attach learning goals, which help search for a certain goal. Cloud data include title, author, dates, skills, edition and date of the last edition. This kind of search will be more comfortable for the users (Sing, 2000).

Packaging and Presentation of Content

In this section, content is packaged in a specific format and provided to students based on their needs. The stored and produced content includes photos, pictures, texts, etc.

Student Support

Student support is one of the electronic learning domains which is specifically different from traditional methods. In traditional education, when a learner needs executive support, s/he explicitly informs of his/her needs and thus receives his/her support. Electronic learning is where the student uses interaction with planned educational systems to learn materials, with all the problems s/he may face could be predicted already so that necessary support is received.

Assessment

The learner's learning is assessed in a formative and summative process. The final assessment is used to rank the learners and determine their success rates and includes a final estimate of the learners' success by emphasizing pre-determined goals. Formative assessment is used to determine and improve the weaknesses of learners and teachers (Williams, 2000).

Siemens Virtual Training Patterns (2002)

Electronic education combines and unifies technology and education, with the educational designer playing a critical role in this combination (Siemens, 2002).

The virtual education designing pattern, shown below, is adjusted based on behavioristic principles and made of five stages 1) analysis, 2) design, 3) production, 4) formative assessment, and 5) final production

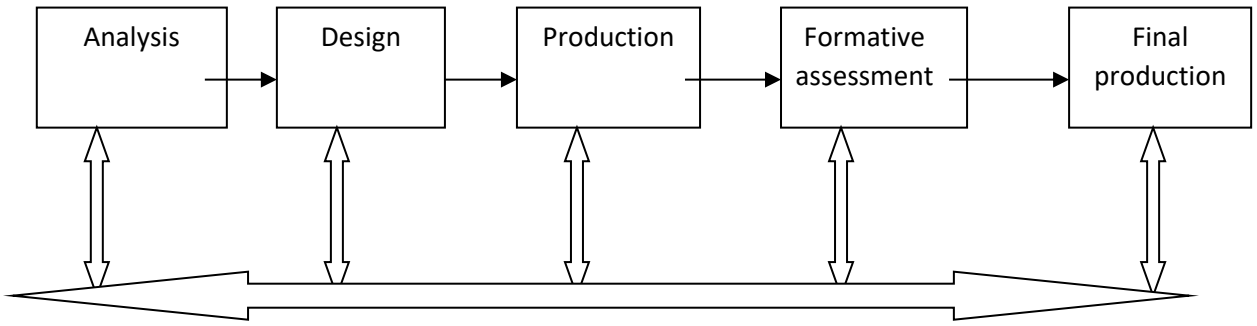


Figure 2: Siemens virtual training pattern (2002)

Analysis

Analysis refers to the determination of skills that help meet a goal. The analysis includes comprehensive analysis and tasks (assignment) analysis. In the comprehensive analysis, the designer should specify the input characteristics of the learners who use the electronic learning program. In this part, the designer elaborates on the capacities and skills that the individual should possess, such as level of education and demographic characteristics. In the tasks (assignment) analysis, a major

part of the content is determined, and the learners refer to the assignment page and diagram of data to observe curricular titles offered during the course. A link section also involves the number and titles of the projects and projects the learners should do during the course.

Design

Design refers to a regular and clear process that results from using scientific principles of learning and training in the form of plans and programs aimed at learning and training subjects (Siemens, 2002). The design provides a framework for creative training, ensuring learners of their own needs. The design includes a determination of educational goals and a selection of educational strategies.

A) Educational goals are a statement of desirable education returns clearly. Meager has brought three major reasons for the statement of educational goals in a clear way, which are:

1) A clear statement of the goals provides an accurate and usable context for selecting or designing educational materials and tools, educational content and methods.
2) Through an accurate statement of the goals, one would realize if the goals are met.
3) With knowledge of educational goals, learners can organize their efforts to achieve intended goals. Given the matching of the goals with Gagne's nine-stage learning, each goal should be investigated, and the learning activity that helps achieve the educational goal should be selected.

B) The term educational strategy may refer to the use of activities, group discussions, case studies, or simulations, which are, in essence, micro-strategies; macro-strategies, however, denote the introduction of a subject to learners in a way they master the goals.

Production

The designer provides the materials in an illustrative draft on the paper stage by stage and considers such features as the presentation time, size of the provided pieces, sequence, voice and films; in the next stage, s/he uses the draft in practice for the educational activities. Considering the previous stages, s/he prepares the draft educational materials and provides the learners with an illustrative outline of the stages of the curricular courses. Considering the stages of planning and fabrication of the materials, the designer provides a questionnaire to assess the stages of provision and quality of the materials and the media.

Formative Assessment

Formative assessment studies gather data to determine the efficacy of the intended educational materials for learners. This assessment aims to determine the virtual training pattern's efficacy and the success level at implementing various educational stages. Assessment is done in three ways:

1) Review and revision by experts: To acquire data, expert assessment of content is used to edit, determine efficacy and provide better education, as the assessment mainly emphasizes gathering and analyzing data for correcting educational materials.
2) One-to-one Test: In this assessment, each learner is given training at a time, with the assessor carefully observing the learner's performance. In this stage, s/he uses a considerable amount of

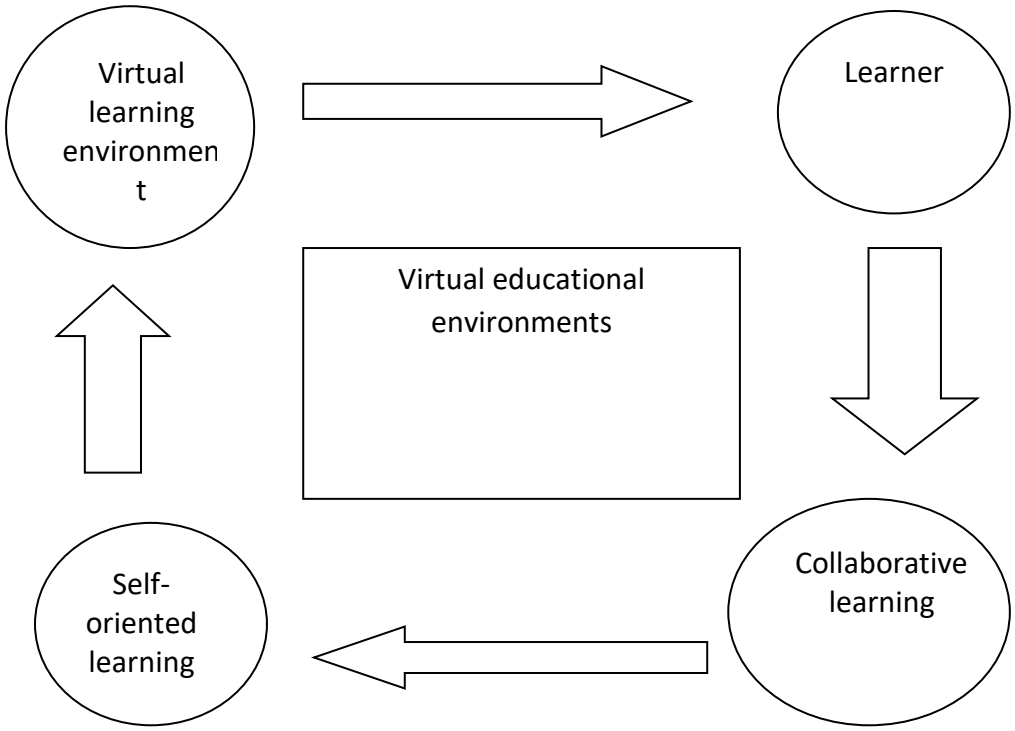
information about issues that may come across concerning the preparation and logic of the educational material. Types of information acquired in a one-to-one test include mistakes in estimating the learners' input capacity, failure to explicitly provide the training, vague questions or guidelines, inappropriate expectations of learning returns and their interaction with the program. Using this information, systematic modifications of the educational content can be done.

3) Small Groups Test: In the third assessment stage, a small group randomly selected from among learners is used. In addition to implementing a curricular assessment questionnaire, learners are also given an attitudinal questionnaire that measures their attitudes towards various aspects of education. Information obtained from small group tests includes the learner's interaction with the educational materials, clarification of curricula and questions and determination of the learner's attitude towards electronic education.

Final Production

After the assessment stage, designers analyze the feedback from content experts and learners and correct and revise educational activities, media elements and design process, thus producing the first part of the electronic learning process.

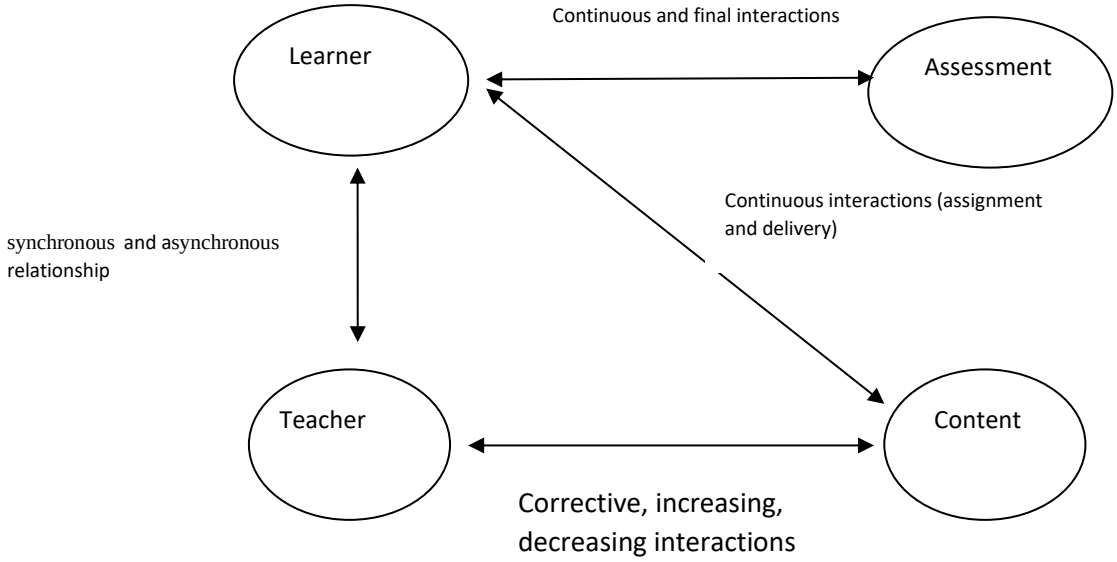
Virtual Educational Environments model



1. Learner: It graduates with various educational and learning styles.
2. Collaborative learning refers to approaching the educational activity management system and online learning.
3. Self-oriented learning focuses on students' learning outcomes; testing skills and attitudes assess these outcomes.

4. Online educational environments: Online educational environment elements include educational tools, networks, and learning (second living).

Electronic Educational Model



In this model, the teaching-learning process should include the following 4 components:

1. Learner
2. Guide
3. Electronic content
4. Assessment

It is worth mentioning that the interactions of the above four main elements affect the attitude and learning abilities, and this is met by observing the requirements regarding the electronics assessment scenario:

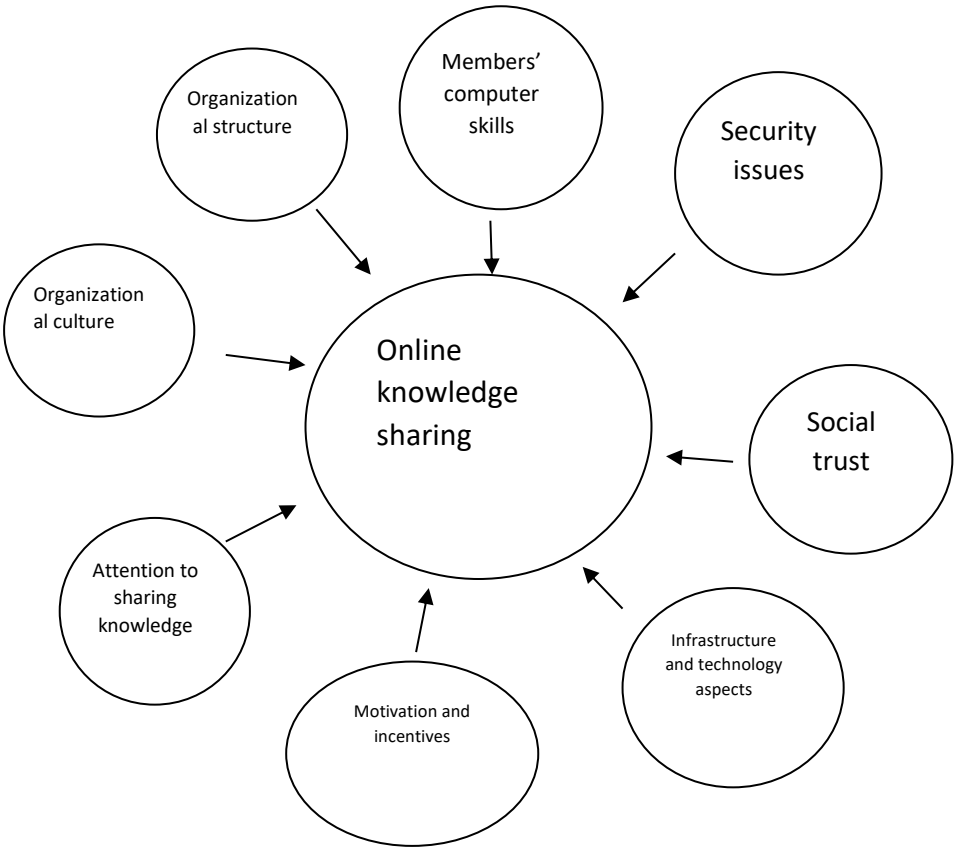
1. Production and delivery of the online content
2. Asynchronous meeting for raising the questions
3. Delivery of the assignment in the synchronous virtual class
4. Removal of the problems in the synchronous virtual class
5. Electronic assessment in the form of pre-course or middle units

Learner Characteristics

In electronic education, the more the learner increases his/her interaction in learning, the greater s/her achieves knowledge and skills, and the more his/her skills promote from a low level of cognition (knowledge, perception and usage) to a higher level of cognition (analysis, combination and assessment). In this stage, the learner does not always suffice to accept the information; rather, s/he delves into the matter; thus, the success of electronic education depends on consideration of the following characteristics in the learner's character.

Guiding or Teaching Characteristics

In electronic education, the lecturer's task is not just to provide the lessons to the user; rather, s/he is tasked with guiding his/herself and assistants to promote virtual communication to a level of live communication.



Indicators of organizational culture and structure, members' computer skills, infrastructure and information technology aspects, social trust, security issues, motivation and reward systems and attention to knowledge sharing are selected as independent variables. Online knowledge sharing is also taken as the dependent variable.

1) Organizational culture: It refers to a set of values shared by people working in an organization towards sharing knowledge
2) Organizational structure: Formality of the affairs and focus of power and decision-making in the organization
3) Members' computer skills: This refers to members' use and skills in using ICT tools
4) Infrastructure and information technologies: Use of infrastructure and electronic training spaces and appropriate communication channels
5) Social trust: The extent to which members believe in cooperation, knowledge, expertise, honesty and trust in colleagues
6) Security issues: Fear of declining occupational sense of security and misuse by others of knowledge share.
7) Motivation and reward system: motivating stimuli and material and immaterial reward systems as about the knowledge shared by the members

8) Attitudes (attention to knowledge sharing): Members' positive and negative viewpoints and enjoyment of motivating tendency towards sharing knowledge.

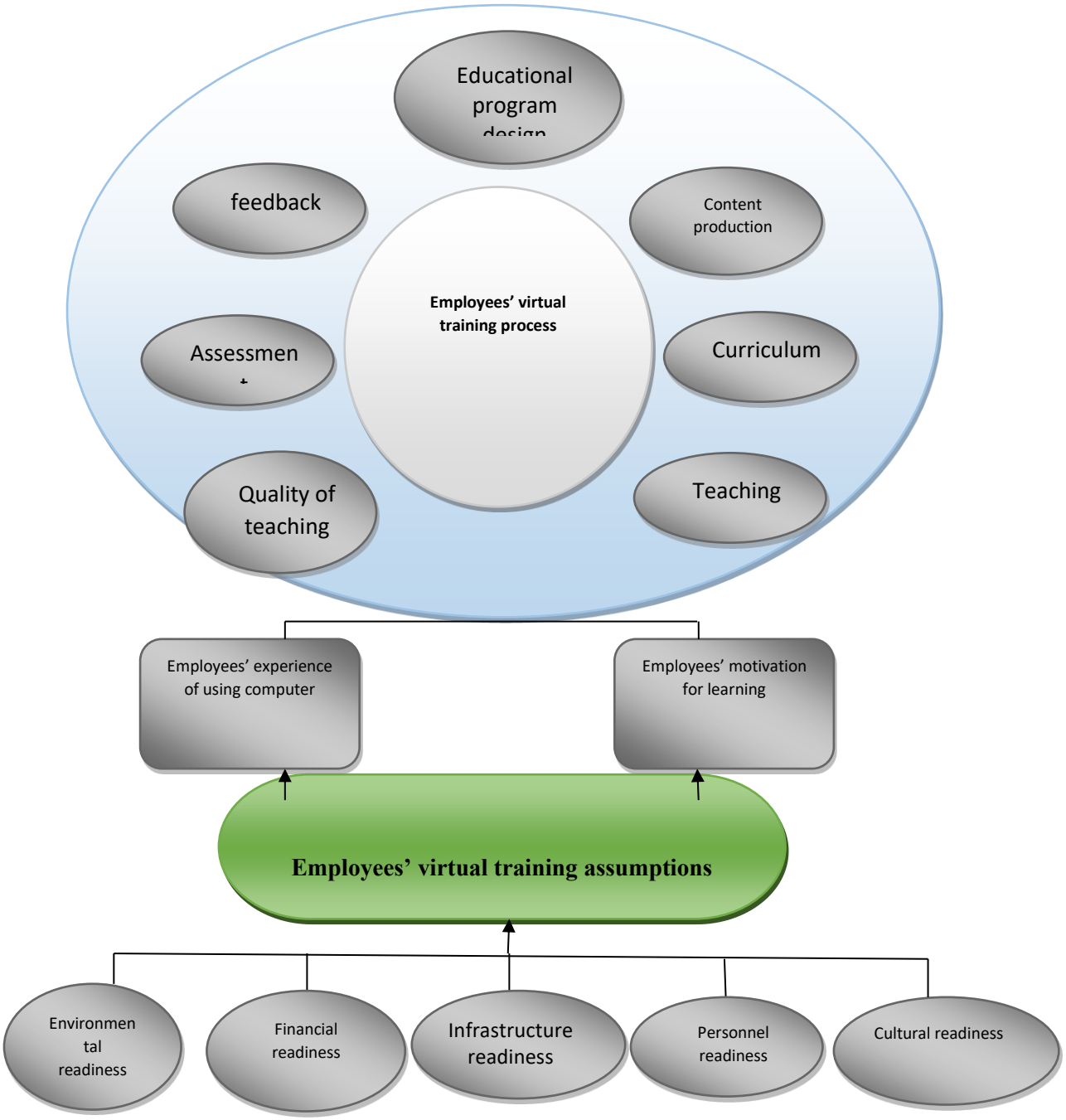


Figure 5: Proposed plan for the virtual training of the employees

Each of the proposed model factors is explained:

1. Environmental readiness: This readiness includes central organization support, objectives and strategies, enjoyment of support from senior organization managers and legal readiness
2. Infrastructure readiness: Level of access to the Internet and technology infrastructure required, access to the Internet for learners' access to information, databases, libraries, and other learning sources.

3. Technical personnel readiness: It investigates effective and expert manpower in electronic learning and computer-technical issues to implement electronic courses.
4. Cultural readiness: Cultural readiness refers to values, attitudes and behaviors that people demonstrate about the electronic learning process (Cruse & Dublin, 2002).
5. Financial readiness: Enjoyment of financial resources required for basic investment (costs of facilities, expert forces, training of employees, etc.) and implementation and improvement of the plan.
6. Employee computer experience: Computer experiences include the level of using computers, opportunities to use the Internet and users' level of computer skills. Experience of using the computer is another variable viewed in the research literature relating to and predicting computer use factors. Experience of using the computer refers to ownership, years of use, times of use, computer training and the way it is used (Akour et al. 2006).
7. Employees' motivation for learning: Motivation is one of the major concepts in human resource development in many organizations; usually, motivation for an employee is a special characteristic that highly increases his/her performance.
8. Educational program design: An effective training program includes such commonness as educational objectives, educational analysis, selection, determination of manners of transfer of educational concepts, determination of educational media, and determination of educational assessment system.
9. Content production: Educational provisions align with planning objectives and stages.
10. Curriculum: The curriculum as a main pillar of training that serves as a comprehensive learning map paves the way for the all-out development of educational concepts and content.
11. Teaching: The curriculum includes all experiences, studies, discussions, and individual and group activities. Of course, courses are presented online, with students and professors exchanging information.
12. Quality of teaching: One of the main components of the higher education system is the quality of the teaching process. This component depends on the quality of teaching and learning performance.
13. Assessment: The effective use of information technology in the educational process and working in electronic learning environments requires learners to accept new roles in the learning process, i.e., they should be able to assess the value of an immense amount of information available on the Internet to be used.
14. Feedback: Electronic learning courses should utilize ways to obtain rapid feedback so that if a problem occurs, it is rapidly resolved. The training in each stage is based on that of the previous stage. Thus, understanding and receiving quick feedback will correctly explain the different educational stages.

Discussion and Conclusion

As stated, training is a factor that affects the usefulness of manpower. Training is a learning-based experience aimed at creating relatively stable changes in the individual so that s/he would increase his/her abilities to do the work. With the introduction of information technology, especially Web-based technologies, in 1990, remote training increasingly began to develop new information processes within the framework of training and learning, as well as lifelong training activities (Whang & Liu, 2003). In the past and present, virtual training has been mainly founded on the interaction between computers and human sources. Organizational unit directors have no choice but to think of the situation and success of their own organizations and to hod in-service training for the employees to increase their qualities and capabilities. Iran is a large and populous country currently making advancements and using young manpower; however, many employees' literacy levels and knowledge are not good. Many people may study majors other than their interested fields of study. This has necessitated the importance of in-service training in Iran. In this regard, it is critical to train human forces and assess their impacts on increasing their performance. Proper human force training not only helps promote employee performance across state organizations but also helps them treat the clients.

Harris (1980) suggests that any educational program to provide learning opportunities to improve professional employees' performance is called in-service training. In-service training creates more ability to produce and increase efficiency in the current occupation and helps employees qualify for higher levels and gain beret status (Fathai-Vajaragah, 1997).

Given the growing importance of in-service training, especially in the current age, and its critical role in improving employee performance, poor quality of presenting it via traditional and virtual forms is a matter of discussion. Electronic training and learning and its interaction with traditional training is a category to be attended to. Each day, hefty costs are spent in cities like Tehran for student commuting, environmental and noise pollution and costs of studying abroad. In the meantime, inter-city and international migration costs should not be unaccounted for. Studies have indicated that attention to electronic education can be a new educational approach that can account for part of the national educational needs, increasing the quality and effectiveness of education in some areas. The electronic learning system has complex aspects and components, the efficiency of which requires a detailed understanding of those dimensions and an appropriate primary design.

The effective use of these educational tools in the richness of the learning-teaching process depends on the electronic learning strategy. According to the provided model, five factors of environmental readiness, infrastructure readiness, technical readiness, cultural readiness and financial readiness were raised; these five factors should be considered to make the virtual model more effective. The government should provide appropriate settings such as environmental, infrastructure, technical, cultural and financial readiness among people to lay the ground for growth and promotion of the nation's scientific promotion. Unless the social culture does not buy into the electronic education courses and organizations fail to access them, one cannot expect success from virtual training.

Electronic training must be consistent with organizational missions, and expert and proficient people should undertake this responsibility as the software and hardware of the informatic center should be at a desirable level. The government should also allocate an appropriate financial budget to get organizations to hold in-service virtual training. One of the strategies and key resources of the virtual training system is manpower who must possess special skills. Because the Internet has a pivotal role in the implementation of virtual training, one of the critical skills is the skill of working with the computer during in-service courses. Motivation is also a critical concept in many organizations that increases employee performance in human resource development. Components of this study should interact with each other to produce a desired performance for the employees in in-service training. The advantage of this model is that it uses a systemic training approach suitable for every type of education.

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