

Introduction

This is the last unit of this Block which is based on the discussions that have taken place in the preceding two units. Since you have gathered considerable idea about and clarifications on the concept and scope of educational technology, and its historical development including the developments in India, you may find it convenient now to think of the field of training technology, i.e. the scope of educational technology within the field of training. To appreciate this better, we have undertaken some discussion on technology based learning to distinguish it from technology based training; and finally on web-based training which is in use currently. The application of the field of educational technology shall be visible to you through all the blocks contained in this course, and through your reflection on all that you do for your own teaching.



Learning outcomes

After going through this unit, you should be able to:

- describe technology based learning;
- describe technology based training as distinct from technology-based learning;
- examine the scope of web-based technology and its applications.

As you will see from the two sections above, we shall discuss three aspects in this unit: i) learning based on technology; ii) training based on technology (distinct from i) due to the distinction between teaching-learning and training; and iii) training based on the web and/or internet. Before taking up the aspect of training, let us first look at technology-based learning (TBL) briefly before taking up technology-based training (TBT).

Technology based learning

As you have seen through the preceding three units, technological developments have influenced the way people learn within and outside classrooms tremendously. Technology-based learning (TBL), therefore, refers to learning of content through the use of any kind of technology – beginning with audio and video, to satellite conferencing, internet and intranet, CD-ROM, computer based instruction, web casts, e-bulletin boards, chat rooms. TBL includes all sorts of technology; while computer based learning (CBL) restricts learning through computer only. Though used interchangeably these days with e-learning, TBL has a much wider scope. Further, in case of distance learning, technology is used more to deliver content; and TBL does not include learning through text (or through correspondence education). This restricted use of TBL covers use of any technology for learning in a contiguous situation (i.e. in classrooms). Therefore, any use of internet or the web takes place in the classroom by both the teacher and the students; this

interaction may take place through the intranet as well (without getting into the world wide web–www).

Instead of the traditional concept or practice of a linear model of learning, TBL includes customized learning and self pacing; and emphasis is given to learning context, personalization, and learning solutions. In case of continuing professional development (which takes place continuously throughout the employment period in any profession), learning takes place as and when needed, and based on the requirement of each employee. This can be achieved through the use of CD-ROM, or intranet, or the internet. TBL goes beyond the F2F (face-to-face) classroom learning with the advantages that: there is greater access and learning can take place anywhere and anytime; learning is self-selected and self-paced as per one's own requirements; TBL can address larger number than what classroom learning can do; this is more up-to-date and instant than F2F learning; and that TBL can be more motivating (in addition to F2F interaction).

However, both teachers and students need to take care of a few factors for TBL to work more effectively. If TBL is made a regular part of classroom teaching-learning, those children who do not have access to computers at home shall be at a severe disadvantage in their learning. A prerequisite to a good TBL programme is that the programme/courses should be interactive, and that there should be enough personalized learner support to address individual learning needs. Cost is an important factor – the unit cost shall increase unless the number of users is increased and/or unless the use of cost-intensive animation and video aspects are reduced.

As we shall see later, either or F2F teaching along or TBL alone has not been able to achieve the desired effects in learning; therefore, blended learning (by combining TBL with F2F interaction) has been advocated so that in a good combination and by designing the mix well the learning effectiveness can be enhanced.

Technology based training

Unlike learning, 'training' as such is more concerned with providing knowledge around existing practical experiences, and developing (updating, upgrading etc.) skills needed to address the changing job profile or work profile. Such changes are induced by many factors – important being changes in globalization and technological developments. However, as you can see from your own experience, there are many other grassroots/in-context factors which induce us to go through initial training, further training, and continuing professional development. Technological developments facilitate such initial and continuous training. Technology based training (TBT) refers to application of digital technology to provide content or training resources to further sharpen knowledge, skills, and abilities so as to improve on-the-job performance. This also enhances interaction; collaboration and reflection so essential for enhancing performance (see Schreiber and Berge, 1998; and Salas and Cannon-Bowers, 2001 for details).

As you may have read about teacher education in many other countries as also in India, especially the in-service teacher education through distance mode has been using technology extensively for this kind of training. In India, the in-service teacher education programmes of India Gandhi National Open University uses a host of technologies – audio and radio (Gyan Vani), Video and television (Gyan Darshan), interactive radio counseling (IRC through FM radio stations), satellite conferencing (through EduSat), online resource repository (through EGYankosh), and online

interaction (through Mobile phones). These technologies have been mixed and designed in different variations to suit the requirements to meet the learners and to meet the learning objectives of various programmes.

TBT takes place through various forms. We discuss below a few important ones; and you may still think of any other TBT scenarios that you may have encountered so that you can relate those with the ones discussed below.

Computer-based training: This involves use of the computer, either in groups or individually (more often as individuals for learning skills and gathering/updating information on one’s own field of work. This may include computer simulations, tutorials, and computer games.

Network-based training: Computer tutorials and games which may take place through any network (either intranet comprising computer network of an institutions or any local network) are included in this. Individual interact from their computer to a network comprising other individuals sitting with their PCs.

Web-based training: This, which we shall discuss in a later section below, includes all kinds of training and professional development which take place on the web (through internet), including the use of social software and social technologies (like Wiki and Facebook).

A variety of technologies are included in training. All kinds of technological developments that you have studied in Unit 2 can be used in one form or the other in training and professional development. The training may take place in a face-to-face workshop context, or through videoconferencing (where people scattered is different places joint or the conferencing for interaction), or through distance learning (comprising the traditional print-based self-learning materials, and/or online resource study and interaction). Therefore, all kinds of technological devices, systems, and networks are included in this – starting from the traditional audiovisual aids, through CD-ROM and DVDs, to videoconferencing and web-based study and interaction. Web-based training may involve simple texts and graphics, or integration of multimedia, hyperlinks to other resources, communication systems, and online assessment tools. At the high end are included electronic performance support system (EPSS), intelligent tutoring systems, distributed interactive simulations, game-based training, and distributed mission training.

ACTIVITY 3.1



At this stage, before proceeding further on TBT (and its extension to WBT), take a pause and briefly examine in what way TBL can be practically used in your classroom teaching. Write in about 150 words.

Factors, benefits and challenges

You may like to visualize the benefits and challenges of technology based training, including the factors that need to be taken into account while designing TBT. Given below is an account of the benefits and challenges as outlined in a recent document by Bell and Kozlowski (2007) which you need to apply to your own contexts, and see how you can contextualize your technology requirements and use them in them training.

i) Factors influencing TBT

There are certain developments globally which influence the choice of technology choice and use for training. Globalization ensures that training through technology can take place at a distance, while reducing cost of displacement and still maintaining the quality of training. Many multinational companies and some universities with multi-campuses across the globe (or even within a single country) use satellite conferencing and the web for delivering training, and maintaining a culture of continuing professional development (CPD). Economic pressures also ensure that workplace learning takes place without any displacement at a low cost. You may agree that in any context of TBT, there are costs involved in deploying and maintaining technology itself. Coupled with this is the recent scenario of flexible work schedules which are facilitated by technologies (especially the internet) and employees and teachers can work from home and get trained similarly. The most important aspect of all is the developments in technology itself. During the last decade, there have been tremendous developments in web technology (especially social technologies and social networks – refer Unit 2 on this). These developments which has large scale social use outside the organizations and institutions (for example, the mobile technology) compel institutions to deploy and use within them the institutions, so that, flexible learning and training combining the institution and home can take place.

ii) Benefits of TBT

You may think of any kind of benefit that can be accrued from the use of technology-based training. This may be visualized in the context of teacher training/teacher professional development. Given below is a brief discussion on the possible benefits that TBT may provide depending on the context of use.

- The foremost is the possible reduction in cost of training when compared to traditional face-to-face training contexts like workshops. The important cost is variable cost involved in commuting, absence from workplace, lodging and boarding, resource persons, workshop venue, etc. This kind of cost gets considerably reduced in case of TBT. On the other hand, a certain minimum amount of money needs to be invested to establish technology infrastructure and to use technology networks for TBT.
- Time is an important cost element too; also time lost in traditional training reduces completion of tasks at the workplace. TBT not only reduces time devoted to training but also the time saved can be fruitfully utilized for higher productivity and career progression.
- The traditional training methods may not encourage intellectual challenges and new pedagogic strategies in organizing training. TBT can take care of these aspects, as also can bring in very effective trainers without even displacing them from their workplaces.

- People, who may have inhibition to attend physically training workshops with other colleagues, may find virtual interaction acceptable and interesting too. People with any sort of disability will also find technology-based communication and interaction convenient.
- TBT can bring in variety into content, interaction, takes and assignment, and assessment. Trainees can also have individual freedom and flexibility to access an immense amount of resources, often guided and modulated by the trainer/mentor.

iii) Challenges of TBT

It is not easy to handle and conduct TBT, nor is it easy for trainees to be able to effectively participate in this kind of training. TBT assumes at least a minimum level of technology competency in the trainees. Even if there is competency, there may not be favourable attitudinal pre-disposition towards technology.

There is every possibility that individual trainees who do not want to proceed in a linear manner to get lost in the process. This may pose difficulty for the tutor/mentor to be able to effectively guide each trainee participant. Learner control on learning/training may not always work to the advantage of the trainees.

Except interactive technologies, most of the technologies do not have possibility of interaction and collaboration. Therefore, the trainer/mentor shall have to work hard to design such training including the trainer's physical interaction or interaction through technology. In case of web-based training, both the trainer and the participants must have adequate expertise to professionally interact with content, technology, peers, and the trainer. This is a very high demand on people involved in TBT. In any case, some kind of face-to-face collaborative interaction is essential, along with TBT. Therefore, a promising strategy for teaching-learning and training is 'blended learning' and/or 'blended training' in which web 2.0, open education resources (Ores), and F2F interaction can be judiciously combined, and in which social interaction and networking should be ensured.

The critical issue is the design of training. TBT shall be doomed to be a failure if the classroom-based training is exactly repurposed for TBT/technological delivery. The TBT design given by Bell and Kozlowski (2007) as drawn in Figure 3.1 and which is self-explanatory is very useful to think of any alternative training design you may have in mind. You may also like to try out this design approach and see how effective this can be.

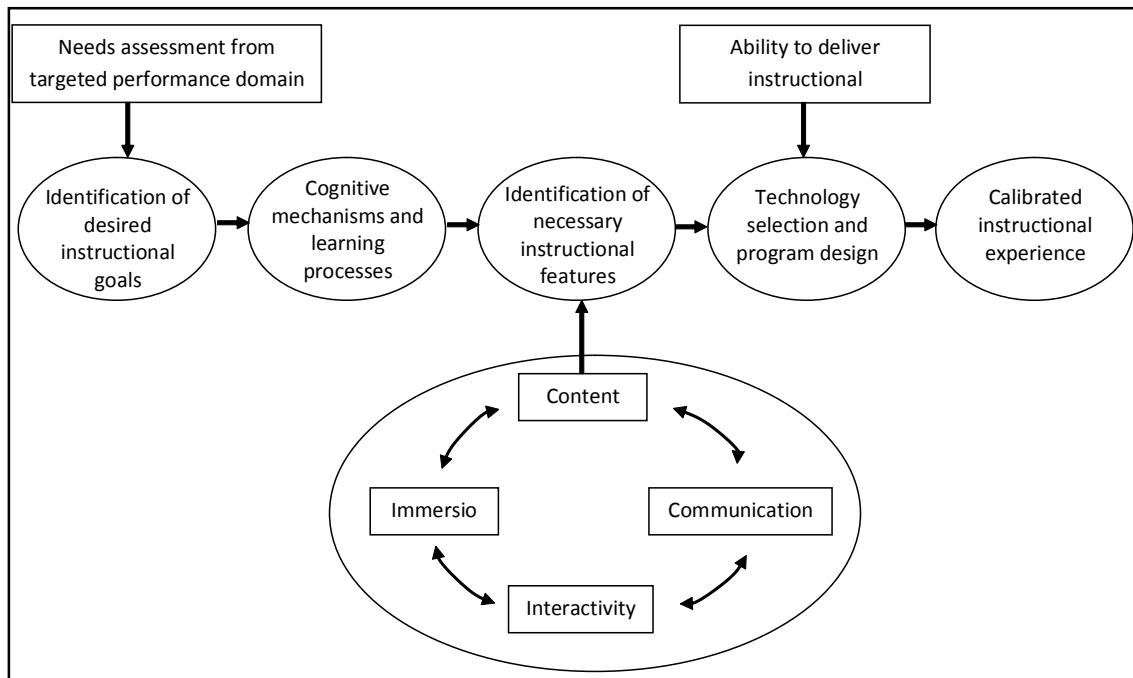


Figure 3.1: A Framework for Technology Based Training Design

(Source: Bell and Kozlowski, 2007)

Summary

You have seen in this unit that, based on what we had discussed in the first two units of this block, the discussion was extended to the field of training through technology based training (TBT). We revisited technology based learning, and based on our knowledge and understanding of it, we moved to discuss technology based training. As you have seen the effective use of TBT uses both the traditional technologies as also the recent social technologies and social networks. Following this, we discussed various factors that need to be kept in mind and taken care of for TBT; the benefits that may be derived by properly planning and designing TBT including capacity building of people involved in this; and various challenges that are faced while designing and implementing TBT. Based on your reflections on what you have read, you may like to think further about how you are going to organize any training programme in the near future.

References and Suggested Readings



Bell, B.S. and Kozlowski, S.W.J. (2007). *Advances in technology-based training*. USA: Cornell University.

Keegan, D. (2000). *Distance training*. London: Routledge.

Salas, E. and Cannon-Bowers, J.A. (2001). The science of training: A decade of progress. *Annual Review of Psychology*, 52, 471-499.

Schreiber, D.A. and Berge, Z.L. (1998). *Distance training*. San Francisco: Jossey-Bass.



Questions for critical reflection

1. Based on what you have read about technology-based learning, technology-based training, and various factors that you need to consider for an effective TBT, critically reflect on (and write down) which of the technologies or technology combinations you may choose to design and implement any training programme for teachers, (that you may be comfortable in organizing).