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# Delivery of WBT

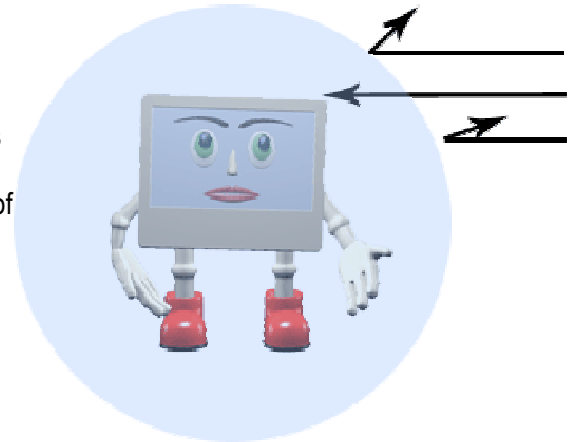
## Motivation

### The relation between motivation and perception

We are always ready to elect some stimulus not important for us. However, unless we are capable of filtering out, we can lose our attention easily. Without selective perception we cannot easily concentrate important things.

Our motivation has a significant effect on our perception. In other words, it leads us to filter or not filter stimuli. Hence, motivation loads a purpose to our perception. For instance, a photographer wants to take a photo of an eagle. At this situation, he can see diverse types of birds, whereas he is motivated to capture a moment of an eagle. Therefore, his motivation to eagle can help him to filter other bird species. This rule is true for every situation.

In closure, we can say that motivation is an important factor that can effect our perception. Only perception is not enough to foster effective learning and teaching. Persistence of perception is another consideration for them.



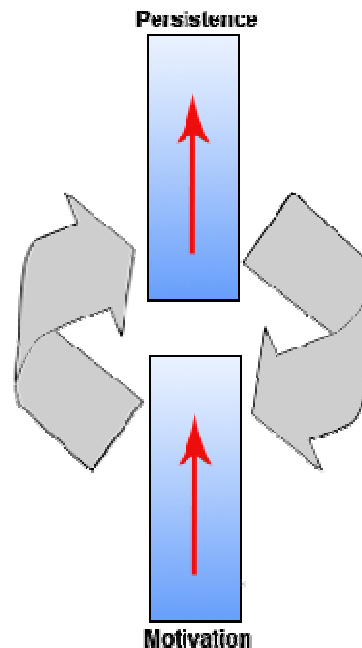
### Motivation and Persistence

Motivation also encourages persistence. Therefore, if we are highly motivated, we can easily reach information needed. Moreover, persistence of a behavior can keep motivation of a person alive.

Motivation plays an important role for a person's perception and persistence to any kinds of action. If we imagine that this person is in e-learning environment, (s)he should be highly motivated. Hence, we mentioned before it as ideal learner. That is why we expect an ideal learner highly motivated.

In e-learning environments, motivation is the most important factor that affects students' participation to lesson activities. Therefore, the most important duty of designers is developing e-learning applications that foster motivation in each module.

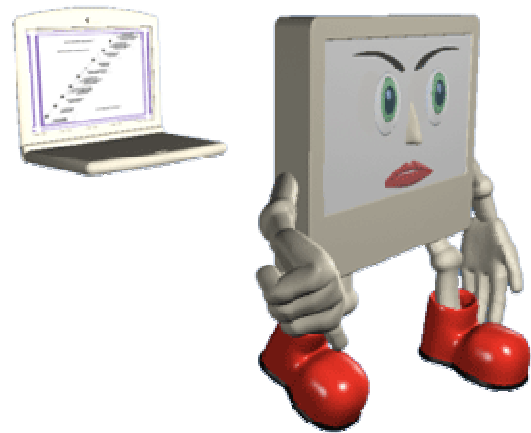
Unless there are no motivators, your e-learning environment cannot be used by users. The concept of drop-rate is main problem of e-learning applications. Designers should ask the question that "as a learner, do I really want to participate and learn something form this course?". This question is so critical that it shapes your all design decisions. To prevent drop-rate, we should first understand what it is and how it constitutes.



## Drop-Rate

There are lots of reasons to leave an e-learning course. Designers should be aware of them. Horton (2001) proposes some samples:

- "The material does not apply to me. It does not help me do my job."
- "The course wastes too much of my time teaching me things I already know."
- "I spent so much time trying to get the technology working that I had little time for learning."
- "It was too lonely trying to learn by myself. I missed having classmates."
- "I am not a herd animal. I learn best alone. I wanted to go faster than the rest of the class."
- "Boring, boring, boring! Just like reading a textbook on the screen. This course is no fun."
- "There was no incentive to try extra hard. No one noticed but the computer."
- "I have a job and a family. The class does not fit my schedule. I cannot just drop everything to attend a chat session that occurs at midnight where I live."
- "There were so many mistakes in the course, and some of the information was out of date. I felt I could not trust it."
- "There was not enough overlap between what the course wanted to teach and what I wanted to learn." (p. 418 - 419).



In fact, all of these complaints are stemmed from ineffective needs assessment processes. If you know your learner and their expectations, you can fulfill their demands. Therefore, your drop-rate could be lower.

Some students just do not participate your e-learning applications; however some students not only participate but also try to hinder other students. Those persons are named as trouble makers. You should have some previously prepared manipulations to cease increment of unmotivated and trouble maker persons.

## Unmotivated Learners

As a designer, your job never ends even you develop the most effective e-learning applications. Each task force (instructors, administrators, or designers) of the application should observe what is happening while the course is progressing. For instance, decreasing motivation of learners is one of the things that should be controlled every phase of the course. You should identify unmotivated learners immediately. You can understand decreasing motivation such kinds of actions:

- Lateness in submitting assignments.
- Unanswered messages.
- Abrupt, sarcastic, or superficial responses.
- Negative comments about the course, instructor, or other learners.
- Negative comments by other learners.
- Sudden reduction in test scores.
- Failure to submit any optional assignments. (Horton, 2001, p. 435)



## Re-motivate Learners

To prevent unmotivated learners, remotivation of an instructor is more effective than a computer. Computer systems can determine these kinds of symptoms, however they cannot cease it. Their combination works better than their single usage. The computer system can determine and instructors can decrease it.

If you realize that there are some unmotivated persons, you should contact them immediately. If you do not get any reply, you should try your chance more than once. However, even your second, third and so on calling they do not answer, you should advise them to quit course.

If they want to contact with you because of their low participation, you should do the following list to re-motivate them:

- First you should find out why the learner cannot participate activities
- You should offer more flexible schedule for those kinds of learners
- If there are some technical problems, you can help or support them to solve these problems
- You should behave them as a peer rather than a parent.
- You always response their questions or demands related to course
- You should keep records of these persons for both their activities in the course and the communication activities to cover their motivation problems. These records may use for assessing success of learners
- You should inform learner about consequences of non-participation
- You should make an agreement to return course with learners
- You should follow up the later activities of those persons.

## Trouble Makers

Trouble makers are defined as negatively motivated learners. They not only participate activities but also try to cease other learners' participations. They show same kinds of behaviors in the classrooms. However, they can be controlled in the classroom. Trouble makers can influence in e-learning environment very easily and seriously. They can be any kinds of person so you have to know how to deal with them without affecting your learning activities.

To deal with trouble makers, you can use this list:

- First you should stay calm. Any kinds of unnecessary discussion also affect your other motivated students. You should not behave personally.
- You should present as much as possible diverse activities. You should not forget that every activity cannot work well on everybody. Alternative activities can help you to control trouble makers.
- You should not be authoritarian. You should not threat any trouble makers otherwise it may increase their magnitude of troubles.
- You should take trouble makers attention to consequences of harming behaviors.
- You should try to communicate with them. You should assign some extra activities to stop their negative behaviors. You should transform their negative behaviors as good as positive.
- You should record every act doing by trouble makers. You can use then if you cannot do anything else.
- You should give extra bonus to persons who behave in good way.



## Support Motivation

To support and keep alive your learners' motivation, except for unmotivated and trouble maker learner, you should do some extra things. There are some advises list but you should not forget that you can also find your own way of


supporting your students' motivation level.

These advices are that:

- You should set clear expectations for the learners. You should explain what the course expects from participants. That most of time works for motivation activities well. Due to training based on more adult learners, clear expectation can increase their valence toward program. If they are aware of that this training program will be useful in my professional life, your defined expectations can support your WBT continuously throughout utilization of it. Moreover, you should ask learner about their expectations.
- You should explain what learners are going to do in this course, why and how. General expression of tasks and activities should be supported by meaningful descriptions. Moreover, you should determine which activities are required or optional. This information should be presented in introduction part of the course.
- At the beginning of the course, you can ask learner what they expect form the course. If the course is generated based on some most common and realistic expectations, it support continuous motivation.
- Commitment is one of the most important aspects of e-learning applications. Most of the dropouts' reason is lack of enough commitment of learner to lectures. Commitment also provides belongingness feeling toward to the course. Learners' commitment could shape the sequence of the course. Following e-learning course just as an audience does not differ from books that are cheaper than WBT.

## Interesting and Funny

You should make your WBT fun and interesting. In other words, you should not develop boring courses.

- You can use some provoking interest activities to gain attention of learner, such as telling a story, stating a problem rather than starting course directly, asking a challenging question, showing interesting picture, showing the results if learners are successful form the course.
  - You should use some motivating words, such as "good, go on; carry on, nice, exactly correct, and etc. You should use words that learners feel to carry on the course. Finally, you should not use negative words even learners do too bad things.
  - You can ensure high quality to support continuity of motivation. The quality means that error-free, well designed (both instructional and graphical), understanding clearly, consistent, providing credible examples in this situation. To realize it, you should make some pilot testing on a group of people.
- 
- You should keep your learners active in teaching and learning processes. You should give some responsibilities to learners. You should use learner-centric design approaches rather than content-centric. You should develop some cases or situations to put learner in a scenario.
  - You should present or develop your WBT as a game. Games generally have purpose and competition. You can make learner more active with help of WBT likes a game. However, you should have some alternative plans because sometimes competition of games goes to wrong direction and individuals play the game to beat each other.
  - You should develop as much as possible presentation of content in your WBT. You can use just text in a chapter. However, you should use simulations in the second chapter. Variation of presentation strongly depends on the type of topic. If you want to express theoretical knowledge, it is really hard to present information in different ways. You should support recently updated announcement pages. You should use some tools to evolve content of course, such as news, press releases, discussion groups, digests of discussion groups, frequently asking questions, tips, list of related web sites, real time data form recently completed studies.

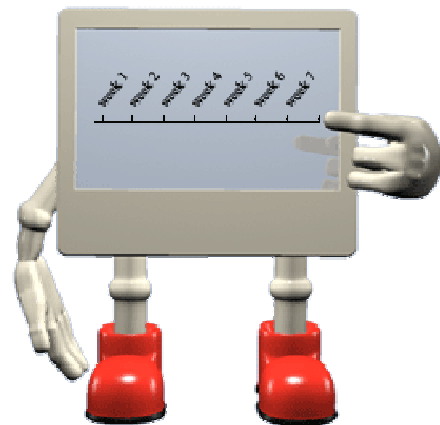
## Anticipated Outcomes

You should emphasize anticipated outcomes of e-learning course. You can do it the following ways:

- You can promote importance of on-line learning. You can reduce suspects of new learners. To do that, you can mention main advantages of on-line learning.
- You can signal the importance of course. For instance, you can stress most important and applicable part of course. If you can establish a relation between WBT and learners' organization, it supports outcomes of your program. You should present some good example alumni.
- You should explain each material in the course. You should express roles, objectives, procedures, how to use, and any other required things.
- You should specify objectives in learner's term. They should be easily understood by learners. Therefore, they can their final results.
- You should create a real-world value about the course. You should obtain some usable products from your activities. For example, paper or article ready to submit a professional journal, action plan to solve a real problem in organization, computer or web products, invention ready for patenting, proposal soliciting a new line of business.

## Pace and Prompt Learners

You should pace and prompt learners continuously. A timetable can help you to keep active learners. Highly motivated students pace themselves to the course, however you should also have some prompting activities to increase their participations. You should explain importance of time schedule and what to do if they fall behind.

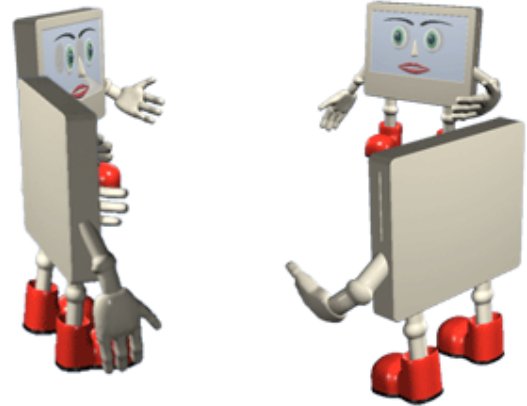


- You can publish your schedule. You also announce immediately if something is changed in the schedule. Your schedule is open to change at some special situations because some of your learners could be busier than rest of the group. You, further, explain average completion time of course at the beginning.
- Timing of feedback is so important in WBT courses. You should provide feedback as soon as possible time otherwise learner could loose their motivation to do a task. You should use automatic response system for their scored tests and activities. Moreover, you should grade all assignments and tests. You should respond all questions coming from students about the course.
- Your activities should be arranged. You should give your course in a consistent, comforting, and regular rhythm. You should demarcate activities into small pieces rather than giving them completely.
- Activities can be provided for every week. Weekly contribution could support learners' persistence. For example, you can give a preparation of a web page, a message to discussion forum, or an e-mail to instructor.
- Learners want to be informed about their progress. You should send regular e-mails them about their progress. Instructors can send e-mails including special dates, deadlines, assignments, or milestones.
- You should always be positive and encouraging while providing feedback. Criticizing learners may affect their performance negatively.
- Due to learning with new technologies, learners are afraid of the WBT course in the first meetings. You should emphasize that it is ok if you do a mistake. Failures of technology do not mean that learners' failure to learn.
- You should encourage learners with sympathetic and helpful messages. Successful learner should be praised. You should praise publicly but criticize privately. Excellent works could be shared to whole class.

## Building Learning Communities

Another important concern of encouraging motivation is to build a learning community. In any community of learners, all students take responsibility for their own education and the members of the community. You should set communities of learning. You should follow these steps for the community to be constituted:

- Let class decide many aspects of the course, such as the pace and coverage,
- Assign each class member a role. Therefore, each student can help each other when they are in trouble.
- Use discussion groups, chat sessions, and e-mail to foster learner - to - learner communication. You can use learner lounges to support communication.
- Set up an alumni association. With help of this association, class members can contact each other even after finishing the course.



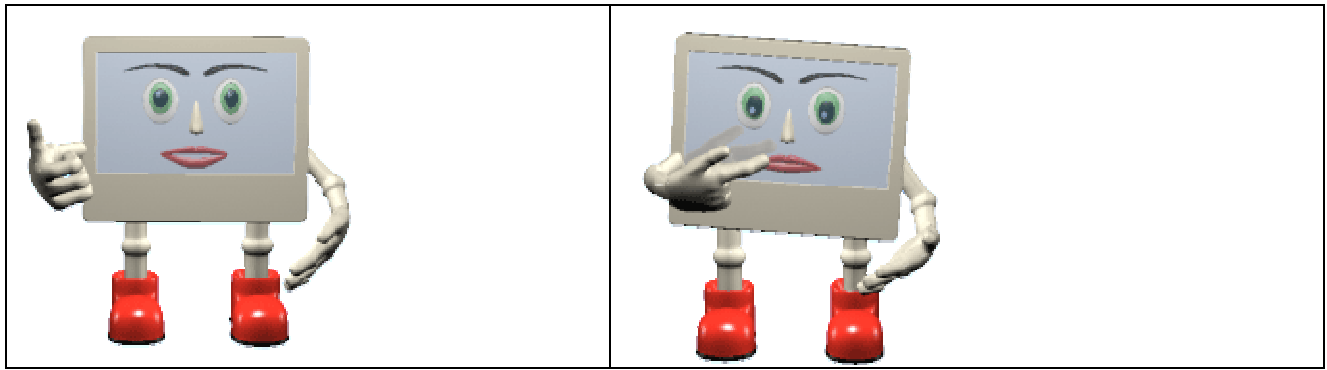
- You should also keep in touch with learners. You can inform learners about later courses.
- Create an emblem of membership. You can provide logos, t-shirts, and other related promotion things. You can establish a fan club.
- Increase human interaction in the course. You can support collaborative working techniques.
- You should always seem to be there in the course. Learners cannot feel lonely throughout the course.
- You should post pictures and videos of both learners and instructors.
- You should meet with learners if it can be possible. Otherwise, you can arrange a electronic video conference rather than face to face meeting.
- You should always hold discussions, chat sessions, and conferences.
- You should communicate with learner in every week.

## Stress

Learner should feel in a risk while they are conducting activities of lesson. Hence, sense of danger or disequilibrium foster motivation in general. It is the good part of stress. It may be realized when there is a winner or loser. However, risky environment have some advantages and disadvantages as usual. Allen (2003) stated that advantages and disadvantages.

The Positives	The Negatives
<ul style="list-style-type: none"> <li>• Energizes learners, avoids boredom</li> <li>• Focuses learners on primary points and on performance</li> <li>• Builds confidence in meeting challenges through rehearsed success</li> </ul>	<ul style="list-style-type: none"> <li>• May frighten learners, causing anxiety that inhibits learning and performance</li> <li>• May rush learners to perform and not allow enough time to build a thorough understanding</li> <li>• May damage confidence and self-image through a succession of failures</li> </ul>





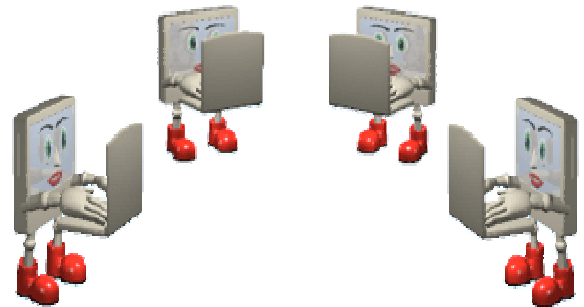
## ***Collaboration***

### **Collaboration**

Collaboration is important component of distance education to work and learn together. With this way, participants can share, discuss, and ask, answer, sighs, smiles, and so on.

### **How Collaboration Tools Work**

Client-Server relationship: Collaboration tools require a communication channel between two kinds of software. First one is collaboration server and the second one is collaboration client. The server can support to coordinate follow of communications. It works generally on a web server, internet, intranet, or a Local Area Network. The client one is installed on each learner's computer. It helps participants to get message from the server continuously.



Human-Computer Interaction: If persons start to interact with computer, human computer interaction becomes another important concern for e-learning applications. Human computer interaction is a interdisciplinary field that investigating and wants to improve usability, design, and impact of computer on individual while they are using comouters. Usability is main consideration of human computer interaction.

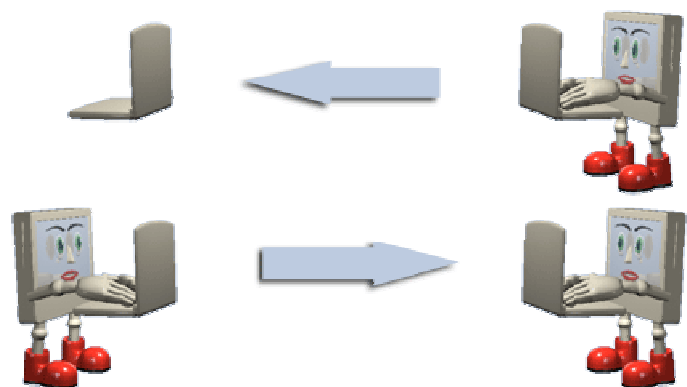
### **Synchronous vs. Asynchronous Collaboration**

Collaboration tools can links people with two different ways that are synchronous and asynchronous.

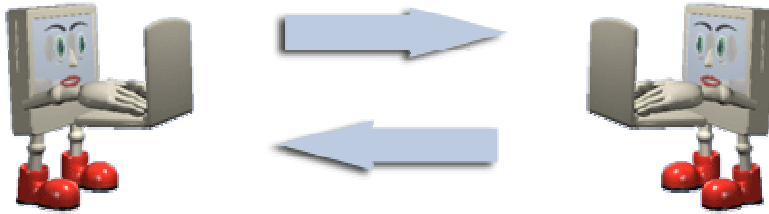
Synchronous can support real time communication, such as video conferencing, live chatting, whiteboards, and audio conferencing. All participants are on-line at the same time in synchronous environments.

Nowadays, mobile phones can be used for synchronous communication devices to support collaboration in a WBT course.

Another one does not require participants to come to together at the same time. Participants just send a message and they wait for an answer to their question. Media of asynchronous communication are e-mail, blogs, and discussion forums.



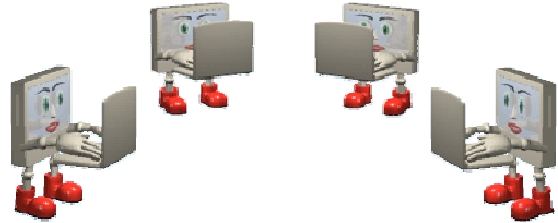




## Collaboration Tools and Capabilities

Designers should be aware of general capabilities of collaboration tools. These are the common collaboration tools used on the internet:

- E-mail: It is the simplest tool to establish a communication between learner and instructor. The communication is not real time. You can use e-mail to broadcast some important messages like a deadline assignment.
- On-line discussion forums: Learner and instructors can post a message and it is open to be read by every in the course. Moreover, the other learner can reply the message. It is not real-time tool either.



- Chat and instant messaging: It is real-time tool. Persons can communicate with each others at the same time.
- Whiteboard: It supports to send graphics.
- Conferencing: It helps participant to establish a communication among all participants. With this tool, you can reach as much as possible student number.

## Include instructions on tools

Provide a complete online manual for discussion, e-mail, chat, or conferencing system used in the course. Unless you have created your own custom system, you can probably link to the online manuals and tutorials provided by the vendors of your tools. I say "probably" because not all vendors have good instructions written for first-time learners.

Make it easy for learners to print out these instructions. Either combine all topics into one file or assemble them into a special printable file. Better still, consolidate all the manuals for all the systems used in the course into one file with a comprehensive table of contents.

## Explain essential actions

Go beyond the basic operations of each tool. Make sure Learners know how to prepare and send the kinds of messages necessary in the class. Provide step-by-step instructions for each of these actions:

- Send a message to an individual or to a whole group
- Reply to messages
- Format the message
- Quote from an original message
- Embed links in messages
- Attach files to messages
- Post a message on a thread of a discussion group

## Supply computer setup instructions

Live events can tax the capabilities of even powerful computers and networks. Instructors and learners need to tune their computers for collaboration. To use these tools effectively, learners need to install additional programs. Therefore, you should alert learners to the event and tell them what they need to do (technically) to get ready for it.

### ***The most common Collaboration Tools***

#### **E-mail**

E-mail is the oldest collaboration tool and/ for many tasks, still the most effective. It is simple, reliable, inexpensive, omnipresent, and familiar. Anyone who can use computer technology can use e-mail, and almost everybody has an e-mail address.

How e-mail is used for e-learning?

Learners use e-mail to ask questions of instructors, facilitators, administrators, and technical support staff. Learners may also use e-mail to discuss issues with fellow learners and to submit assignments. Instructors typically use e-mail to give assignments, make announcements, and answer questions. Instructors may structure assignments around e-mail, for example, requiring learners to conduct an e-mail interview of an expert.

*Capabilities to look for in e-mail tools*

E-mail is used for many purposes beyond e-learning, but here are some capabilities that are important to participants in e-learning.

- File attachments
- HTML formatting
- Message sorting
- Multiple folders
- Automatic routing of messages
- Message receipts and flags
- Automatic archiving
- Backup and restore
- Address book
- Familiar interface

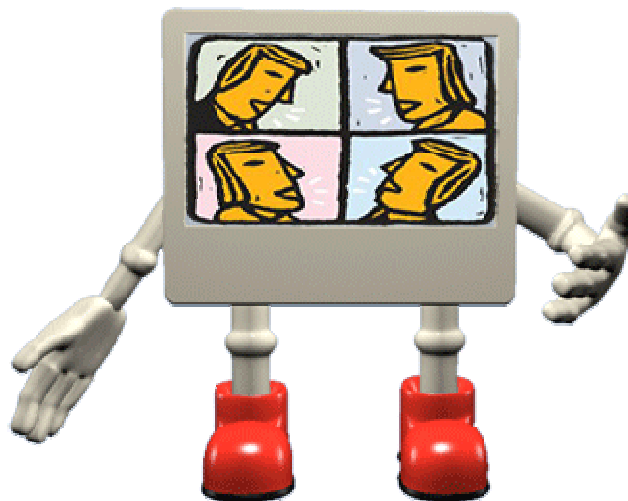


## Online Discussion

Online discussions are sharing pool for intellectual knowledge on internet. There are lots of types that are newsgroups, net news, discussion groups, computer bulletin boards, and discussion forums. Most online discussion software is implemented by threading method. Threading is a way of displaying messages and replies to message in an easy to follow format. With this way, you can see reply messages with first posted message so you can follow whole discussion without any missing information.

### *How online discussion is used for e-learning?*

Participants can contribute discussions without any time constrains. They can both post and reply messages. It is very suitable when participants of WBT are so busy or have tight schedule. Sometimes, you will have shy or language fluency problem students. It is also useful for these kinds of persons.

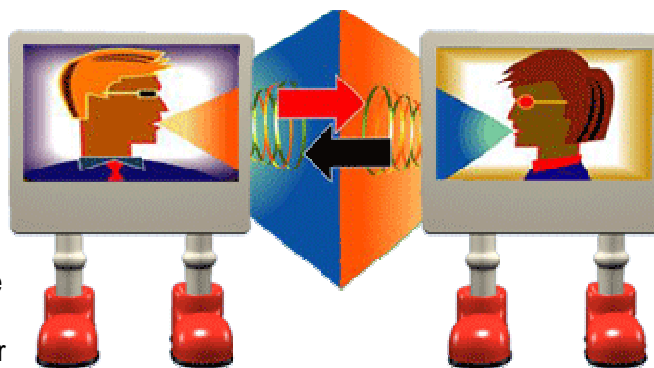


First, the initiative message is posted by a participant or instructor. Learner read the message. They do what the message wants. In the second step, they reply the first posted message as an individual or a group based on demands. These kinds of tools helps learner to establish a community for learning. It also fosters critical thinking, brain storming, group critiquing, team training, and team design activities. It is also used for out class activities, continuing class activities, and coaching and supporting other learners.

## Chat and Instant Messaging

Chat and instant messaging is one of the craziest technology disseminated very quickly. There are lots of members of ICQ, MSN Messenger, Yahoo Messenger, and etc. They provide simultaneous communication opportunity. In state of art instant messengers, you can send your audio and video at the same time. In other words, they can support also audio and video conferencing.

There are common component among all chat programs. For instance, the chatting area is placed at the left-top part of the screen. The typing area is placed at the bottom of the screen. You can reach other users from the left-top of the screen. There is a send button to port your message to your party. Some chat programs are Java Applets and some are software itself.



### *How chat is used for e-learning?*

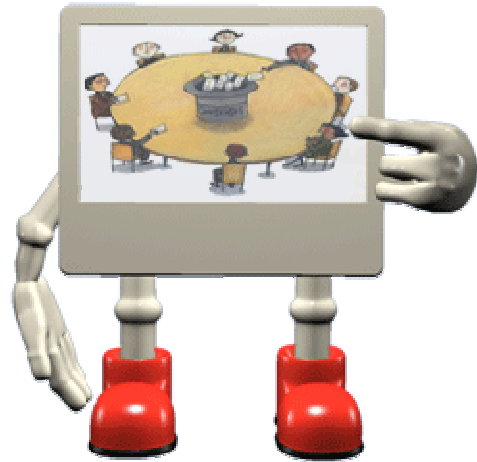
They can be used for real-time communication purposes to foster critical thinking, team working, and role-play activities. They can also support immediate feedback for everything about lesson. Their logs can be tracked simultaneously. Therefore, they can be used also for grading.

## Voting

Online voting is providing a question and collecting the answers of it. Participants can define their choices about a topic.

### *How voting is used for e-learning?*

Voting direct participants to think about a topic and then requests their ideas based on pre-determined choices. With help of voting we can collect opinion of course members and persons outside the course. Designers can use voting to analyze background and interest of participants, uncover attitudes, feelings, and biases, measure and monitor understanding of course progress, and finally foster thought and discussion.



## Web Tour

In web tours, the leader navigates the Web while participants follow their Web browsers.

### *How web tour is used for e-learning?*

You can use web tour in order to show how participants can use WBT application, analyzing a web page related to course topic, teach how to look up information on the internet, introduce online job aids, and show and discuss navigation, user interface, usability, graphical design, icons, and other aspects of web pages.

## Whiteboard

Whiteboard is a platform that a person draws something on a wall-mounted board and then invites other participants to contribute drawing. It is a real-time activity.

### *How whiteboard is used for e-learning?*

It is useful when you want to discuss topics including visual patterns. For instance, for art history or architecture classes, instructors can use whiteboards very effectively. You can foster visual collaborative activities on whiteboard, like brain storming or discussing.



## Application Sharing

Application sharing lets the presenter share program while instructing some activities. Participants can see presenters screen at the same time. In some systems, user can control screen. It is useful when you present real data and make some manipulations on them. You can also use it to teach computer software programs. Application Sharing programs can be used instead of whiteboard, web tour, or drawing tools.

### *How application sharing is used for e-learning?*

It can be used to demonstrate computer programs. Users cannot have some program.

## Audio Conferencing

Audio Conferencing let participants to talk with each other at the same time on the internet. Nowadays, the new technologies, such as Voice over IP, can support audio conferencing with very cheap prices and high qualities.

*How audio conferencing is used for e-learning?*

They can be used to exchange ideas of participants quickly. As you know, speaking is always easier than writing. Therefore, participants can spend less effort with audio conferencing.



## Video Conferencing

Additional to audio conferencing, participants can see each other in video conferencing. It promises interpersonal communication including voices, gestures, body language, facial expression, and everything. You can see who you are talking.

*How video conferencing is used for e-learning?*

It can be used to introduce instructor of course, demonstrate some psychical procedures and psychomotor skills, reveal three-dimensional shapes and spatial relationships, add realism by demonstrating things, and support complete communication with whole components.

## Online Meeting Tools

Online meeting tools are produced as separate software but its philosophy is stemmed from combination of all possible collaboration tools. You can use at the same chat, audio conferencing, web tour, and etc. The main advantages of online meeting tools that it can support you many tools in a platform.

## Choosing Collaboration Tools

Because of too many types of collaboration tools and their capabilities to select, you should know their general attributes to use in their lessons effectively. Therefore, you first determine what collaboration capabilities you need.

To determine that, designers should analyze what they have. They can contact with information technology department to identify current belonging technologies. If your department has a web server, you check what the server has. Moreover, you should use all of the capabilities of server. Hence, some of them requires additional price. Later IT standards for all organization should be defined. You should determine platform you are going to study, client that participants are going to join lessons with help of them, meeting size of your lesson sessions, the amount of data required to store, learners' needs, and finally which products and their maintenance.

## Technical Problems

### Technical Complexity

One of the main disadvantages of WBT is its technical complexity. It threatens WBT course from two different dimensions. Technical complexities first frustrate, distract, and discourage learners that can easily give up the course. Coping with technical problems also increase work load of both instructors and technical staff. In other words, without any technical support plan, a WBT course could become a nightmare for everybody in the course.

## **Plan for Technical Support**

You should plan your technical support very carefully. All alternatives could be thought in all details. To start your plan you should consider all things. For instance, how will your learner obtain tools and technologies they need for your course?, Who will answer questions about them?, Who will help learners when they have problems?, How will instructors and administrators receive training on the tool and technology?, and What is the policy of using technical support?. These questions do not finish. It is a kind of snow-ball. You can increase your questions in each application of WBT course.

Technical support plan is a kind of disaster analysis. You should think about all possible disasters that may effect or stop your WBT. You should have good management system for technical support. Each step and each person's in technical support should be explained well. There should be contact addresses for each staff and instructor.

You should prepare a framework for all courses. You can do it from common problems faced in WBT courses. For example, you can present them as Frequently Asked Questions (FAQ), tutorials, test pages, setup activities, or help desk.

## **Lower the Hurdles**

Whatever you can do, it is indispensable to vanish technical hurdles. Therefore, your plan can help you these hurdles as much as possible amount. In addition to your plan, you should gather data for your course effectiveness. That is why learners' feedback is so important that you can improve your technical support. However, some feedbacks can be more specific to persons. You can cover this problem one to one support, learner customized or generated lessons. While learners are in application part of the course, you should identify common technical barriers with your automatic tracking and human control systems.

Moreover, you should design your course based on the technologies that are moderate level. Learners do not require buying additional hardware or software to connect your system. If there is a need for a special program, you should deliver it to learners. Other consideration is browser capabilities. You should consider all possible browser manufacturers. Using beta or unknown version of software is not recommended.

You should analyze your technological requirements well. Hence, some of WBT courses are so excellent but they cannot be used due to high bandwidth requirement. You should decide which technology is mostly required or which is not. You should use most frequently supported technologies. For example, the program can install and uninstall itself automatically when just click a button. There are useful manual supports. Moreover, the program users can call helpdesk 7 days and 24 hours.

You should not lower settings of your course. Some common settings do not require additional software. Learners can adjust their settings easily if they do not have to upgrade own technology. You can use package technologies so learners do not require collecting separate tools to contribute lessons. You can serve these integrated tools as multipurpose tools, integrated tools into a page, or an integrated installation program.

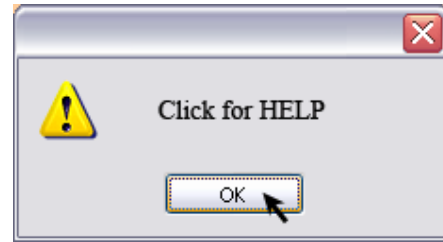
The security is another critical concern of your WBT courses. You should support your WBT with powerful firewall technologies. You can block any part of the course. However, most of time security gets learners in trouble so to use firewall, you should contact administrators of firewall program and you can ask some as much as possible independency. Firewall is generally problem for media materials. You should use a special program or permission for entering the course, hybrid CD-ROMs to deliver media to students.

You should not forget learner in WBT courses have to know some required computer skills. Without any previous computer knowledge, these persons will be your continuous member of technical support team. Lack of computer skills could not be excuse for an uncompleted assignment. You should also develop your courses based on very simple computer skilled persons.

## Solve Problems

A designer should solve problems before the course starts

You should do some activities to prevent technical problems. These can be listed as:



- You should not leave learners alone. They have to be guided while they struggling with technical complexities. You can use manuals, help desk pages, instructions and so on. You should support all additional materials that are required to start course.
- All requirements of the course should be supported completely. For instance, hardware, software, basic setup (browser version, browser settings, display settings or operating system properties), media player and resources (plug-ins, codec, additional programs) are the most important and common ones.
- You should make a search for all requirements on learners' computers. Therefore, they may not be capable enough to evaluate their current technology. You should present a report about configuration.
- You should schedule and announce collaborative activities. If it is required some special things, you should emphasize or support them.
- If you want to do some activities or conduct an exam, you should test interactive components first. If some learners are not familiar with them, they can miss some point while discovering them.
- You should first perform a pilot test for live events.
- Learners should be supported by complete setup instructions. Moreover, you can provide screenshots of each installing process.

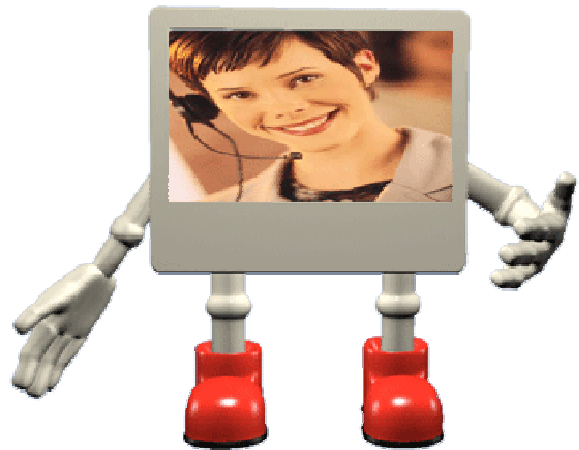
## Support

Support learners during the course

A starting point is very effective method to direct learners. The starting point can be a simple page that lists all available resources, or it can be support primary resources of topic. Maybe, they can be a test to generate suitable environment. Moreover, you can provide some choices to learners and they can control their learning sequence based on their selection.

You should create necessary support resources. Resources should be always available for the learners. These resources can support learner:

- Help files,
- FAQs,
- Tutorials or instructions,
- Discussion groups for technical support,
- Interactive troubleshooting guide,
- Downloadable manuals,
- Phone numbers and hours for help desk,
- Web form for requesting assistance or reporting problem.



## Test Your Course

You should test your course before delivering it to whole students. You should install it on a foreign computer and observe how it can be used. You can test your course on the minimal requirement systems. If there is no error on



minimal system, you do not worry about the higher performance systems. The minimal systems should include old version of operating systems, minimal amount of memory (RAM), and older version of browser, slowest connection speed, older version of central processing unit, and any other older things that can influence your course implementation negatively.

The browsers and their diversity is another problem of WBT. You should control all your pages in WBT on the all types of browsers. Hence, some technologies can be applied on one browser but if you pass to another one, your course does not like actual appearance.

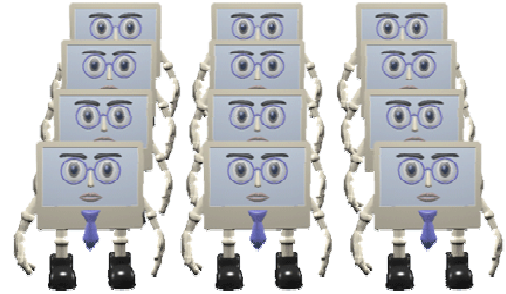
## Identify Sources of Support

You should determine your training staff. You should also provide their job descriptions. They should be caring, sympathetic, and technically knowledgeable persons. Their communication skills and patient are so important.

Information Technology center can also support your WBT course. You should work with them reciprocally. Most of the large universities have these kinds of centers. They have too many experiences for technical support. Their experience may be valuable for your WBT.

Furthermore, you can use tool vendors to support your learners. Each tool in general is bought from a private company. They have to provide guarantee for their products. Technical support is also available for their sold product. You use this opportunity.

You can also use distributed learning systems to support learners that want to solve problems themselves. You can also support those persons with some peer technical support.



## Evaluate Learning

### Testing

One of the main advantages of WBT testing is reduction of test expenses, such as paper, pencil, grader, and so on. However, testing of WBT should be well planned and implemented.

### Plan Test Carefully

You should first plan your testing process very carefully. One small missing point may cause too many problems while implementation phase. The most important thing is why you want to test participants. You should propose a good rationale. In other words, your test should have a purpose. If you provide good reasons for testing, it really works well. For instance, to gauge learners progress in the course is a good reason rather than fulfilling expectations of students about exam, such as it is a course and exam is indispensable part of courses.

The other step for planning is to determine what you really want to measure. Your objectives can be helpful for this decision if they are set carefully. Moreover, you can also use some taxonomies to define what you want to measure. For instance, Bloom or Gagne's taxonomies can be your guidance.

The next step is whether your test will be graded or not. It should be announced to students, too. If they are graded, how will they be graded? Horton (2001) asserted some techniques for grading of online tests.

- Answers are evaluated by a script program on the learner's computer

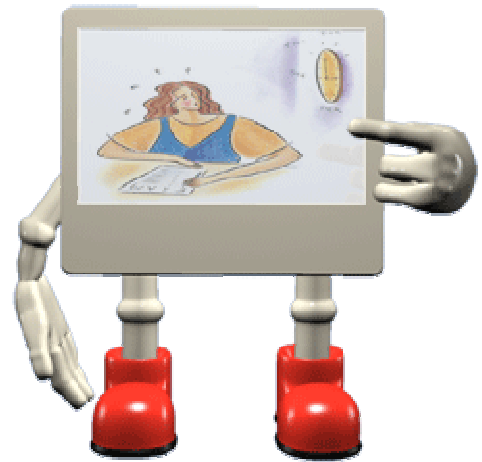


- Answers are transmitted to a remote computer, which analyzes them and generates a response
- Answers are e-mailed to the instructor, who grades them and write back with an evaluation,
- Learners have a co-worker on or on-site advisor examine their answers and comment on them,
- Learners evaluate their own work using a procedure spelled out by the instructor,
- Other learners evaluate the work.

## Planning Testing

The other crucial thing is to determine feedback time. There are some alternative methods to deliver feedback. Feedback can be delivered;

- After each question: It supports immediate feedback which supports motivation of learners. It can correct misconceptions immediately. It also does not allow missing some questions. However, immediate feedback after each question becomes test boring and takes longer time.
- After test is completed: It is more efficient and economical, but less fun than after each question. Learners do not wait extra time for feedback. Your feedbacks are more specific and targeted at the end of the exam. Learner can go back and analyze their answers in detail. However, postponing feedback to end of the test, learner can miss some questions because of their misunderstanding.
- After a delay for human evaluation: If immediate feedback is not possible and answers of the test are more complex, you should use this type of feedback. Answers must be transmitted to an evaluator and then evaluator scores the answers based on a specified rubric. You should determine grade announcement deadline. It should not be more than 48 hours.



Furthermore, you should determine your time for the test. Limiting time can prevent cheating. However, some of your participants cannot enter the system, you cannot apply limited time. Moreover, time limitations can trigger anxiety of students and it can hinder performance of students. If you do not constrain test's application time, you should think some cautions for cheating faking participants' actual performance.

You should also determine learners will take test more than one time. If yes, how will they be graded? When learners can take tests again, it provides a chance to control their mastery level consistently. However, the second or third tests should not be given with same questions. While learners are taking tests again and again, how is their success measured. Which one of the test can be used for evaluation? You can use first attempt, only the most recent attempt, only the best attempt, and an average of all attempts.

You should have an emergency plan if there is any problem while conducting test. For instance, you can support your web or test server with another copy so if it is any problem, you can change test servers. Some technical support team can be online during exam so they can control everything at the same time.

After planning phase, the second phase, which is selection of right questions, is starting.

## Selection of Right Questions

You can use too variety of question types. In this section, only some popular ones are going to be presented in the following table.

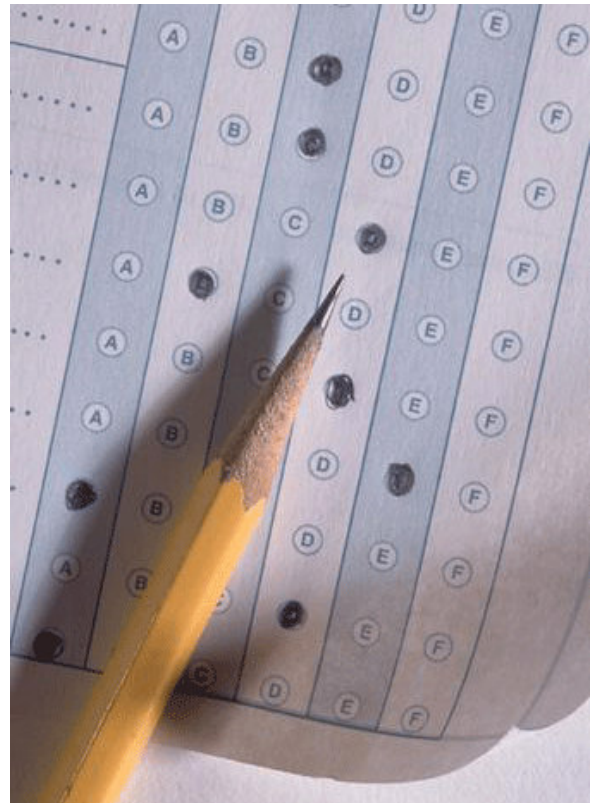
Question Types	When to use
True - False: Learners requires making a selection between two choices. Typically, they say whether statement is true or false	If you need to measure binary decisions of learners. You can determine definite judgment of learner about a topic.

Multiple Choice Questions: A question is provided and learner requires making a selection among choices that can be from 4 to 7 or more. You can select only one or more than one choices.	If you need to measure higher order thinking skills of students, you can use multiple choices. They are easy to score and provide feedback. You can ask factual or procedural concepts.
Text Input Questions: Learners require typing answers of questions into text boxes. They are short answer question in typical manner.	You can use it to assess memorization of concepts and their definitions. You can also use them to measure rehearsal level of learners.
Matching List Questions: Learners require specifying which items in one list corresponds to items in another list.	You can use them to measure relationships among concepts.
Click in Picture Questions: Learners require select an area on an image based on instructions.	You can use them when some visual systems must be recognized.
Drag and Drop Questions: Learners require moving icons or images onto the specific areas	You can use them to gauge categorical concepts or classifications.
Simulation Questions: They let learners to complete highly complicated interactive tasks.	They can use to measure whole outcome of the course. You can gauge performance of learners rather than declarative knowledge. You want to put persons in real life evaluation procedure. The topic is so complex. The speed of performing task is important.
Fill-in-the-blanks Questions: Learners require supply missing words in sentences.	You can use them to measure learners' application level of knowledge in contextual situation.

## Design Effective Questions

The following principles make your question more effective to reflect your course success on learners' outcome. Questions which are going to be developed should:

- State questions precisely and clearly,
- Word questions and answers clearly,
- Keep questions simple for students,
- Ask one question at a time,
- Ask job related questions,
- Avoid obsolescence,
- Be careful when asking absolute questions,
- Emphasize important words,
- Make all choices plausible,
  - Keep all answers at the same long
  - Make all choices grammatically equivalent
  - Make choices Parallel
- Challenge test takers
  - Keep questions challenging
  - Do not make questions too easy
  - Make sure that one questions is answer of another question
  - Do not ask biased questions
  - Do not reveal answer: The status bar of a web browser can include right answers of questions.



## Explanation of Test

Learners always come to exam with some worries. Therefore, they want more information about test to show their maximum performance. At this point, you should express everything about exam to conduct it clearly. You should ask the following question themselves to make your test instruction easily understandable.

- Is the test graded?
- What does the test cover?
- Is the test times?
- When must be test taken?
- How long is the test?
- How are answers scored?
- How accurate must my answers be?
- What form does the test take?
- Can I take the test later?
- Can I retake test for a better grade later?
- What resources can I use to take the test?
- How realistic are the questions?
- How will the test be graded?
- Must questions be answered in sequence?
- What is I experience a computer failure?

If you analyze questions carefully, the planning phase of a test should be emphasized here. Hence, each of the questions above is the step of planning phase. Moreover, you can collect additional questions from your learners.

You should careful when you are using instructions. You should use consistent instruction style and content to separate instructions from items.

Learner should start test with a welcome page. You can provide useful instructions and information about exam here. All rules about exam should be provided word by word; otherwise some of learner could attempt to use it in a wrong way to get fake scores. You should also present rules and regulation in a contract format. Therefore, students should have to accept conditions during test.

Before applying exam, you should test the test in a pilot case. You should also prepare an emergency guidance when there are any kinds of problem during test. Also, you can time and score each questions separately.

## Sequencing of Test Questions

You can sequence test questions based on some rationale. You can use the following sequencing technique:

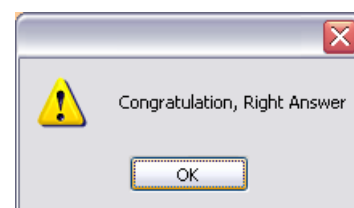
- Put an order your questions with respect to their difficulty. The easiest one can be the first question and the most difficult one is the last question.
- You can enable to navigation between questions. Therefore, learners can do some questions which they are more capable.
- All questions should be independent from each other. They are not related to base on their answer. Hence, a small misconception of first chain of these types of questions result wrong answers for whole chain.
- You should use as much as possible question types. You can group them or your can use them mixed.
- You can ask multiple questions for one scenario.

## Give Meaningful Feedback

One of the main purposes of testing is providing feedback for students' progress. Therefore, feedback and its presentation type is critical. Feedback should be meaningful to learners.

To make meaningful feedback, designers should provide complete information in a feedback. These components are;

- The question,
- Right or wrong flag,
- The correct answer,



- The learner's answer,
- Why the correct answer is right,
- Link to original presentation or material.

### **For right answer**

For right answer, you should be brief. You should just say "right, correct, exactly, yes". You should also challenge user why this answer is correct. With this way, we can teach a person who guess the question. The correct feedback can also teach additional information.

### **For wrong answer**

For incorrect answer, you should gently but clearly point out the problem. You should;

- Use neutral terms, such as "sorry" or "not quite",
- Not embraces or insult the learner,
- Acknowledge partial success,
- Provide hints first.

## **Improve Testing**

You should always evaluate your tests' effectiveness after applying it. In each lesson, you should improve your test. You can monitor your test items. For instance, some questions can be whether answered or not by most of the students. You can extract these questions because of their not effective difficulty level. Some questions can be skipped by most of the students. These questions are also problematic. You should revise them. If there are large numbers of questions left, there is a problem with time limitations.

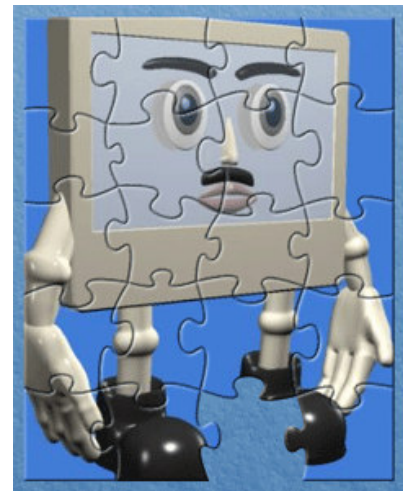
You should consider feedback coming from learners. They can point out some problematic questions. Based on these feedbacks, you can control your questions.

### **Alternative methods for testing**

You can use combination of different assessment techniques, such as:

- Formal graded tests,
- Open-book tests,
- Self-graded tests,
- Ungraded tests,
- Activities,
- Games,
- Puzzles,
- Research Projects,
- Tests taken by teams rather than individuals.

Moreover, you can measure learners' performance in the workplace. You use a simulation or role playing activities for it.



Nowadays, one of the most popular assessment techniques is portfolio that can be useful for WBT courses. Learner can show their progress what they did through the course. They can put any kinds of material to show evidences for their learning process.

Rather than giving some scores to students, they can be encouraged to collect token throughout the course.