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how to webcast

Webcast training methodology

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1. Introduction to webcasting

The term “webcast” first appears in Daniel Keys Moran’s mid-80s science-fiction novel *The Armageddon Blues* where he describes a news company called DataWeb “webcasting” a news bulletin. However, at this time webcasting was still only an idea.

At a conference called “IterTainment 89” held in New York, Brian Raila of GTE Laboratories first described the streaming media technology which would make webcasting a reality. He called it “buffered media” where rather than as had previously been practice, downloading entire pieces of media, media is downloaded progressively in portions or “streamed” to the client computer. After collaboration with his colleague James Paschetto who developed the first working prototype of streaming media, Raila first publicly presented and demonstrated the technology.

During the early 90s this led to the first experimental broadcasts of radio and video streamed over the internet using similar streaming technology. Popularity of webcasting for entertainment and news purposes grew rapidly coinciding with growth of capacity for web traffic both commercially and physically.

1.1. What is webcasting

Webcasting, as defined for the purposes of this project is:

"Transmission of video and audio online (over the internet) from one source to a large group of receivers."

A webcast transmission can be delivered either live, or recorded and delivered “on demand” giving the flexibility to the viewer to watch the webcast whenever they wish. However, rather than requiring a download like a video podcast, a webcast uses a progressive video stream onto the user’s computer so there is no need for hard drive space or leftover media files.

This on demand availability allowing the sharing and distribution of the recorded webcast, via a portal or database, plays an invaluable role to the learner. It means that content is at the fingertips of students, and that unlimited playback is possible.

Due to its generally accepted use, webcasting is most broadly used by the media to broadcast non-interactive entertainment and news over the web. The main benefit of this is the flexibility provided to the viewer who is not constrained by time schedules like those of more traditional broadcasting. Within the UK, major television networks such as the BBC, ITV and Channel 4 all webcast their content over the web, both

as live streams and as an “on demand/watch again” service.

These examples of webcasting do not generally allow for a direct interactive element and are more for the convenience of the viewer. However, an interactive function can be fulfilled by discussion boards and online chat-rooms provided on the same website as the webcast. This either allows viewers to discuss the content as an online community or, in some cases of live discussion and panel shows, contribute to the show directly by asking questions or making statements which can be relayed directly to the panel.

As these webcasts involve heightened interactivity they become more similar to the educational webcasts we address in this methodology, where a linear broadcast of a lecture or educational piece of video is made available and trainees are asked to discuss the piece or can submit questions and opinions. As the trainees are given an increased level of interactivity by allowing them to submit information to the discussion (be it text, graphic, audio or video) the experience will become more engaging for them and make for a better learning experience.

1.2. Webcasting terms

Many of the elements combined to form a webcast match with those used in a video conference. Video conferences, which are a form of enhanced conference telephone call, are used in the business world to conduct meetings between groups of people over a network such as the internet. During such meetings software is used with functionality similar to the software for which we have developed this methodology. However, during a video conference, communication has a "many to many" structure meaning that even if one person is leading the conference, all participants have equal opportunities to take part at the same time. Also, while teleconferencing mimics a traditional face to face meeting, meaning an agenda is set but not definitive, a more strict lesson plan needs to be adhered to during an educational webcast.

The concept of broadcast on-line is used to determine the form of a webcast. Typically, broadcast is the transfer of content from one place to the wide group of listeners / viewers in different geographical locations. The distinguishing feature of broadcast is the limited interaction possible between participants (usually they are not able to actively participate in an event, cannot ask questions or conduct discussions). Examples of this style of online broadcast are conferences, concerts, group meetings and football matches.

Multicasting on the other hand, is a form of broadcasting of multimedia content over a network based on the principle that the content is first sent to a content distribution network media server, which sends it on to the various viewers. This solution is used in webcasting and allows transmission to multiple people at once, even when there is a relatively low-speed internet.

1.3. Webcasting in education

Use of this technology for learning is still considered to be in its infancy, however as with news and

entertainment, growth of use within teaching practice is expanding rapidly alongside the capacity of trainers and learners to support the technology. The potential which webcasting holds within education, particularly for adult education and continuing professional development within small and medium businesses, opens up a huge market for in house up skilling of staff where traditionally staff would have to be sent on training days, often at great cost to the company. Also, the option for webcasting to either be live and interactive, allowing a simulated classroom experience, or “on demand” for trainees to watch when they want (as many times as they want), makes training of this type very flexible and therefore efficient, particularly for small businesses.

As the use of technology in post-compulsory education has become more widespread, educators have begun to use these technologies as an additional core skill in more traditional areas of learning, as well as in subjects such as IT which this technology lends itself to. This has led to a culture shift in education with more acceptance of what we call “blended learning” referring to educators using new and innovative technologies in conjunction with more traditional teaching methods practiced in the classroom to deliver their lessons.

In webcasting for learning, the structure of content and the level of control over interactivity made available creates more of a “broadcast” environment, with one person (namely the lecturer) delivering content to a group. While an e-learning webcast with a small number (2 or 3 trainees) may have a high level of interactivity and reflects a blended learning structure, where the lecturer allows control over the heightened interactivity, as the volume of trainees taking part in the webcast increases, less interactivity should be made available in order to control the webcast. Therefore large groups will lead to webcasts similar to a traditional broadcast format.

Although these new technologies support learning, many still use them with the traditional teaching styles they have adopted for the classroom. While many underlying methodologies common to all teaching practice are allowed to function using new technologies such as webcasting, the effect of these technologies can be maximised by developing new processes and teaching styles specific to the new technologies and this document sets out to address how you can deliver the most effective teaching and learning through webcasting.

1.4. Advantages and challenges of webcasting for training

Rapid development of infrastructure and software used for remote communication makes webcasting technology itself cheaper and more available. As prices of more enhanced software decreases every month, the user's experience is enriched. In such circumstances, a fast internet connection is a standard in every educational institution or enterprise. As a result, distant education is becoming a far cheaper and better alternative to traditional training.

The price is undoubtedly one of the advantages of webcasting training (especially when the costs of travel and accommodation are high). The savings webcast training can result in appear in such areas as:

- Time commitment required by the trainees
- Travel and accommodation
- Training materials
- Evaluation of training
- Post training materials preparation

Webcasting allows for a learning experience with a subject expert which would otherwise be unavailable because of the associated distance and time limitations. It also allows the trainer to record such sessions easily for other trainees (and to make available “on demand”). Webcasting sessions provide those looking to up skill or retrain in a certain subject area a good option to trial various subjects if they are unsure of the specifics of what they want to study. Thanks to webcasting technology trainees can attend many webcasting training sessions to check themes and topics before choosing often expensive traditional training formats or post-graduate studies.

Unfortunately this style of learning also has disadvantages. Trainees participating in traditional training are generally more focused on their studies than those participating in a webcasting session. During the webcasting session, trainees can at the same time browse the internet, work, read and do many other things that might distract them and detract from the training.

Also, with webcasting software it is fairly easy to conduct ad hoc meetings but only in groups of up to 5 or 6 trainees. Webcasts with larger groups of trainees have to be prepared earlier. Also, traditional meetings allow participants to be more flexible and interact more than during webcasting sessions. Consequently, during a webcasting training session it is difficult to moderate a large group of participants especially when the non verbal communication between participants is limited to an absolute minimum.

2. Webcast technology

2.1. Webcasting software

Many pieces of webcasting software are web based applications and do not require installation. This is due to issues regarding the learners' willingness and ability to install new software on their computer and the inevitable time delays which will be incurred as users address first time issues with joining a webcast, but realise they are required to install software. Many pieces of webcast software are built on the Adobe Flash platform which is both free and installed on 99% of machines. A further benefit to this beyond the removal of a require installation of software, is that the software will work across multiple platforms and operating systems. Using web based software however can result in high bandwidth use and many pieces of software developed to be web based are renowned for being bandwidth intensive. This can result in problems running the software on computers connected to the internet through smaller networks.

One solution to this is a technology called multi-casting. Multi-casting gives the opportunity to communicate on a large scale (up to several hundred people at once) by allowing you to stream large amounts of multimedia content over a distance. This improved streaming means the webcast may be presented live on multiple computers simultaneously. This, coupled with improved audio and video codecs, allows a webcast of a similar quality to television to be transmitted over a wide area to a large number of viewers.

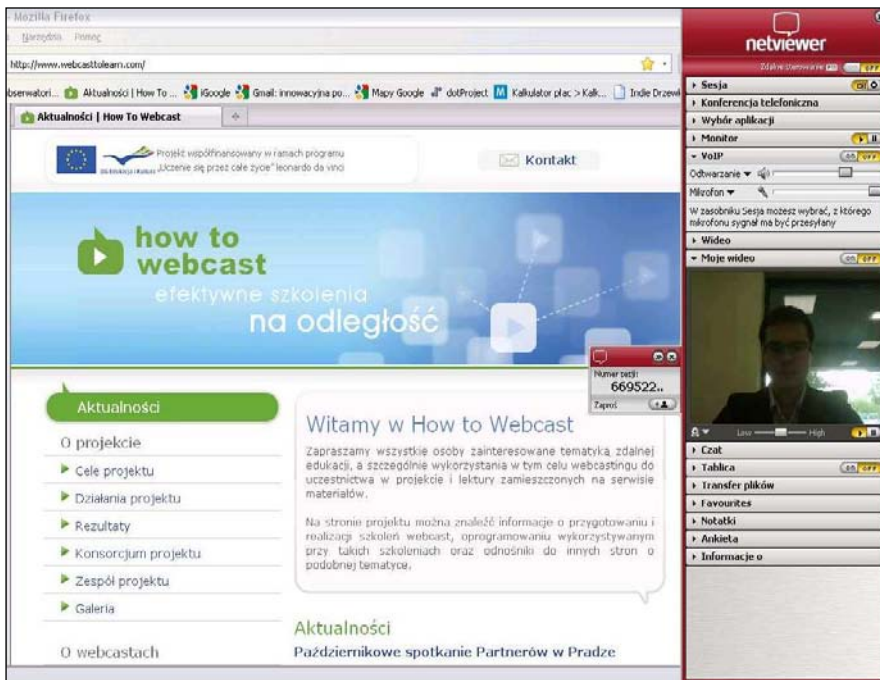
2.1.1. Functionalities

Within this paper we have identified that there are a number of functionalities which are beneficial to webcasting software. Some of these functionalities are essential to delivering the webcast, while others simply enhance the learning experience. As with all software, the number of functionalities available to the user depends on the development of the software and this is reflected in the cost. We have evaluated a variety of pieces of software ranging from freeware / shareware software available to paid options.

The following functionalities are found in most, if not all, webcasting software suitable for education:

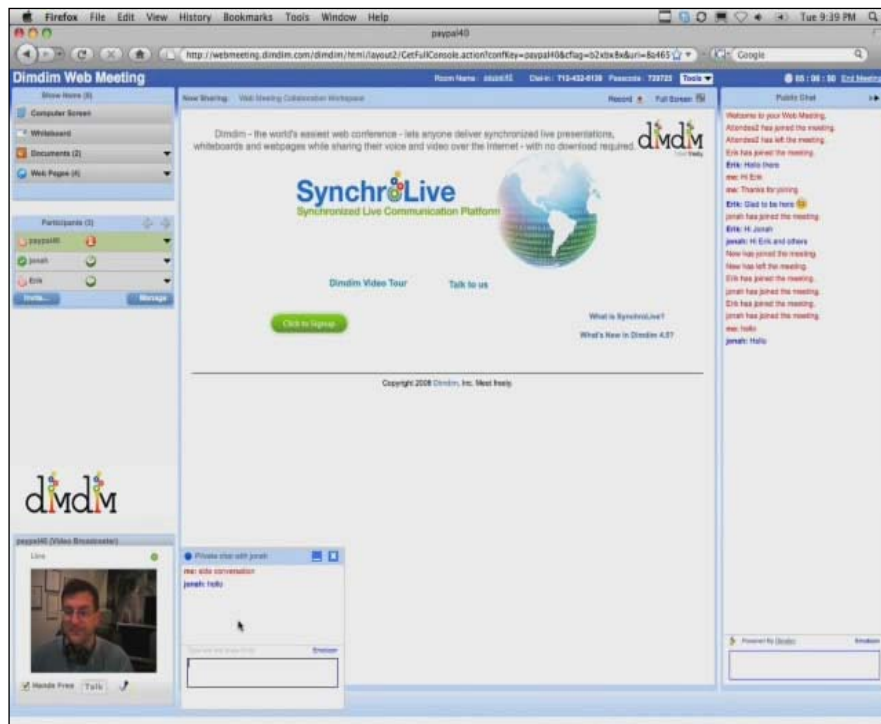
- Voice transmission (VoIP)

- Video transmission



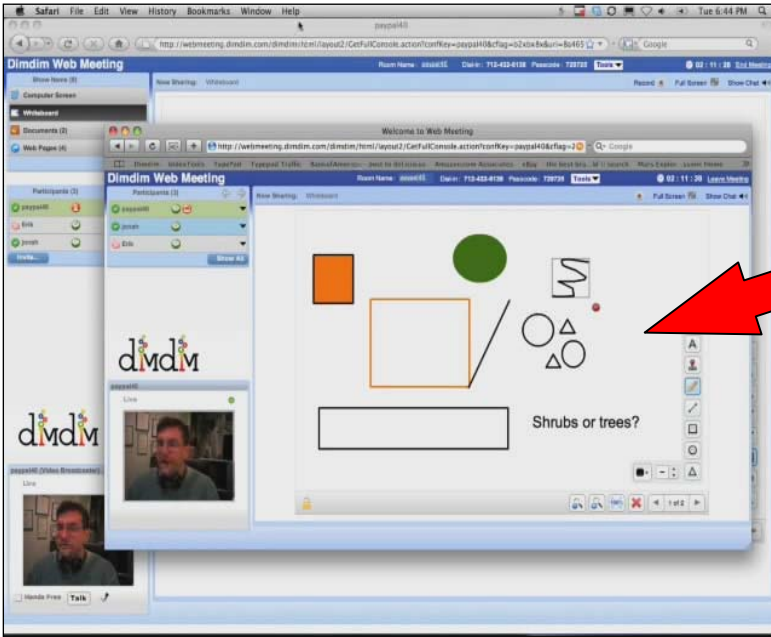
Video Transmission in Netviewer software

- Chat

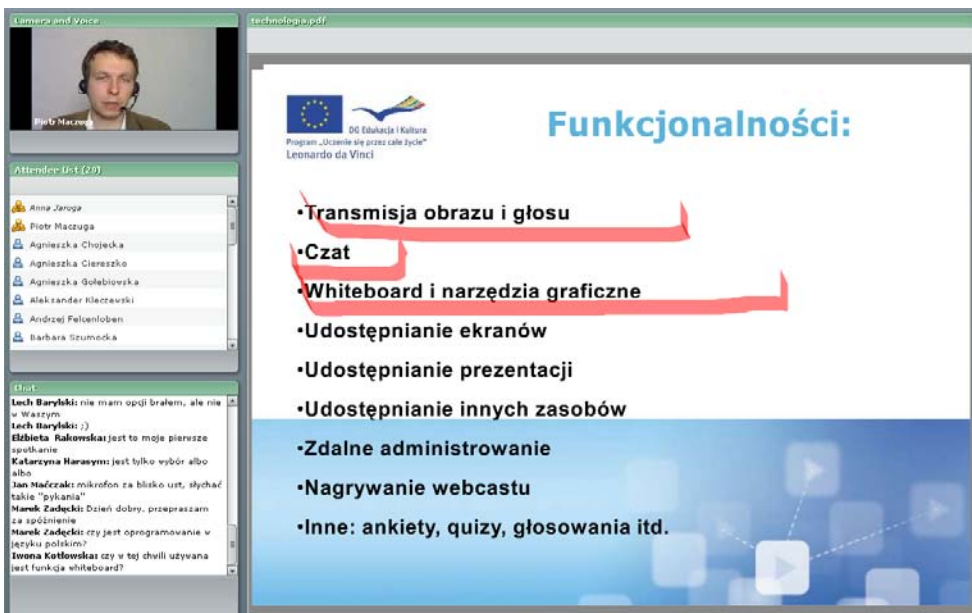


Public and private chat window in DimDim software

- Real time whiteboard



Sharing of the interactive board in Dim Dim software

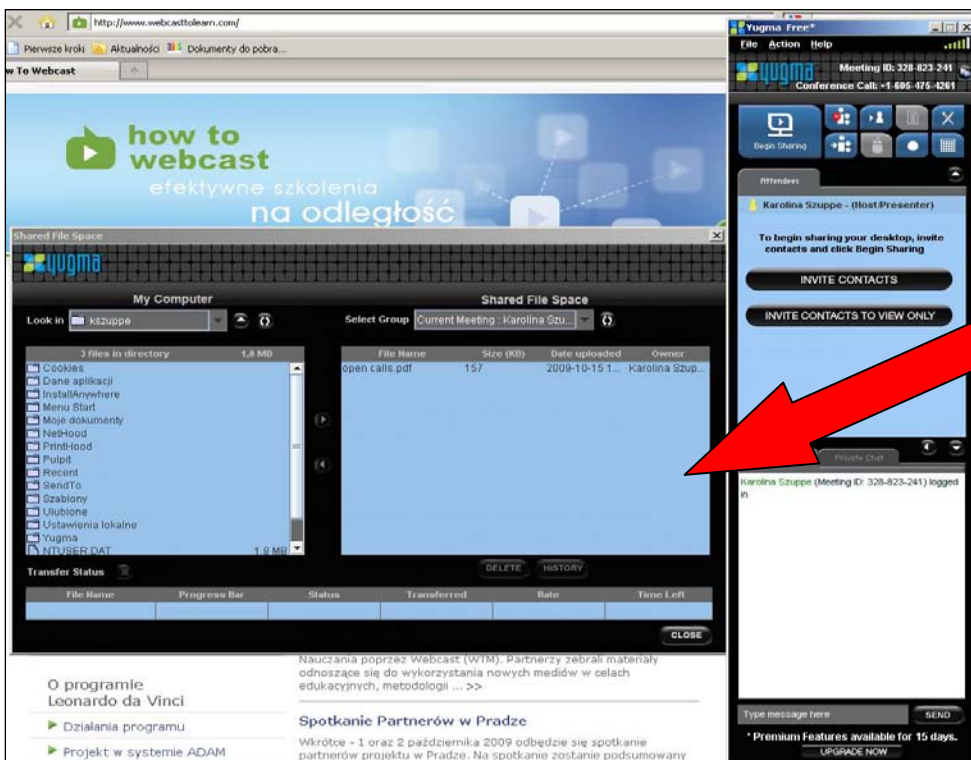


White board edited in presentation Adobe Connect Pro Meeting software

- File sharing



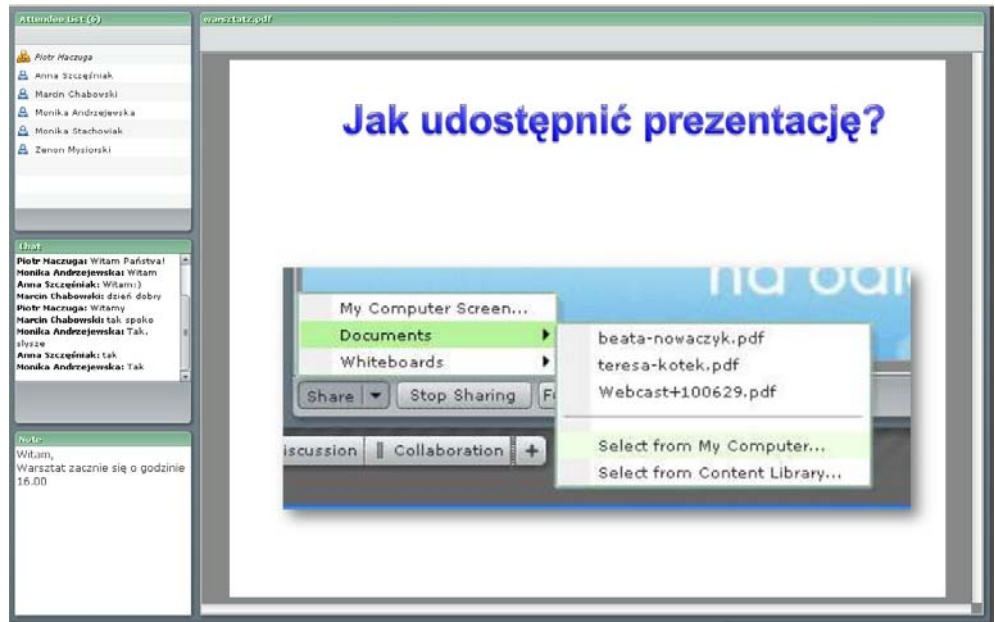
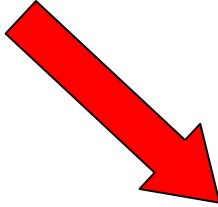
Sharing documents in DimDim software



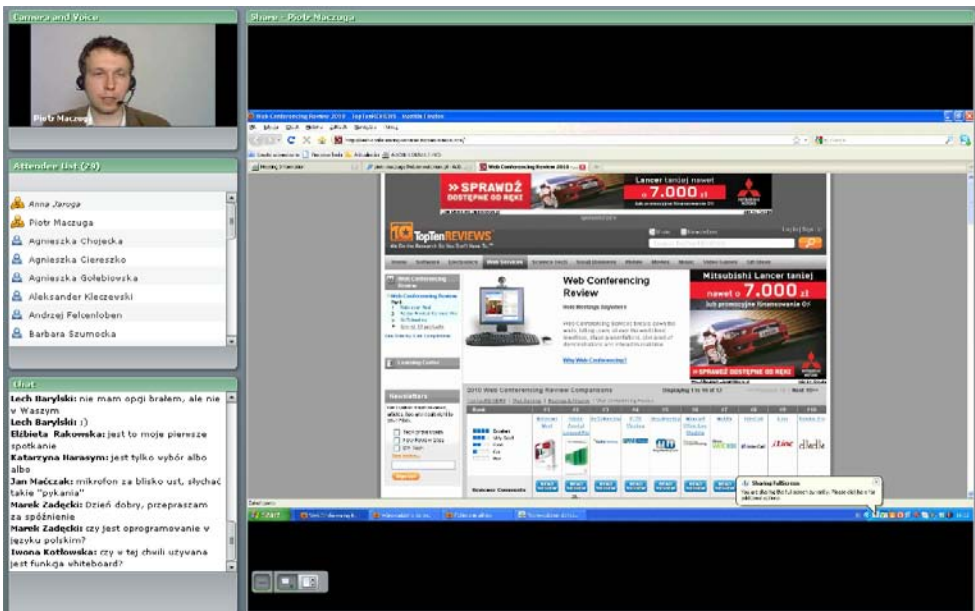
Sharing documents in version of Yugma software

- Note sharing

Note window in n Adobe Connect Pro Meeting software

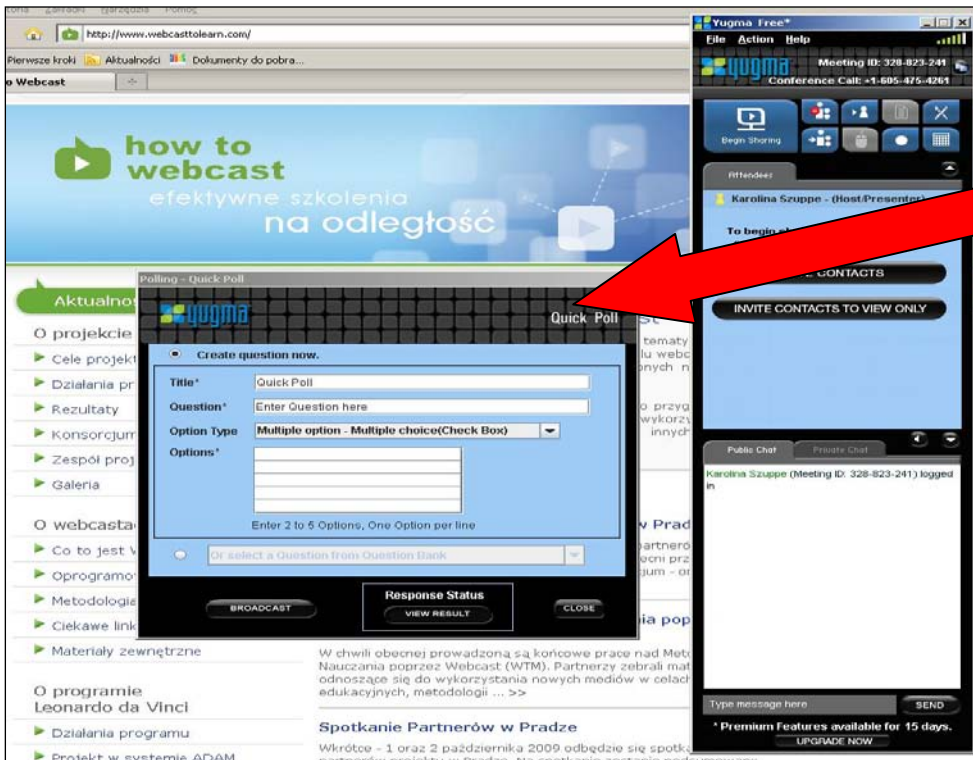


- Screen sharing (ability to view the monitor screen of the presenter / lecturer).



Screen sharing in Adobe Connect Pro Meeting software

- Surveys/quizzes (on-line on line questionnaires)



Creating the questionnaire in free Yugma software.

Further options which may be useful and are available in some of the more advanced software options are:

- The ability to change moderator/trainer during the session—this can be helpful for webcasts to smaller groups as it allows trainees and trainers to work collaboratively and swap who is sharing their screen, etc;
- The ability to view a downloaded file through the software—this is helpful for discussion purposes;
- The ability to record a webcast through the software—this can be very helpful as it not only allows trainees who have not attended the webcast to view the content, but also works as a form of digital note taking meaning trainees can devote their full attention to the webcast at the time of live delivery;
- The ability to carry out teleconferencing style webcasts—this can be very helpful if the lecturer wishes to allow the trainees to take control of their own lesson in order to hold a discussion or collaborative work;
- A questionnaire creator—this can be an excellent way to carry out assessment;
- The ability to publish this questionnaire—this can be an excellent way to give feedback to trainees on this assessment quickly and easily.

In order to define the effectiveness of a piece of webcasting software we can ask questions such as:

- Is it web based or does it require software file downloading?
- Does it require software installation?
- What is the maximum number of users at the same time?
- Is it freeware?

2.1.2. Resources

There are a number of software packages, both free and commercial, which can be used for educational purposes.

Examples of software used in webcasting:

- DimDim - <http://www.dimdim.com/>
- Yugma - <https://www.yugma.com/>
- WiZiQ - <http://www.wiziq.com/>
- Adobe Connect - <http://www.adobe.com/products/acrobatconnectpro/>
- Netviewer - <http://www.netviewer.com/>
- Onif - <http://www.onif.cz/>
- Wimba - <http://www.wimba.com/>
- Polycom pvx - http://www.polycom.com/products/telepresence_video/video_conference_systems/personal_systems/pvx.html
- ViPS - <http://emtc.ktu.lt/cms/emtc/app>
- Tandberg See&Share - <http://www.tandberg.com/products/webconferencing.jsp>

2.2. Hardware requirements

As with education in the classroom, webcasting should be available to all and therefore webcasting software should be compatible with reasonably low specification computers. The physical hardware required varies depending on the level of engagement the user wishes. To view a webcast, the bare minimum required is a computer with a broadband internet connection, a keyboard, mouse and screen. This will allow a minimal level of interaction. However, as the level of interaction is raised the more engaging the experience will be for the user. For example, the addition of speakers to the computer set up will create a fuller experience for the user. This hardware will allow the user to interact at a basic level with the webcast, allowing them to see and hear the content being webcast, typing notes and perhaps writing to forums or chat rooms regarding the webcast. The introduction of a microphone and/or a webcam raises this level of interactivity as it gives the viewer the ability to broadcast themselves through the webcast. The addition of an audio/visual representation of the user being broadcast brings a more flowing interaction with the webcast and will more clearly communicate the persona of the user.

Webcast technology requirements		
	Trainer/Moderator	Trainee
Computer	Specially chosen multimedia computer (fulfilling the requirements of modern games and multimedia software)	Any chosen computer for home/office use equipped at least: 512MB RAM, screen with a resolution of 1024 x 768 and a microphone
Internet Connection	Stable internet connection. 1024/512 Mb/s (down-/upload)	Stable internet connection. 512/256 Mb/s (down-/upload)
Peripherals	Webcam or other video tool, headphones and microphone (attached headset recommended)	Headphones or Speakers
Back-up	Quiet environment with good acoustics. Clearly lit with the possibility of extra lighting.	Any location

This table is only a model and the actual requirements should be based on tools used in webcast, the type of broadcast content and the number of participants. Such requirements will change as network capacity becomes higher and computers become more advanced. However two trends are particularly evident:

Firstly, the trainer should have a powerful computer ideally built to the required specification of the webcasting software package which will be used. Also a large monitor or, if available, two monitors to allow a presentation area and a preparation area out of sight of the trainees.

Secondly, the participant does not need a computer built to as high a specification, or a very fast Internet connection. It is just important that the current version of Flash and Java™ have been installed on the computer and run smoothly.

Often there are some technological myths regarding participation in webcasts such as that in order to take part in an interactive webcast you need a very powerful computer. As a rule, an average computer designed for office work or home use can handle the webcasting software as long as the software running is current and complete. Therefore, the percentage of people who, for technical reasons, are unable to participate in webcast is very low.

2.3. Bandwidth/network requirements

The factors affecting bandwidth are [1]:

- The quality setting for the upload of video and audio (a typical combined setting would be 300kbps);

- The length of the live webcast in minutes;
- The number of trainees of the webcast session;
- The length of time each of those visitors remain logged in for in minutes.
- For example, a 1 hour video webcast at the quality rating indicated above would generate the following amount of bandwidth if 100 people logged in and each of them watched the whole 1 hour:
 - Quality rating: 300kbps;
 - 1 hour of the webcast at this quality: 1,080,000 kbits, 1,080 Mbits or 1.08Gbits;
 - 100 people watching for 1 hour each = 100 hours;
 - Total bandwidth = $100 * 1.08\text{GB} = 1080\text{GB}$, or 13.5GB (GigaBytes).

There are a substantial number of Internet users who connect to the web using high speed alternatives such as ISDN modems, DSL, dedicated T-1 access and cable modems. The growth of these high-speed connection alternatives has already eclipsed standard 28.8 and 56K modem connections. Viewers with faster and more consistent connections will have a better viewing experience. At the time of this publication wireless connections such as Wi-Fi or GPRS cause high delays in transfer of audio and video. However, constant advancements in both webcasting and wireless network technology mean that these high delays are being addressed and in the future will become less of an issue.

2.4. Webcasting production techniques

A solid lesson plan, a good trainer and an avid group of trainees are certainly the basic elements needed to successfully conduct any training course. Nonetheless, even if these requirements are met a webcast training session may be disrupted by a number of factors related to the delivery of the content. Here are some basic instructions for conducting a successful webcast.

2.4.1. Place

Even though the webcast can be delivered from anywhere there is online access, it is good to dedicate a certain amount of time to choosing the correct location to deliver from. When doing this there are a number of factors which should be considered.

Above all, remember that a webcast is very much dependant on audio. Even when equipped with excellent equipment, it is easy for the webcast to be disrupted if the room in which the microphone is located is vulnerable to background noise. Disturbances such as traffic noise from outside, background noise from colleagues or the noise from buzzing lights and air conditioning units can have an effect on the quality of sound captured on microphones and be distracting for participants.

The level of these disturbances can be evaluated “by ear” without the use of special equipment, simply basing the evaluation on an awareness of potential sources of noise. At the same time it is also worth

remembering that an empty room devoid of furniture and other equipment can cause a very empty, almost echoing sound. In most cases, one can customise the site to the required conditions, using for example acoustic mats. If you intend to transmit an image from a webcam, an appropriate background is crucial. This may be a single plain surface, such as a wall or perhaps a simple banner. In whatever case, let us remember that the trainer is what's important here and what lies behind his back should not distract from content of the webcast. Therefore, placement in the background of items such as pop-up advertisements, while tempting, is not recommended for training.

Finally, the workspace the trainer has should be adjusted to address the need for greater desk space for documents or personal laptop. Also consider that in addition to the trainer and moderator, there may be more people taking part in the webcast such as a support trainer or co-presenter. Each of these persons must have a separate computer workstation although the trainer and moderator should be situated in close proximity to be able to communicate outside the webcast as well.

Carrying out the above preparations mean that there will be little to no interference for the trainer to negotiate during the webcast. Remember that the camera and microphone are tools for the trainer and should aid him rather than hinder his ability or cause him any distractions.

2.4.2. Camera angle

In order to achieve the best framing for a webcast, the camera angle should be level with the eye of the trainer, like in a TV news broadcast. With many camera models, especially those built into notebooks, this may prove difficult. As a general rule, however, the higher the better (but not higher than the head of the trainer). Also, it is best if the camera is a few degrees either to the left or right of the speaker, so the trainer is not in the middle of the frame. If the trainer gesticulates while speaking, they should set up the camera in a way that allows trainees to see their arms and hands. Before broadcasting the trainer has to make sure that the web camera is connected to the computer and that it is operational.

Although a video webcast is far from a Hollywood movie, the same rules and principles of visual composition apply to the moving pictures. Although the video camera stream will not be the most crucial element in most training courses, it has a strong role in supporting the transfer of knowledge from trainer to learner.

2.4.3. Lighting

Another key element in video is the lighting. It is said that photography is the art of painting with light, and the same goes for video, webcasts included. Lighting the subject of a video is a very broad subject and will only be addressed here in a simplified approach.

The trainer's face should be lit either by a lamp (or lamps) or sunlight from a window. The face should be the most lit part of the frame, i.e. there are no windows or lamps facing the camera from behind the trainer. It is best if the trainer is evenly lit, but allowing some shadows to be cast from the facial features as this will define the face more clearly on the trainees screen. A general rule to follow is that there shouldn't be a strong light source behind the object being filmed as this will flood the camera with light and cast the whole subject in a shadow.

2.4.4. Audio

The audio broadcast part of the webcast training sessions is arguably the most important element as the majority of information will be transferred by voice. For this reason, it is necessary to ensure that the audio broadcast is of a high quality. If course trainees are forced to listen to a crackling, noisy voice broadcast they will quickly grow tired and lose interest in the lesson.

Before conducting a webcast, the trainer has to make sure that the microphone is properly configured to his personal computer. A wireless microphone and headphones set is the best solution, as it allows free use of the hands. USB headsets require no installation and bypasses the sound card allowing them to avoid common driver problems. Although most notebooks have a built in microphone, it is best to use a microphone headset as it will more accurately pick up the trainers voice. Be aware also that when using loudspeakers the microphone can "hear" the audio being broadcast and will relay this to the webcast, causing a echo or feedback effect which will distort the sound.

Before conducting the webcast session the trainer should check the following software/hardware settings:

- Check the audio/video functionality - This can be a problematic point as the audio path from the computer to the ear leads runs through several bottlenecks;
- Check the audio-card is not disabled/muted;
- Check the earphones/microphone are properly plugged in, that they have fresh batteries where needed and that the volume-control is not switched off;
- Check you are using the correct input device - Your computer may have more than one input device for a single task (e.g. camera microphone, built in microphone and line-in microphone);
- Check your audio is properly set up in the webcasting software - Most webcasting software comes equipped with a technical "wizard" enabling you to set audio/video devices;
- Check the volume control and be sure to set it at all available points (software, sound card, headphones);
- Check your camera is not in conflict with other devices;
- Check you have properly set the audio/video driver software—e.g. all audio effects are switched

off;

- Check there is not an echo if someone is listening to you.

3. Organization of the live webcasting training

As was suggested during the introduction, webcasting has a variety of uses in entertainment, business and learning. Nevertheless the main focus of interest in this paper will be only one form of webcasting, live broadcast for educational purposes. Many aspects of live webcasting, such as technology or learners' motivation, can impact the effectiveness of training. The institution that organises a webcast training session has the most important role to play, which is the responsibility to provide an engaging, well structured and organised session.

3.1. The aim of the webcasting session

An institution that wants to organise webcast training has to answer a fundamental question. Why do we need this? The given answer will determine how the webcasting session will be organised. The most common reason for choosing an audio-video broadcast is due to the geographical dispersion of learners and trainers. The technology of webcasting gives an opportunity to avoid travel, which in turn reduces costs and saves time. It also gives potential to easily enrich a course program by inviting guest lectures to present remotely. Finally, webcasting is an alternative for learners who cannot attend the training in person because they are unable to travel or are ill. Regardless of the reason by which decide to organise a webcasting session, the aim of webcasting for learning is to increase access to education.

3.2. Types of trainees

The training organiser is responsible for providing information about their remote trainees to their trainers (adults/children, professionals/laymen, etc.) and how many of them will participate in the training.

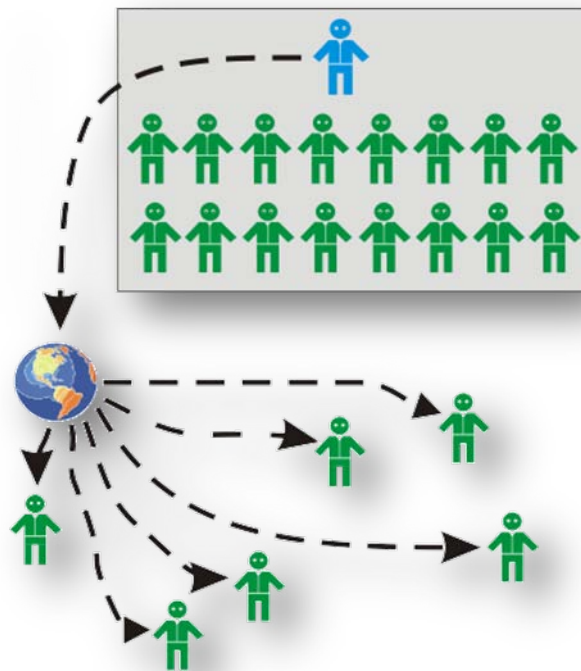
If we consider types of trainees, first of all the trainer has to know who will attend the training, and this depends on the nature of the webcast:

- Closed, limited audience (invitation required, known identity of the particular people);
- Advanced users (advanced users of computer programs);
- Anonymous users.

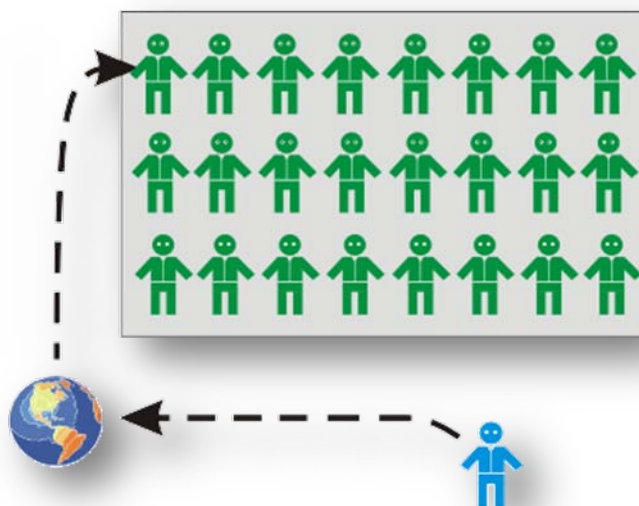
All of the types mentioned above require a specific approach (e.g. advanced users (usually) do not need an "opening ceremony"; "Do you hear me? I do not hear you...", "How do I set up my camera?") this part takes up extremely large amounts of time for inexperienced users. Anonymous users have their own specific habits (see most open internet discussions) and the administrator has to control such a user using available tools for the whole session.

Another factor that determines a webcasting session is the location of trainees. There are a number of possibilities:

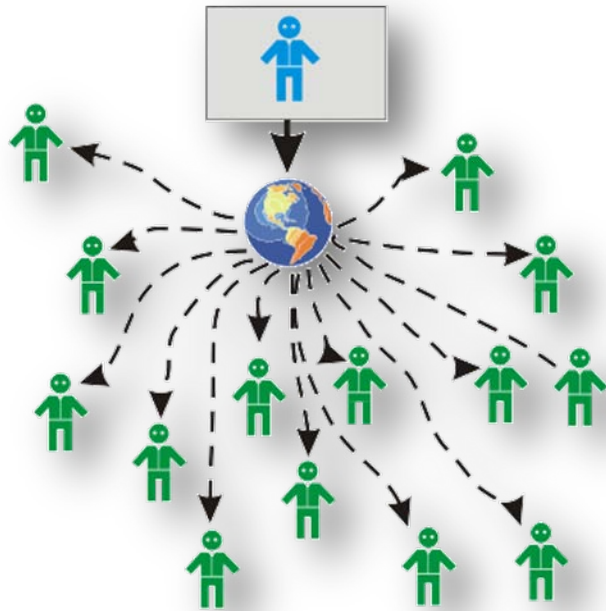
- Trainer and local trainees in the same class + remote trainees;



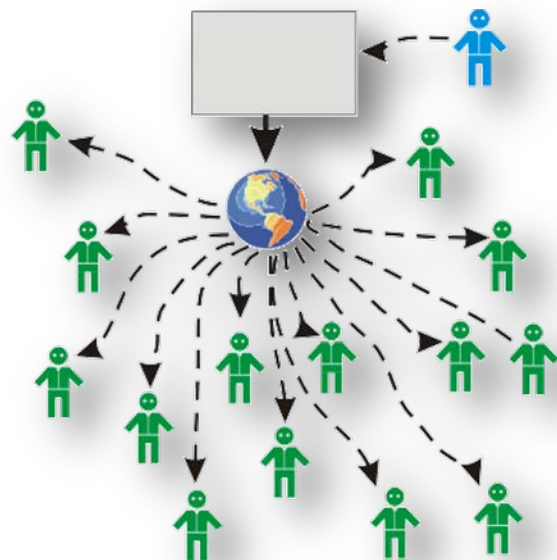
- Local trainees in the same class + remote trainer;



- Local trainer + remote trainees;



- Remote trainer + remote trainees.



Each of these situations requires a different approach to preparing webcast training. The trainer has to know

how to structure the lesson, what types of activities and interaction might be used, and whether they will be supported by technical staff.

Also, the number of trainees in the group is significant when organising a successful training. There is one general rule for webcasting: the more users—the less interactivity. This rule of thumb has to be considered when planning the structure of the webcast session. The following tables demonstrate how a webcast alters depending on the number of attendees.

Level of interactivity and webcast structure

Number of trainees	Interactivity level	Structure of the webcast
Up to 6	High level of interactivity—the session can be led as a dialogue. The trainees can interrupt the lecturer spontaneously. There are allowed interactions between particular trainees e.g. via chat. If there is a local trainees, polls, voting and similar tools do not play such a big role – everything can be addressed face to face.	Structure of the session can be changed if necessary according to the feedback and interaction.
7-20	Limited audio/video responses (lecturer can select who will talk). There has to be tool to express particular status by the trainee (e.g. “raising hand” button available in webcasting software). Polls, voting and similar tools are important.	Structure should be set “semi firmly”. There has to be space for extending/shortening some parts of the session if it is interactively required. There should be space for Q/A after each logical block or at the end.
20-50	Limited feedback via chat or interactive tools like poll and questionnaires.	The structure should be firm, there should be some space for FAQ via chat
50+	The level of interactivity depends on size of the webcasting team. If the size is small (or none)—only polls and similar tools can be used. If the team is more robust, chat can be allowed and pre-sorted.	The structure should be firm. There will be anonymous users and the fact that some attendees come later, some leave earlier.

Required attendees identification

Number of trainees	Trainee identity
Up to 6	Full – Name/Surname/Email
7-20	Full Name/Surname
20-50	Limited (Name/Nick)
50+	Anonymous – identification for chatters only required

Depending on the workshop needs, the above diagram may be modified and fixed. The above data shouldn't be considered a stencil, rather a hint when planning your own webcast.

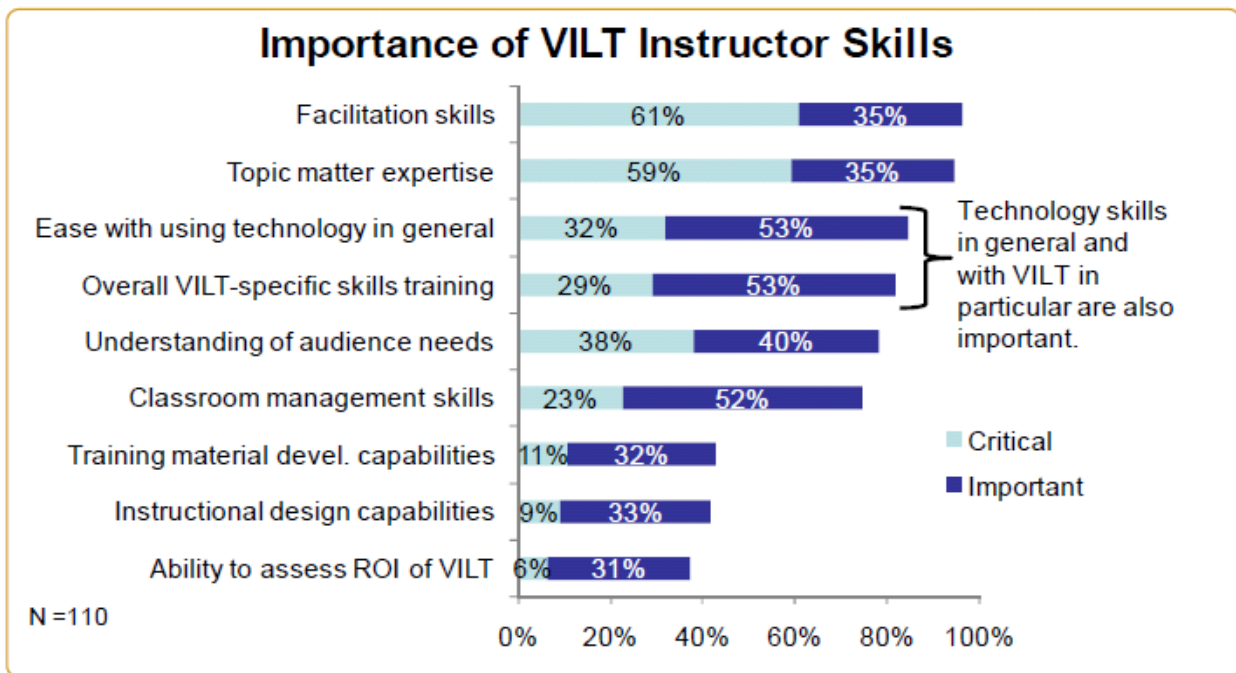
3.3. Trainer's role in webcasting training

A trainer who knows webcasting technology will be able to independently lead his workshop for a small group (6 people) with success. In a webcast for a group larger than 50 people, help of an administrator / moderator is more crucial. However, no matter how big the group may be, the trainer has a large number of workshop / training responsibilities.

Above all, the trainer needs to prepare a theme and structure for the webcast meeting, as well as all associated materials including multimedia presentations. It is important therefore that the trainer feels at ease in the webcast environment, has experience that allows him to assess the capabilities of the software and to choose the right tools and content. In the case of webcast training and workshops where participants cannot see the trainers, they are focused primarily on the presentation. It must therefore be designed in an aesthetically pleasing way to the audience, but must also be functional and effective. Good knowledge of the software package being used to prepare a presentation is helpful here.

Keeping in mind that materials used in webcast workshops usually come from various sources and will be in an assortment of formats, it is important for the trainer to have at least a basic knowledge of different technologies. Below we present a graph showing the importance of a trainers skills relating to virtual instructor led training (VILT). According to research, the most important skill a webcast trainer should have is the ability to be able to formulate their thoughts clearly and in an accessible way to the participants. Also important is the fluency in presentation of a topic, skills connected with the ability to use webcasting technology, technological know-how and ease with using technology in general and specific knowledge of leading workshops online (overall VILT-specific skills training). However, although these skills are very important for the efficient conduct of this training they are not its primary component. In this style of training the content will always be of fundamental importance.

As well as the skills outlined above, there are skills connected with the training process itself. These are understanding of participants' needs, classroom management skills, training material development capabilities, instructional design capabilities and the ability to assess and evaluate VILT.



Research 2010: Delivering Virtual Instructor-Led Training (VILT) - © 2010 General Physics Corporation (GP) and Training Industry, Inc.

The organiser of the webcasting session should provide the trainer with information about trainees and learning outcomes well in advance of the training session. The organiser must be ready to answer the following questions:

- What is the aim of the particular webcast?
- What do we want the learner to be able to do?
- What do we want the learner to know?

- What type of trainees will participate in the webcast?
- Is the webcast for a closed or open group?
- What is the number of trainees?
- Do the trainees use this kind of software frequently?
- Will there only be one session or do we expect more consecutive sessions? If consecutive sessions—will there be the same attendance?

- What are the hardware conditions during the training?
- Is everyone sitting by their own computer?
- Is the broadcast made for single or multiple “classes”?
- Is there technical support provided for the learners and trainer?

The trainers job is to choose the right methods to accomplish their teaching goals. However, the organiser must provide the trainer guidance in the field of technology and the use of webcasting in education. If the

trainer is well trained and informed, they should be ready to prepare a good lesson plan.

Before live webcast training the trainer should be able to answer the questions below:

- What type of interactivity is desired?
- Full audio/video interactivity on both sides
- Switched trainees response (the administrator can choose who will speak)
- Instant message / chat response only
- Response through some interactive tools (e.g. voting, questionnaire)
- No response at all
- What are the expected outcomes of the session?
- Knowledge and understating of presented problems
- Practical application of the knowledge
- Analysis/problem solving skills
- Evaluation skills

What is the structure of the webcast?

- Lecture
- Interactive training
- Networking / collaboration

What kind of external materials will be used?

- Presentations
- Documents
- Video / Audio

What software will be used during the session and what are the other technical conditions?

Is it possible to use these materials “interactively” (e.g. using whiteboard tools)?

If we are using media requiring high bandwidth (e.g, HD video)—do we know of any bottleneck of the connection (are all trainees well connected)?

While the trainer can count on the support of the moderator, to the trainees he appears as the person who conducts the meeting. Their success depends on a previously prepared scenario and training materials as well as experience. Trainers who assume at first that they know the topic well and are good speakers, usually struggle with their first attempt to webcast. A lack of preparation, where relevant skills are not geared to the webcasting format, are visible right away, and such webcasts tend not to be successful.

In that sense, the trainers duty is also leading the meeting in such a way to constantly engage participants in the training process. It is easy to forget this when we cannot see the audience and the signs of how we are perceived do not reach us. Most often, for people without previous experience it is advised to assume their

presentation should be more engaging and dynamic. There are people who have a more natural tendency to be brief and energetic which is very useful in webcast meetings, and certainly after a few tries, each trainer is able to choose the style and form appropriate to the audience, which at the same time fits their skills.

During the webcast it is the trainer who is the expert in the topic, thus the audience will expect them to answer their questions. It is right to answer such expectations in a positive manner. However, as time during training isn't always provided for questions, the trainer's responsibility is to answer questions after the main part of the training, even if this takes several minutes or longer.

In many cases the trainer will represent the company organising training, so it is up to them to also perform the standard housekeeping tasks of the meeting such as delivering appropriate salutations and informing trainees of any formalities of the webcast. The moderator, who may have more information which is not related strictly to the training can fill in for the trainer in appropriate situations, such as when the trainer is a guest speaker invited by the company organising the webcast. However, in this case the trainer should also find out about the company which has organised the webcast.

A very important duty of the trainer is the evaluation of the training. There are various tools which are suited to this task. It is possible to play back the recorded meeting, or to glance at the statistics about it. With some software the trainer can view statistics concerning not just answers which were given in certain quizzes, but also information showing audience participation. The coach should be able to view data showing the length of the session, the number of participants and their participation times. Even the fact that some participants were quitting the session during its course partially shows whether the meeting was engaging and well led. During webcasts it is possible to successfully use such data, and not evaluate the meeting solely on feelings and grades from evaluation surveys.

3.4. Moderator and technical support

According to the Grand Spelling Dictionary PWN, the definition of the word "moderator" is:

"person leading discussion on TV, radio, internet discussion boards, etc, making sure of its correct process, also a person bringing back together the arguing sides."

As we can see, in the webcast meetings the role and the character of the moderator is a little different. The moderator is usually employed by the company organising a webcast and represents the company among the participants of the meeting, unless such responsibility can be taken by the trainer.

The moderator may use his experience in webcasting and start the meeting, correctly introducing the trainer to the participants, which allows the trainer to build up his authority right away. Thus it is useful for the moderator to possess above average communication skills.

During a webcast, the trainer may find they have to deliver a presentation fluently while at the same time pay attention to questions from the trainees and text-based comments from the remote attendees. The moderator is the person who helps the trainer to deal with the high volume of trainee interaction. The moderator can focus on the organisation of the class discussion. They can easily follow comments and questions, categorise them into topics and present them to the trainer in the time reserved for discussion.

This assistance which is expected from the moderator by the trainer is to make sure of the proper involvement of the trainees via chat and other tools. This is slightly connected to the dictionary definition given at the beginning. The moderator browses chat, pacifies diversification and other actions which could harm the process of training and to discreetly relay information to the trainer about the progress of the meeting, and which important factors should be paid the most attention to. While skimming through chat, the moderator can find out what the opinions and questions of the trainees are even before the trainer. The moderator should also possess at least the minimal knowledge on the topic of the training session. He may help the trainer by quickly verifying the chat questions, and presenting the most interesting ones to the them. In this role, his co-trainer may substitute him. However usually organised webcasts do not have such a developed staff team, thus the moderator should be flexible.

An important role of the moderator is technical support for the participants and the leaders. They will most often will have an advanced knowl ofedge the applications for delivering webcasts over the trainer and have much greater experience in this area. Because of the technical problems often experienced by the participants and not the trainer, the moderator should also have access to a dedicated telephone line, so he can advise the participants outside the webcast in the event of any technical issues for them.

Duties of the moderator may also include creating part of training, organising marketing materials and gathering publications with side notes on internet community portals. They can also be tasked to organise materials and recordings of the webcast to be made available after the training session along with a review of the webcast itself. The moderator seems to be the right person for such tasks when it comes to a training/workshop company organising webcasts, for he not only knows the company but takes part in the meetings himself.

As we can see– the moderator’s duties are very versatile and range from organising the training with the trainer to the more technical issues. For this reason it is advised to divide these duties between two moderators, a technician and a co-trainer, during large webcasts.

4. Educational impact

4.1. Training program and preparation

Both teaching and on camera presentation requires a certain skill set. Trainers vary in teaching styles, strategies, and experience. Even highly skilled educators tend to have problems acting on camera—they lose their charisma and self-confidence. That is the reason why accurate preparation is key to a successful webcast. In this case the usual curriculum consisting of aims, goals, objectives and a list of content areas is not enough. The trainer should prepare a document which is more scripted than a regular curriculum or syllabus. Scripts differ from normal pieces of text. A lesson script should contain a plan of trainer—trainee and trainee—trainee interactions, detailed learning activities and evaluation procedures.

Evidence included in the materials prepared for the “Good NGO Trainer” project (report, manual) shows that addressing issues of trainer competency development and setting up a clear and precise training structure is crucial, especially for less experienced trainers. Having proven live webcast trainings are similar to traditional trainings we can transfer certain good practices and rules directly from regular training to webcast training methodology.

When addressing the subject-matter of training structure preparation an educator should know how to:

- Prepare each element of the webcast training in a way allowing it to keep the right apportionment for trainee activity, focusing especially on sustaining trainee energy to avoid drowsiness;
- Select materials in a way which allows the trainees to easily find the logic in the training as a whole and in particular elements that make up for the key conclusions of the training;
- Blend proven didactic methods into methods used before training as well as those used afterward, which is referred in the WTM Model as “blended learning” methods;
- Create the training program in a way to find a balance between individual activities and those meant for team work, with recognition to the objectives and terms established before the training;
- Select an adequate structure in case the training is conducted by more than one educator.

Putting together a training program structure suitable to the objectives and conditions of a particular training can be quite complex. The more elements taken into account during the planning process, the easier the program is in the later stages for the educator to conduct. This is extremely important in cases when the training is conducted by more than one educator.

Program structure must strongly take into consideration the characteristics of the group, such as its predisposition to concentrate in a longer time period. It is desirable for the program structure to be transparent and clear, not only for the educator guiding the sequence and timing of particular parts but also

the trainees. A clear program structure makes it easier to verify and modify for the individuals controlling or responsible for approving a given training program and allowing it to be implemented or financed.

Considering the functional side of preparing a training program structure the trainer should know how to:

- Plan the whole infrastructure and resources required to conduct a didactically efficient training;
- Provide a complete transfer of appropriate information to all the people supporting the training or co-organising it, as well as all of the trainees;
- Predict eventual problematic situations, prepare a course of substitute actions and materials, and introduce an elastic form of reaction to all sorts of changes or troubles you might encounter while conducting training.

In order to reliably plan all necessary equipment, infrastructure and materials, it is desirable to use a check list. It gives a sense of organisational safety to all of the trainings and it minimises the chance of forgetting not only about anything important but also about details which increase the comfort of work and build a professional image. Good practice is to be present at the training an hour before, to make sure all of the equipment is adjusted accordingly and that presentations are ready. This allows you to find infrastructure glitches that make up for nuances (example: software adjustments of one or more trainees that affect everyone in the training because of the effect of feedback). Important elements of organising trainings are clear methods of naming the training session and giving the trainees training schedules beforehand (so that trainees can prepare for the session).

4.1.1.Session planning

The activity of delivering a webcast starts a long time before the actual broadcast online. In preparation for the webcast training, the trainer must plan a certain scheduled and sequenced group of tasks. Depending on the client, training group or topic, certain tasks or their order may vary, however usually they appear in the following order:

Task I: Analysis of the meeting participants.

Answer the questions:

1. Are the participants from the same organisation? Are they internal or external participants?
2. Are they familiar with online software applications? Do they feel comfortable working with computer?
3. What are their expectations from the training?
4. What motivated them to take part in the training?
5. What will be the estimated level of group discipline?

Think:

When you think of who the trainees are, it may actually reveal how they will behave during a webcast.

People who are anonymous may disrupt the webcast, on the other hand people who know each other from the same organisation but do not get to see each other often will be likely to chat with others about things not connected to the training itself. The ability to answer to the expectations of the participants is valuable and may increase the motivation to actively take part in the training.

Task II: Figuring out the assumptions:

Answer the questions:

1. What are the goals of the training? What is the primary goal and the secondary goals? Can they be established by a webcast training?
2. What should be taken into consideration when constructing a webcast to make the goals more probable to achieve?
3. What indicators can we define to check if the goal has been reached and to what extent?

Think:

Let's remember that we have to set the indicators for whether our goal was achieved or not. For example: if the aim of the training is to widen the knowledge of the traders about technical details of products offered by them, the indicators may be the sale results over the coming months or the results of an audit. If the results of the indicators must be ready right away, they may be based on the test of knowledge taken by the participants a week after training.

Task III: Getting the methodology ready

Answer the questions:

1. What is the topic of the training (what should it be about)?
2. What is the range of the training (main points)?
3. What will be the training plan? What aspects can be considered when designing a presentation?
4. What extra materials can be used?

Think:

While planning materials to use, it is useful to make use of different kinds of media. The trainer should not have inhibitions when it comes to mixing and combining a range of materials, for example presentations with videos or documents. It makes for a good environment for the participants to feel engaged, as they are not only the observers of the presentation then but rather take part in it themselves.

Task IV: Set the forms of the training

Answer the questions:

1. How many people will take part in the session?
2. Where will it be transmitted from?

3. How are trainees participating – How are they dispersed geographically, do they all have access to their own computer?
4. What is the assumed time for the training?
5. What tools will be used?

Think:

There are cases of multiple users taking part in a webcast using one computer workstation. It may also happen that the trainer will not be available in the place from which the webcasts are usually transmitted, so it will be impossible to give them the dedicated equipment and area and the right internet connection. It can greatly affect the form of the training and requires previous preparation.

Task V: Defining technological conditions

Answer the questions:

1. What are the technical criteria for the software?
2. What is to be expected from the equipment?
3. What are the possible challenges for the participants (do they have easily predetermined solutions)?

Think:

A training plan should also include the technological conditions. Even the best materials and tools will turn out to be useless if the participants are not be capable of using them. Part of this may have to do with the equipment's effectiveness or the quality of the internet connection, and here everything should be adapted to the trainee.

Task VI: Planning the training scenario

Define:

1. Date and time of the training
2. Structure of the training
3. Form of the training
4. Training staff members and their duties
5. Number of participants at which the enrolment should be stopped
6. Using interactive tools
7. Training requirements

4.1.2 Getting the materials ready

Using different media with a large number of graphics is becoming a standard. Internet connections are getting faster and the trainer's perception of the well designed graphics is increasing and this is affecting the results of training. Key to a rich presentation is not only the presentation itself, but a good mix of different

multimedia elements.

When designing a presentation, it is necessary to make best use of the space provided in the webcast. The margin may serve as a sort of table of contents, which will help the user get oriented in the structure of the presentation. It is not worth choosing wide proportions if there is no practical reason for it, because we will not gain anything this way, yet we are limiting our space for presenting another tool.

The correct layout of the slides for a presentation, taking into consideration elements such as the graphics and the font being used (normal text, header and footer, bullets) is also very important. It should seem professional, yet not too overwhelming so it does not take away from the content of the slides. A well designed layout can also be a commercial tool, because it will be branded by the webcast organisers. This is important when we think of the possible distribution of the material to the wider range of people. While designing the layout, we should consider the specificity of projecting the text on screens of different diameters. Content should be clearly legible on a net-book with a 10 inch screen as well as a 30 inch multimedia monitor.

Software for presentation design lets us use all kinds of extras that actually affect the visual character of the presentation. Complicated animated elements should be avoided. Most of the software for webcasting will struggle with any complex animation. There may also be problems with converting such materials to different formats.

Something very important about not only the presentation, but the materials used during the webcast session, is to choose the amount of content so the participants don't get overwhelmed. It is good to avoid large amounts of text on the slide. Articulated points should not be duplicated and there shouldn't be too much in the way of additional information, like extra facts that are not entirely relevant to the training.

Graphics used in the presentation should help explain the content. It is good to use diagrams or charts in place of text. We can confidently use graphs that show correlation between topics, that show and help visualise numbers, progress of the process in time or that point to important matters and help with understanding.

It is important to remember that the webcast session is not only the multimedia presentation. Without doubt there should be other materials ready. Depending on the ability of the webcast applications you can use video, audio, text and graphics. It makes the presentation a lot more attractive and helps the participants get involved in the training process more easily. It is indeed important that the materials be tested earlier when it comes to compatibility with the application and the bandwidth. It does not make sense to prepare an inspirational video in high definition, if the output limits will not let us fully transmit such content, and it will result in the disappointment of participants and the trainers frustration.

Also, elements which engage participants such as quizzes or surveys should be planned at this time.

Especially important is not only planning the content of those elements, but also the moment when they should be used.

4.1.3. Contact with trainees

By inviting the users to webcast we should remember that the character of the online meeting makes it possible to forget it easily. Not many people write down webcast in their calendars, and a lot of the enrolment happens a few weeks before the date of the session.

If we are opening the enrolment possibility 2 days or more before the session, we should inform the participant about registering and give them some of useful information:

Hello Michael!

We are confirming your webcast registration:

- Topic: „Homemade ways to bake cakes”
- Trainer: Granny Halina
- Date: February29th, 2010
- Time: 11:00
- Duration: 60 minutes

Please confirm your participation ([click here](#)). Not confirming in the next 48 hours will result in automatic crossing off the list of participants.

Information on how to log in will be sent 24 hours before starting the webcast.

If it will be your first webcast or you have doubts if your computer will handle it, [click here](#) to make a quick and easy test.

If you have any queries, we will gladly answer your questions.

Greetings,
The Food Training Staff

The author of this e-mail incorporated all the crucial information for the participant in a couple of paragraphs: he clearly stated the basic data and made the compatibility tests possible. Webcasting software often has the ability to automatically generate such messages according to the model. However, it may also be done with the help of e-mail software. It is essential to also (if we often are organising webcasts) turn on the versatile calendar folder in the *.ics format. It works with multiple application for time management such as Microsoft Calendar or Mozilla Sunbird and automatically starts the reminder of an upcoming webcast, adding itself to a list of meetings or tasks planned by the participant. It is also good to avoid too many graphics in the e-mail since most of the programs will block them automatically, and in some cases our correspondence may be treated like spam.

One day before the webcast, participants should be informed about it again, especially if the enrolment process lasted longer than one week. For this purpose we may use the template model again:

Hello Michael

We are letting you know that tomorrow is the webcast which you want to take part in:

- Topic: „Homemade ways to bake cakes”
- Trainer: Granny Halina
- Date: February 29th, 2010
- Time: 11:00
- Duration: 60 minutes

You may log into webcast from 10:30

- Link: <http://szkolenia-z-jedzenia.biz/12345>
- Login: michal.nowak@poczta.pl
- Password: wDuPi3#cZ@

You may test the settings of your computer by clicking here: During the whole meeting you will have access to our consultant-in case of any problems call: 0800 123456

Best regards,
The Food training Staff

This time the person typing the e-mail sent the login information. The organiser also left the phone number of the technical problem phone line.

There are many ways to make the relation with the participants of the webcast work better. Some companies experiment with using SMS, thinking that it is easier to check a text message than the e-mail. There are different opinions on the set time and frequency of the messages. It is important to keep in mind three rules of what this information should be:

Clear – as the receiver wants to quickly find important information: topic, date, time, login information, etc.

Set for the right time and sent in time – as the receiver wants to make sure that his enrolment was accepted, and that he will not forget about the webcast either.

Non-invasive – as the receiver does not want to be attacked with the messages several times a week just because he agreed to take part in the webcast.

When it comes to the relation with the participant, the organiser is given certain promotional possibilities- the correspondence lets a good e-mail database build up: knowing who wants to take part in the webcast and what kind of things are of interest to them. It is also good to use this knowledge in the practical sense and keep building a strong client society, which should not be in opposition with the third rule of the ones mentioned above.

4.1.4. Presentation

A key feature in webcast training is that it allows the use of extra materials and presentations as an integral part. As a visual medium, webcast sessions depend largely on graphics. The graphic approach and design must be coordinated with other lesson elements to enhance and clarify messages and learning points.

Graphics should always have communication and educational value; simple and straightforward graphics are most effective [3]. The most popular presentation tool that can be easily used during a webcasting session is PowerPoint. This format of presenting a series of slides with text, images and simple animations is a great way to illustrate information provided during a lecture. Although PowerPoint is a common and well known presentation tool many users actually keep making the same mistakes. A trainer who presents slides should avoid legibility problems such as too small fonts or lack of consistency in style.

These simple recommendations below can be helpful in a successful slide preparation [4]:

- Use a simple PowerPoint template in landscape format
- Use dark print with a plain light background or light print and a plain dark background; a dark blue background is recommended
- Allow for a 1 inch margin on all borders
- Limit the number of words per slide:
 - use no more than 5 bullets of information per slide
 - use brief phrases instead of sentences
- Keep any graphics simple:
 - use simple bold tables like pie charts or bar graphs
 - avoid complex tables and scatter plots
- Use a consistent font size:
 - at least 30-point font for text and 44-point for headings
- Select a simple, clear, and bold font such as: Arial, Tahoma, Verdana
 - avoid italics
 - use lower case for text
- Avoid animation and special effects such as: sounds, fly-ons, fade-ins:
 - use simple slide transition
 - remember about simplicity

There is a difference between a presentation prepared for live presentation only and a presentation for archiving purposes. If trainees can re-use a presentation the trainer should prepare some extra textual materials which will be an equivalent to the talk.

Although PowerPoint presentations are by far the most popular as a lecture element, other materials can be equally useful. The exact way in which extra materials can be used in a training course depends on the lesson plan and the software that is being used. Many of the webcasting software tools available allow file sharing. A “file access” option makes it possible for the trainer to upload files to trainee’s computers so they can access them on their own. These might be spreadsheets, text documents, audio or video files—the only limit is the file size, which will probably be around 10 megabytes depending on the internet connection speed of the trainer and course trainees.

Regardless of the potential of a piece of new media, the trainer should consider how to use lesson time in the most effective way. Reading text documents during, e.g. a 45 minute session, could be considered a waste of time. Live webcasting sessions need a good plan of activities which will be creative and enhancing both for trainees and the trainer

4.1.5. Activities

For each webcasting event (course, training, lecture) there exist some criteria which influence effectiveness of learning. Probably the most important criteria is the degree of interaction (learning activities). The trainer cannot expect that trainees will focus on the webcast lecture if there is only one-way communication. A live lecture broadcast on the web is like a television program. It is a one-way message received by a passive audience. However, television use edit points and different images combined with a variety of sounds to communicate its message. Webcasting lectures or trainings usually have lower production values. In fact a webcasting session if viewed as a one-way technology can be seen as very low quality television [5]. This could be one reason why trainees disengage in one-way presentations. We can be sure that interaction between trainer and learners, communication and activities will change these trainees reactions.

As mentioned earlier, the intended productive utilisation of webcast training involves planning a number of activities:

- Interaction with training materials;
- Interaction with trainer;
- Interaction between learners.

The potential of new media presentations has increases enormously in the past few years. The speed of internet connections and hardware/software throughout grows constantly. The richness of new media allows the trainer to plan interesting and varied trainee-content interaction. This is a list of popular Internet sources:

- Public video resources/channels (e.g. YouTube, trainer Tube);
- Google Books, Google Academics (proved documents—mostly in English only);
- Number of new publicly accessible Internet services:
 - vocabularies,
 - knowledge basis,
 - digital libraries,
 - free online courses materials;
- Web 2.0 pages (web-based communities e.g.: wikis, blogs, social-networking sites).

Webcasting software functionalities allows trainers to build a collaborative webcast program based on trainee-generated content:

- Document/screen sharing (it allows users to see the content of each others screen and even to take control of it—very useful for document creation/revision etc.);
- Co-browsing (sharing of web pages—everyone sees the same page and content);
- Video sharing (simultaneous broadcasting of video);
- Screen cast (this option allows the trainer, or any of the trainees, to project a video stream of what is happening on their computer desktop. This allows for practically unlimited flexibility, as the trainer can show, work on and comment on any application or materials that he has on his computer. This can be particularly useful when teaching how to use software);
- Programmable APIs to public internet services including services like YouTube, Google Maps and many others. This technique enables broad usage of publicly accessible resources in one's webcast.

Interaction with a trainer can be provided in the form of questions, comments and answers. Activities defined as a 50 minute presentation and 10 minute questions/answers session would not be effective. However, there are educational events where time is limited and the presenter is a special guest who's availability is limited. In these circumstances limited activities are justifiable. Special guests, such as an experts or celebrities can make an impact on learning and motivate trainees.

The literature of webcasting for education [5] indicates that some preparations need to be carried out to optimise the session:

- Provide information about the trainees and learning objectives;
- Demonstrate webcasting technology, it will reduce their apprehension if they are not familiar with it;
- Agree on a format of webcast session;
- Agree with the guest how and when questions from trainees will be handled;
- If they are not comfortable with giving a speech suggest an interview style;
- Ask if they are happy to answer questions during the speech or if they prefer to take questions in the end;
- Ask if they would prefer the moderator to act as chairperson or will trainees talk directly to the guest;
- Prepare the learners, give them information about guest;
- Ask trainees and guide them to the preparation of questions.

Other activities that are suitable for live webcast training which include interactions between trainees are listed below:

- Debate
- Discussion
- Brainstorming
- Presenting
- Project
- Dramatisation
- Create

- Case study
- Exploration
- Role-playing

As we can see, if the communication and cooperation between trainees is not an issue, the trainer can actively involve trainees in learning. Brainstorming allows trainees to create new ideas, solve problems, answer questions, introduce a new subject, raise interest, motivate and develop teams. Brainstorming is a great motivational tool because it involves members of a team in bigger management issues, and it gets a team working together. During the random collection of ideas the trainer must record every suggestion on the flip-chart or blackboard. In webcast brainstorming exercises a camera can be pointed at a blackboard or a flip-chart can serve the same purpose. Tools available in webcasting software (sharable electronic whiteboard, forums, text chat) can be used to record the ideas generated.

Using a case study as an educational technique enables arousal of the interest of the trainee by placing him or her in an active role and by making them analyse real world problems. The case study requires learners to decide which analytical tools and techniques to use in complex situations and then to deal with the practical problems of implementing their decisions [6]. Case studies usually consist of three elements: a scenario, supporting materials, and the problem. The scenario is the story of the real world problem. Case study scenarios can be delivered verbally by the trainer as a introduction to the problem. The supporting materials are often text documents but can be web pages, media files, or tables and data. Advanced webcasting tools allow document/video sharing and co-browsing which makes trainees cooperation easy and effective. The problem should be an open-ended one in which the trainee develops a solution as well as a supporting argument. Reporters from each group can then use the video or other webcasting software tools (forum, chat) to share their group's response with the training trainees. While the process of a case study is a valuable learning activity it is also a starting point for what can be a rich discussion of a problem and the proposed solution.

The discussion method uses two-way communication between the trainer and the trainees to increase learning opportunities. Discussions allow the trainees to be actively engaged in the content of the webcasting session, which improves recall and use in the future. Trainees questions demonstrate the level of understanding about the lesson issue. Trainer questions stimulate thinking about the key learning points. Discussion can be provided via audio-video channel, or/and text chat. The important thing is to manage the discussion by engaging a moderator. With a small group of trainees the trainer can moderate discussion them self or they can ask a trainee to play a role of moderator.

Concerning moderating trainee interaction trainer should be able to:

Plan an adequate timeframe to complete all of the elements of training, including efficiency assessment in a way that will allow achieving the objectives set up for the training session with the use of available resources, along with time;

Arrange all the planned breaks to ensure a smooth, dynamic and comfortable course for trainees;

Create time elasticity of the training prepared to react to most possible training session situations.

When planning the timeframe for the training session keep in mind that concentration is higher in the early day time hours which gives a possibility to increase the amount of learning activities in this part of the day. The later the session will be conducted during the day the shorter the length of the learning activity should be. Important elements influencing the general length of each activity carried out in the training session are obviously the types of activities for trainees (lectures and presentations should be short units of time and exercises should be longer units). The time of year also influences the length of a training session, especially in the winter time and summer. It is commonly known that the optimal length of a didactic training unit is between 45 minutes and 90 minutes. This rule is made of course for timeframe planning purposes mainly and regardless of its educators should react to the level of trainee concentration during the training session and adequately adjust the length of each particular unit.

4.2. Engaging and motivation

Some learners are naturally enthusiastic about learning, but many require to be inspired and stimulate by their trainers. There is no simple answer to question about trainees' motivation. Many factors influence learners' motivation, such as: interest in a particular topic, its usefulness, self-confidence, patience and determination. Literature of this subject [5], [7] suggests that instructors use the following strategies to encourage trainees to become self-motivated learners:

- Give frequent, early, positive feedback that support learners' beliefs that they can do well;
- Use teaching strategies that engage and actively involve learners;
- Help trainees find personal meaning and value in material (prepare up-to-date, real world based training content);
- Communicate personal interest in trainees by calling them by name and asking questions;
- Asking questions directed to particular trainees can ensure that even quietest trainee has role in webcast training;
- Help trainees feel that they are valued members of a community of responsible learners.

In a webcasting event contact and communication have a special meaning. It is important both to trainer and learners to enhance the sense of presence. When answering a question there is a trick about how to appear, to give eye contact to the trainees as in classroom. While it is natural to look at the image of the trainees on the screen if trainer looks into the camera it will appear to them that he or she is looking into their eyes [5].

4.2.1. Building social interaction

Learning is a social process, therefore social aspects of learning such as: communication, collaboration and emotion have a great influence on the effectiveness of learning and teaching. Learner-based teaching

focuses on encouraging trainees to express their ideas freely. That is why a webcasting session should be structured with many opportunities for learners to talk formally and informally. For example—if there is a break in the class the trainer should leave the webcast link connected and suggest to trainees that they can use it.

As mentioned earlier, the trainer should build a learner friendly environment that encourages trainees and lets them feel valued members of a learning community. The trainer can involve learners in creating webcast session rules and agreements.

In the beginning of the training session the trainer should be able to:

- Plan the beginning of the training in a manner allowing the trainees to be informed of all the important training aspects for the organization or individual;
- Make arrangements with training trainees at the beginning of the session insuring a swift method of carrying out the training and maximizing the comfort of the educator and trainees.

Communication aspects with trainees at the beginning of training should include such matters as:

- The time frame of the session;
- A training program schedule;
- Information concerning the use of didactic materials;
- Information regarding efficiency assessment of trainings and possible requirements to trainings ending with formal examination.

To address potentially important domains that need to be discussed with training trainees before are:

- Agreements concerning forms of addressing each other or a preferred tone, atmosphere of the training;
- Rules concerning breaks during the training;
- Terms of asking questions and leading discussions in the training;
- Principles of comfort and concentration during training (examples: turning off all communicators, leaving the training outside the given breaks, non subject related chats and communication during the training);
- Content-related trainee expectations.

After presenting all of the above mentioned rules, regulations and terms it is good practice to leave some time for questions from training trainees in case of confusion. Before the trainer starts to present a subject they can involve trainees in an ice-breaking activity. This can serve to create the feeling of inclusion, particularly for a remote audience. If the number of remote trainees is not too great ask the trainees to introduce themselves. While they do this draw a simple map, including the trainees' names. The resulting

map can be used later in the class to direct questions and seek comments from particular trainees.

4.3. Learners' evaluation

Once the trainer has defined the learning purpose, they would then select the assessment or series of assessments that measure the trainees' progress (knowledge, skills etc.). Good assessment starts with a pre-assessment of what trainees already know about the subject. For example, an educator might choose to assess the learners' creation of materials that will be used during the webcast. As a result, the trainer will evaluate if the trainees have communicated their ideas clearly, succinctly, and visually. The other way to pre-assess trainees' knowledge and skills is a quick pretest.

Trainers assess trainees during the learning process as well. The issue is not how many notes are taken during the training, but what trainees are learning. The trainer can embed assessment throughout the interactive session. The trainer can watch and evaluate the activities that learners are involved in. They can observe how well the trainees cooperate and do the tasks they were given. The trainer can ask trainees for clarification and further explanation, or additional arguments. The educator can also ask trainees to assess each other's achievements, presentations or problem solution (peer-assessment). Many trainers use a discussion as a way of assessing trainee learning [8].

The final evaluation of webcast training can be provided by open or close question test.

4.3.1. Assessment methods and tools

For assessment of webcast training direct measurable of learning outcomes are appropriate. Direct measures of learning outcomes are objective assessments of knowledge, skills and perspectives demonstrated by the trainee at the time of measurement. These include things like assessment of specific learning objectives as grades for class assignments, or evaluation of observed behaviours, or a count of the number of times a particular perspective is recognised in a examination. This type of data is obtained from an assessment of trainee output (e.g. trainee assignments, presentations, examinations) and can be completed by the instructor or by an independent examiner [9].

The trainer can prepare computer-based tests, quizzes or any other exercises using free assessment software available on the World Wide Web resources, for instance:

- Easy Test Maker (<http://www.easytestmaker.com/default.aspx>)—free online test generator;
- Hot Potatoes (<http://hotpot.uvic.ca/>)—the Hot Potatoes suite includes six applications, enabling users to create interactive multiple-choice, short-answer, jumbled-sentence, crossword, matching/ordering and gap-fill exercises for the World Wide Web;
- QuizMaker JavaScript Wizard (<http://www.edict.com.hk/quizmaker>)—tests and quiz tool;
- Personal Educational Press (<http://www.educationalpress.org>)— allows the creation of free

educational worksheets such as flashcards, game boards, and quizzes to print directly from your browser as well as make tracing sheets, quizzes, study sheets, word lists, bingo cards, word scrambles, word searches and more.

4.4. Training evaluation

Evaluation of training whether it be before (needs assessments and trainees polling for training design), during (evaluating learning of key concepts) or after the training (feedback on delivery methods and other aspects of the training experience), can be obtained using qualitative and/or quantitative methods. Evaluation can be formative, summative and impact. These types may be conducted in the following ways:

Formative evaluation, e.g. by discussion or interview. This is useful early on in a training to get the trainees' feedback on the course up until that time. This can be either formal or informal;

Summative—end-of-session questionnaires or interviews;

Impact evaluation—after the session has finished—this can be an interview or questionnaire with trainees [10].

4.4.1 Follow-up and after-training materials

Virtual meetings usually force the sides to keep the relation if they want to make it stronger. Also, to strengthen the knowledge acquired during the training it is important for the training not to finish along with logging out of the webcast session. Thus, the trainer is obligated to prepare the after-training materials for participants, which should not only be the copy of the presentation. The packet should include:

- Presentation PDF format
- Answers to questions which the trainer did not have time to answer during the webcast session.
- Other attachments, reports, research – if trainer mentioned them during the webcast
- Links to other online sources used in webcast, such as YouTube or SlideShare links.

Also it is advised to send the above using e-mail, not later than 48 hours after the finish of the webcast (later, the impressions of the meeting are blurred and the interest in the presented topic decreases).

The attached documents should be in the PDF format, to make it possible for users of different systems to view them, without having to worry whether they have any sort of an office packet. The full size of the e-mail should not exceed 5 MB (with attachments). If it does, it should be put on the company server and shared by sharing links to certain folders/ documents. If we are putting up a large number of interesting links, the ones used in the webcast should be on top of the list, and later the ones which we considered interesting or even adding to the topic but haven't been used. Every link should be described, so the participant could know what it is right away without having to click on it.

Developing and presenting the after-training materials to the students has its own business use. It is a

perfect tool for marketing through knowledge. It's a great way to promote the company. It is often that participants of old trainings recruit themselves and others for new ones.

4.4.2 Training evaluation

Thanks to the possibility of webcast recording, evaluation of trainings lead in such a way is easier. Above all, the webcast recording helps in re-evaluating the training. This way it is easier to grade the process and personal work, especially after some time.

The use of tools to evaluate training, such as automatic registration of statistics and electronic surveys, speed up the process of evaluation. The trainer has the ability to analyse every participant of the meeting even though he cannot see them. Part of the application allows for detailed reports of the participation in the meeting to be generated, collating such data as:

length of participation, answers to questions, engagement in teamwork, and even if the participant was looking at the program window or doing something not connected with the training.

Trainer's grades and methods of teaching can also be based on classic tools, which are the evaluation surveys. To achieve this we can use webcast software, however in the case of more complicated surveys, it is better to use special internet software.

Elements such as recording analysis, particularly when it comes to the chat conversations, meeting statistics and evaluation surveys allow for the quick analysis of training using models such a Kirkpatrick's.

Using evaluation lets us keep a high level of training services. Naturally, until the method is widely used and has a strong position in the market, the level of trust given to it will be limited. Evaluation not only lets trust build, but above all it lets everyone receive crucial knowledge on the training process realised in a special environment. It also allows a trainers career development as well as new skill gaining.

Exemplar evaluation based on Kirkpatrick model:

Level	What it concerns?	How to measure it?
Reaction	Level of participants' satisfaction	On-line survey right after the training, measuring the opinion of the participants about the trainer and the training. There can be a separate question on the opinion of the training in the context of webcast.

Knowledge and Skills	How did the level of knowledge and skill change?	Giving out tests on-line before and after the training and then comparing the results.
Behaviour	How did the new knowledge affect the behaviour?	Self-evaluation surveys, possibly interviews. Interviews with workers, participants- a few weeks after the training. If the training session is a part of a greater cycle, thanks to registration we may observe behaviour of participants after certain stages.
Results	Comparison of effects of training with its cost.	Comparison of practical effects of work effectiveness, money result, quality of work, stability of staff, etc.

4.4.3 Working with the recording

Webcast training has advantages over traditional because it is fully documented. Not only are the voice and image can be recorded but the chat conversations and other tools used in the session are also captured. All of it is happening automatically and it does not require the trainer or moderator to pay special attention to it. A ready recording can also fulfil several roles after the webcast.

Recording a webcast allows for it to be replayed, as well as the desynchronised participation of several people and the development of database through creation of education sources. This is the value of webcasting not present in other traditional trainings, and this is why it is worth to inform the participants about it. In many cases people taking part in meetings think about webcasting only as the live transmission.

Recording of the statements will also cause a psychological effect in means of trainer's stronger motivation to answer the questions or comments of the trainees. Registered statements are visible and kept, thus the trainer must sooner or later comment on them. From the point of view in which we care about the participant satisfaction, none of the questions should be ignored.

Besides the earlier mentioned evaluation or follow-up ease, the recording also has another valuable commercial side to it. It can be shared on demand as another option, thus it may bring profit as long as the topic and method are up to date. Such recordings are perfect for the promotion of the company as multiples of people can watch it numerous times, as opposed to the live session.

The trainer or organiser may also set the way to access recorded material. It may be accessed on the basis of free internet database, accessible publicly or strictly by the participants of the training who have to login to access it. Some models of software make the registration possible in the flash form, where elements of the program stay active even though it is a recording (for example the chat window can be scrolled), and others

let the content be seen only after downloading a certain player. This specification should be considered when choosing the webcast software.

Feedback is very useful to trainers, organisers and learners even if it is not always complimentary. Trainees can provide excellent feedback for reflection when they evaluate the trainer's expertise, evaluate how they increased their knowledge and skills, anticipate practice changes, strengths and weaknesses of the presentation, and ideas for course improvements.

To get a full picture of a webcasting session the trainer or organiser should collect information like:

- Who was connected?
- What was his connectivity?
- How many trainees arrived late and left early?
- If there were any questionnaires, polls etc? Do we have the results?
- Was there any contact with the trainees after the lesson (mail, telephone call etc.)?

After answering all of these questions we can plan the next webcast. All of the mentioned facts above should have significant influence on the planned webcast content, duration and session length so the impact of the lesson should be optimal.

4.5. Survey

Quantitative methods involve gathering information that can be tabulated in the form of statistics. A common quantitative method is surveying using a rating scale. Here statements are rated along a three or five point scale. Three or five points are needed to ensure that the data you collect is meaningful and meets research protocols i.e. you need to have end extremes and a neutral middle rating to give trainees enough options to choose accurately.

<i>Examples of three point scales and five point scales</i>	
3 point scale	5 point scale
good, average, poor	excellent, good, average, below average, poor
agree, neutral, disagree	strongly agree, agree, neutral, disagree, strongly disagree

Other examples of qualitative measurements are: multiple choice questions, true or false statements or yes or no questions. The advantage of using quantitative measurements is that you can provide statistics to stakeholders e.g. 89% percent of trainees strongly agreed that the material covered will help them improve their productivity.

Whereas quantitative research is closed, qualitative research involves asking open-ended questions to

gather thoughts, opinions and suggestions. This level of detail can help the trainer understand exactly why certain elements need improvement and if suggestions are made, how they can be improved.

Some examples of open-ended questions are:

- What exercise or activity did you enjoy the most? Why?
- What would you like to receive additional training on?

An example of training course feedback on-line:

<http://www.bre.com/training/courses/training-feedback.aspx>

4.6. Good practices

- Always have a plan “B”.
- During the creation of the training session pay special attention to the connection between the educational process and the group process
- Adjust your language, metaphors, and materials to each target group
- Check the location of your training
- Check the equipment and materials
- At the beginning of the session ask trainees about their expectations
- Pay attention to the amount of time spent on each exercise
- Prepare alternative training session scenarios
- Assess and research trainee expectations and needs and define the crucial concentrated moments of the training—do it before the session
- Keep in mind that some trainees might be “forced” to take part of the training session and that you might need more time to fully commence the educational stage
- Describe each training scenario—the objectives, modules, exercises, time, resources, the content of exercises, material and tools
- Plan realistically—the effective time of the training session, not the number of hours
- Set the rules and conditions of the training before it starts
- Get to know the people you are working with
- Stick to your training scenario

The “golden” rule, especially for inexperienced trainers/educators/lecturers is: “prepare yourself, prepare yourself and once again prepare yourself”.

- Join processes
- Analyze the target group
- Planning is important but elasticity is even more important
- There are no stupid questions or points of view—do not try to “fix” training trainees, treat them the way they are and adjust to them also on the program level
- Always have with you your “trainer suitcase” full of presentations, necessary software, back up files, printed materials, laptop and a webcam
- Someone else might organize the training session but you should be in direct contact with that person

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