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# Generating Virtual Eye Contacts Through Online Synchronous Communications in Virtual Classroom Applications

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## ABSTRACT

**The Internet usage has been increasing among persons in the worldwide. This situation highlights that the number of potential distance learners has been increasing in the Internet society. Besides, the terms and concepts of the Internet environments become to be spread out in this society like virtual reality. It is also possible to explain the characters of the Internet clearly via generating relatively new terms or concepts. "Virtual eye contact" concept is one of these. In this article, this concept is considered with a specific application of synchronous internet-based e-learning environments which is virtual classroom platform application. Explanation, technological infrastructure and benefits of this concept and training of the trainers to use this nonverbal communication type more powerfully are explained and discussed.**

**Keywords:** **Virtual eye contact, virtual classroom, e-learning, distance education.**

## INTRODUCTION

**Usage of the Internet has been growing up since the last decade of the 20th century. Benschop (2005) states that there were 25 million of people in 1995 and 605 million people in 2002 connected to the Internet whereas there were 1,022,863,307 people in the Internet environments in the first three months of the year 2006 (InternetWorldStats, 2006). This means more than %15 of the people was connecting the net in the beginning of 2006s in the world. While it is growing gradually, some concepts, terms and explanations related to virtual learning are becoming extremely important for the people, Internet users, researchers, designers and/or online communication workers.**

**The *virtual* term, therefore, takes a significant place in Internet-based societies. There are different explanations of the term *virtual* as existing in essence and/or effect though not in actual fact (WordNet, 2006), or as created, simulated, and/or carried on by means of a computer or computer network (OnlineDegreeZone, 2006). It is also possible to generate different virtual-based applications and environments in the Internet, like virtual reality, virtual games so on. Since the *virtual* term has potential to explain generated illusions, replications or environments near real ones, it helps us generate the term *Virtual Eye Contacts* between people to support their Internet-based communications.**

**Moreover, when two or more concepts are considered together like virtual eye contacts and e-learning, it can be possible to explain specific applications of virtual eye contact*s* in the Internet environments. This criterion is important, because there may be different key factors and features for each type of applications and communications.**

**In this study, the main purpose is to discuss the synchronous virtual classroom platform oriented virtual eye contacts. After explaining the virtual classroom concept and its application styles, there are four main steps for clarifying virtual eye contact concept in the virtual classroom environments. These steps cover:**

- **the concept of virtual eye contacts in virtual classroom applications**
- **the technological infrastructure for creating virtual eye contacts in virtual classroom-based learning environments**
- **the benefits of virtual eye contacts for e-learning trainers and e-learners**
- **the training of the trainers for designing more powerful virtual eye contacts during the meetings of virtual classroom applications**

**Virtual eye contact concept can be helpful the researchers who are interested in video-mediated communications. Besides, this concept can be used to explain specific conditions within the approaches which include visual communications and e-learning milieus like social presence approach or media richness approach. As an example, social presence is defined as the degree of awareness of another person that takes place in a mediated environment and it is an important factor in the field of distance education (Rourke, Anderson, Garrison, & Archer, 2001). Degree of awareness may be explained considering virtual eye contacts in visual communications within specific applications like virtual classroom applications. If it is highlighted again, virtual eye contacts can be applied or explained most of the approaches that cover video-mediated communications and e-learning.**

## FEATURES OF VIRTUAL CLASSROOMS

**The specific software platforms are used for generating virtual classrooms (Hofmann, 2004). The virtual classrooms have their features with the help of these software platforms as mentioned below. Besides, the developments on the hardware and software technology are probably affecting them positively. This means they will have extra features with the developments of their platforms.**

**An important feature of the virtual classrooms is the session delivery types. Usage types of the Internet in distance education can be separated as synchronous sessions and meetings, asynchronous ones and a mix of these types. Although the virtual classrooms have a capacity to use the third type, the dominant type is synchronous meetings in these kinds of e-classrooms (Hoffman, 2004). Moore and Kearsley (2005) explain synchronous communications with their interactive constructions as same time interaction is called synchronous interaction. Hofmann (2004) highlights that synchronous refers the training that is delivered to a geographically dispersed group of participants at the same time. In the past, using synchronous communications in the Internet were very limited in any kind of aims which also covered e-learning because of technological boundaries. Considering historical order, text-based communications were the first step. The developments of the Internet-based technology have allowed e-learning workers communicating with further approaches. Audio-based connection is a choice whereas using video with audio is another choice. Virtual classrooms allow video, audio and text-based instantaneous communications between communication workers (including online educators and distance learners).**

**Another feature of virtual classrooms is the interfaces of them which are used by communication workers, content part producers, management team and instructors. All of these workers use specific interfaces.**

**For instance, content part providers use an interface characterized to place the content easily for a virtual classroom session in a software platform. They can add presentation slide parts, question parts, white board parts, motion video parts, image parts or Web page director for a lesson session. Instructors use an interface characterized for using some properties during the synchronous lesson. Turning on and off the voices of the clients, separating the content parts, allowing the distance learners to use the text-based chats for asking questions, answering or giving comments during the synchronous meetings are the examples.**

**Management team uses another interface in software platform which allows them to open a session, assign instructors' names to the sessions, add the distance learners to the relevant sessions, and have some reports about sessions, instructors and distance learners. Besides, distance learners have their own interfaces to join the synchronous session and interact with the instructors and the other participants. Their interfaces also have some extra characters. For instance, they have a hand raise button to warn the instructors and the others about a question, an answer, or a comment during the meeting. Although there are many interfaces which perform different duties in a platform, Virtual Eye Contacts concern with only the instructors' and the learners' interfaces during a synchronous meeting. Screen parts on a monitor during the meetings are also important features. There are at least three main screen parts in the software platform-based virtual classrooms. One of them is presentation screen. The instructors show the distance learners the content parts with this screen part on the monitor. Besides, distance learners have some interactions with the help of presentation screen parts. For instance, they can answer the content parts which have questions like multiple choices or fill in the blank styles. There can be only one question, a test or a survey on the presentation screen which covers one content part. Second part is chat-box part.**

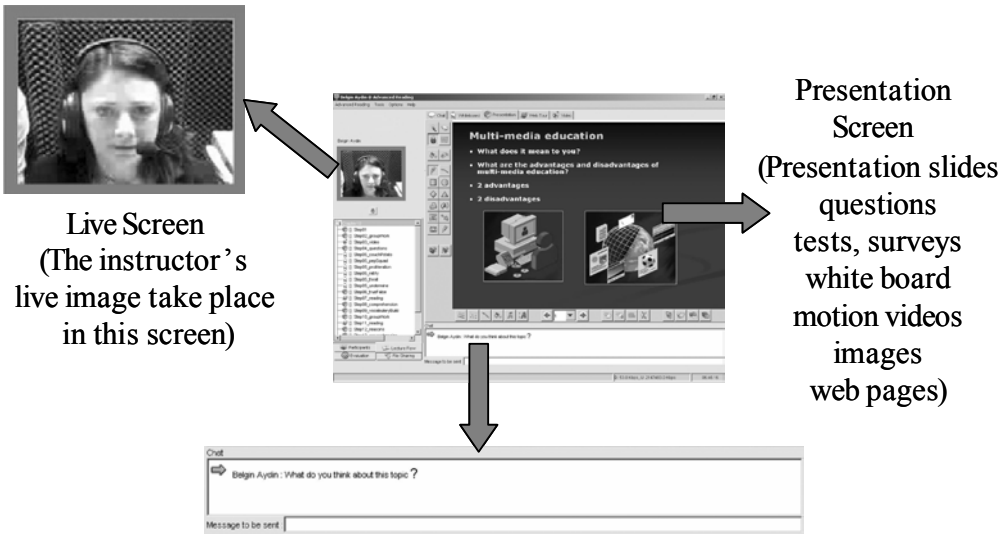


**Figure: 1**
**An example of screen parts on a computer monitor from VisiClass [1].**

**Distance learners interact with other participants during a meeting as well as they communicate with the instructors. This part resembles a classical IRC (Internet Relay Chat). The last part is live screen part. The clients can see their instructors with this part on their monitors. If Internet lines have enough capacity to carry the data, the instructor may show one of the clients live motion picture on this screen part when this client is speaking. If it is not possible, the instructor and other clients only hear the voice of this client. Figure 1 shows an example of these screen parts on a monitor.**

**Although each screen part performs very important issues in the virtual classroom environments, live screen parts have a critical and indispensable importance to create synchronous virtual eye contacts in the virtual classroom applications.**

## VIRTUAL EYE CONTACTS IN THE VIRTUAL CLASSROOMS

**Eye contact can be defined as an intense nonverbal, visual connection made as one person gazes into the eyes of another (Wikipedia, 2006), and also a direct visual contact with the eyes of another person (Lucas, 2006).**

**Besides, eye contact term is also explained as the communicating a person does with his or her eyes during a speech and it is very important that a speaker establish sincere eye contact with the audience so that full communication can take place (Speech Terms, 2006). All of these explanations especially highlight the important characters of real eye contacts:**

- **Persons have to be the same or relatively close places in the same time to have real eye contacts with each other. The distance is related to seeing clearly the eyes of the others. Besides, the same time refers synchronous communication necessity for generating eye contacts.**
- **The eye contacts are meaningful when there is a communication between persons. There may be a spoken-based communication between persons as a character. Eye contacts help each person about the continuum of the speaking. A person may understand or guess how the reaction of the others will be about his or her speaking with the help of the eye contact as an example. (There may be different examples; but in some cases, eye contact examples should be explained considering different cultures, subcultures, biases, stereotypes, ethics or values.) Another communication dimension occurs between persons with gestures, or eye contacts when there is or not a speaking action as another character. This dimension is non-verbal communication. There is not a need a verbal communication in some situations. Only non-verbal communications may occur between or among persons in some cases to explain actions or reactions with body movements, gestures or eye contacts.**
- **Interaction is another character of the eye contact. The same time or synchronous interactions take place between persons when they have eye contacts in verbal or non-verbal communications.**

**Virtual eye contacts should have these characters as much as possible to create a reality replication or illusion. Sharing communications in a synchronous time is important. This means only synchronous learning and communication types of the Internet environments enable to generate this virtual event.**

**Interaction must take place in the Internet-based meetings as it happens within real eye contacts. The same places or close distances concept changes with the help of the Internet environments. Persons have eye contacts with video-mediated communications in this environment. Sellen (1997) argues that video-mediated communications allow participants to reach the visual information, and therefore there is likelihood that many of the advantages associated with co-present face-to-face interaction can be replicated. Eye contacts absolutely find a place in visual information sharing which occurs via synchronous meetings. Virtual eye contacts in the virtual classrooms can be defined after the explanations above: Generating an eye contact replication between communication workers (especially instructors and distance learners) in virtual classroom platforms in spite of long distances with the help of live video mediated communications and characters of the Internet environments like interaction and synchronous communication is called *Virtual Eye Contact* (Figure: 2). Eye contacts in the virtual environments also have some extra characters different from real life eye contacts. In the virtual classrooms each distance learner must have a computer connected with Internet lines. When the instructor is lecturing, each learner has a chance to look at the instructor's eyes on his or her monitor. Virtual eye contact can be produced between one instructor and whole of the distance learners. This character changes person-to-person eye contact comprehension at the same time. One person-to-many person virtual eye contact at the same time can be produced in virtual classrooms [2]. In virtual classroom applications, instructors do not see the video images of the learners during the whole time of the meeting because of the unnecessary position about this issue; but the learners can see them anytime on the live screen.**

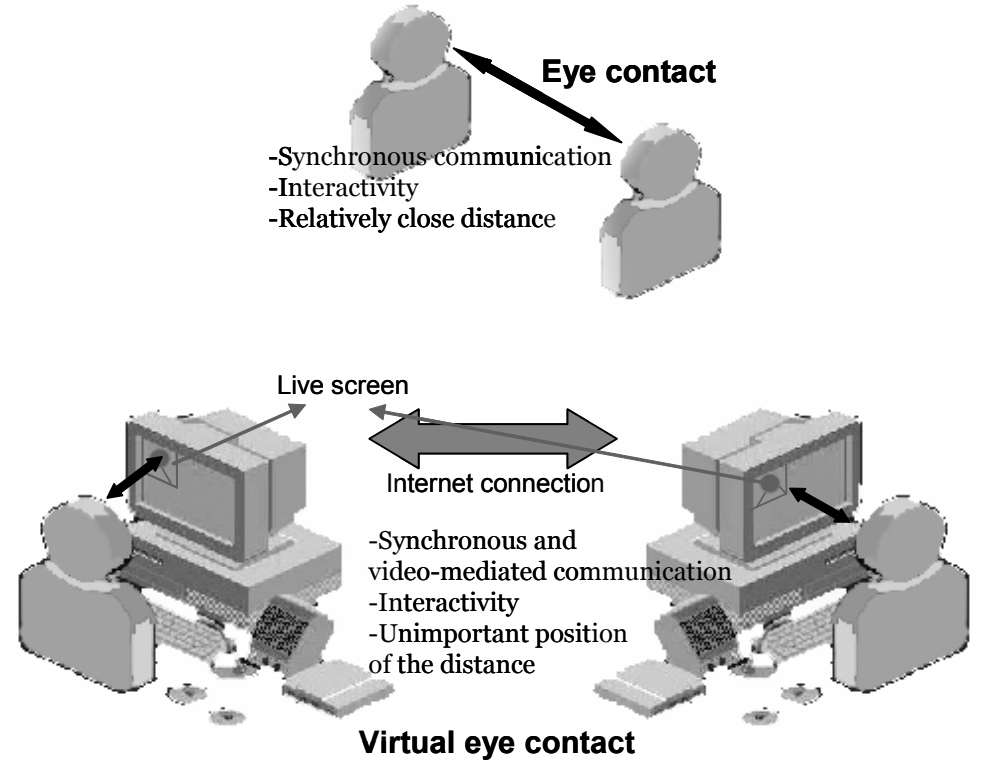


**Figure: 2**
**Generating virtual eye contacts in synchronous and interactive internet environments in spite of long distances.**

**However, it is possible to claim that there is still a dimension of virtual eye contact only in the sight of the learners. They can easily look at the eyes of the instructors on the live screen part when the instructor is looking at the camera in front of him/her. This situation reveals another character of the virtual eye contacts. There may be two-way-virtual eye contacts (from the instructor to the clients and from the clients to the instructor) or one-way-virtual eye contacts (only from the instructor to the clients). In this case, this one-way-virtual eye contact situation causes a *virtual blindness* position in the side of the instructor. Also, the instructor or a communication worker who takes place in this manner can be named as *virtually blind*. This situation affect the eye contact concept from its basic; but this kind of very different applications help to explain virtual eye contact as an absolutely new instrument and its uniqueness.**

## TECHNICAL ASPECTS OF VIRTUAL EYE CONTACTS

**The dominant devices of the virtual eye contacts are the cameras (Web-cams are used in general) in the virtual platforms. Besides, live screen parts on the monitors are as important as Web-cams as mentioned before. These two parts generate synchronous virtual eye contacts to be used together with the Internet lines. When using a camera, the screen size, framing of the instructor during shooting, location of the camera, camera height and picture quality effect generating of virtual eye contacts in virtual classroom environments.**

**There is three important parts on the monitor screen in virtual classroom platforms at the learner side as mentioned. These are presentation screen, live screen and chat-box part. Because of dividing one monitor screen at least these main parts, there is a small place for live screen part. (Generally presentation screen parts take the largest part of the monitor screen because of helping to be explained content parts which cover slide shows, animations, images, written questions or taped motion pictures.) Besides, there is an aspect ratio of the live screen parts like the other parts. The traditional aspect ratio is 4:3 which means 4 wide by 3 high in TV screens. HDTV's aspect ratio is 16:9. Since there is a live and motion image on it, virtual classroom platform producers tend to use the traditional aspect ratios because of the familiarity of the users from the television screens.**

**On the other hand, there are always minor aspect ratio and pixel count differences between software programs (Kerlow, 2004). Live screen takes part with a definite aspect ratio in a small part of the client's monitor. Some virtual classroom platforms allow making the live screen larger; but it does not cover full screen because of the importance of the other screen parts of the virtual classrooms.**

**This criterion affects framing of the instructor in front of the camera. This communication worker is generally sitting during the virtual classroom meetings, because s/he uses his or her mouse or keyboard to control and change the content parts or interact with the distance learners both verbally or text-based. Close-up shots or medium close-up shots of the instructor may probably the most appropriate shots for producing virtual eye contacts.**

**Close-up shot of a person refers just above head to upper chest and medium close-up refers cutting of a body at lower chest (Millerson, 1985). It is possible to see the eyes of the instructor easily for distance learners with these shots. If the framing of that person becomes larger, the head and the eyes will become smaller and because of the small size of the screen, virtual eye contact will not occur.**

**Location of the camera is also critical because of two different situations. First, the instructor must look at the camera directly to generate virtual eye contacts with the distance learners during the synchronous meetings. Second, there are always important materials like content parts or warnings about a client's question or comment on the monitor. Besides, controlling the presentation screen, changing the content parts and answering the clients are some of the responsibilities of the instructor. (They can have assistants to share controlling or changing responsibilities in the platforms, if they want.) S/he performs these responsibilities on his or her monitor.**

**If the instructor can see the monitor and look at the camera at the same time, this point of view provides the best solution in the virtual classrooms. This point of view can be achieved if the camera is located nearly above or below of the monitor. With a clear distance from the monitor about one or one and the half meters, the instructor can see these two items.**

**Moreover, his/her looking at the camera dominantly and gazing at the monitor with the borders of the point of view help him or her during a meeting when there is a need of virtual eye contact generation. (This situation is explained more clearly in the fallowing parts of the article.)**

**Location of the camera highlights the height of the camera. As the instructor sits down on a chair in front of the monitor, the camera should be located nearly at the eye level of the instructor. The eye level position can be fixed with raising or lowering the height of the monitor depending on the camera's position being on the top or down of the monitor. Being the upper side or the lower side of the camera from the eye level does not affect the virtual eye contact.**

**However, it affects the perceiving of the person in front of the camera and this may affect perceiving of the virtual eye contact indirectly. High shots (higher of the camera 20° from the eye-line) can make a subject appear weak, unimportant and inferior (Millerson, 1985).**

**A person seems to lack the authority with these kinds of shots. This situation affects the reliability of the instructor. Low shots (lower of the camera 20° from the eye-line) make the people appear imposing, threatening and powerful (Millerson, 1985). Threatening position also provides a barrier between the instructor and the distance learners. Therefore, virtual eye contacts will be affected by these camera positions negatively. Eye level shots provide the best solution in the virtual classroom platforms.**

**The picture quality of the live image is another technical aspect in the side of the distance learners for generating virtual eye contact. Suwita, Bocker, Muhlbach and Runde (1997) state that picture quality of HDTV better than traditional television and there is not a difference between HDTV (High Definition Television) and traditional television for the distance partners in video conference applications about recognizing of non-verbal communications like gestures or postures. This criterion also provides guessing the picture quality of the live screens in virtual classroom platforms for the producers. If the image of the instructor can be seen clearly by the e-learners, this will be enough for generating virtual eye contacts.**

**There may be different shooting angles of the cameras or the Web-cams which provide the live images without generating virtual eye contact. These kinds of live images are also acceptable in the virtual classrooms. However, shootings with providing virtual eye contacts create further benefits for the distance learners.**

## THE BENEFITS OF THE VIRTUAL EYE CONTACTS

**The beneficial effects of the virtual eye contacts on distance learners and the instructors can be considered different issues. Increasing possibility of attention is a beneficial issue. According to Ledbury, White and Darn (2006) one of the powerful tools for the learners and the instructor is the eyes in the classrooms in spite of much classroom time is spent with eyes firmly fixed on the book, the board, the floor, the window, or roaming randomly around the teaching and learning environment. Even in these circumstances eye contacts help the learners to attract attention (Ledbury at. al, 2006).**

**This situation resembles the virtual classroom environments. The learners can look at their instructor's virtual eyes at the same time even they are different places from each other or they can focus on the content parts which are on the presentation screen, different place from the monitor like the window, or roaming randomly their eyes around the place in which they are. Kelley and Gorham (1988) state that eye contacts increase attention and facilitate the encoding of the information. According to Fullwood and Doherty-Sneddon (2006) this situation is valid for the communications via the camera.**

**These explanations highlight that the virtual eye contacts between the instructor and the learners enable to increase attention from the long distances in the distance education milieus.**

**The second benefit of the virtual eye contacts concern with remembering easily. Titsworth (2000) explains learners can remember more information in the long-term when the instructors tend to use non-verbal communications like eye contacts. Sherwood (1988) states gazing of the presenters to their listeners improve memory for the information in verbal presentations compared to verbal presentations without gazing. Fry and Smith (1975) showed that if the instructors gaze at their learners more frequently, the learners can remember more instructions from the instructor. According to these examples eye contacts are related to the cognitive processing positively of the learners. This positive cognitive processing effect of the eye contacts can be used with allowing the virtual eye contacts in synchronous meetings. Fullwood and Doherty-Sneddon (2006) state non-verbal communications like eye contacts work positively when people communicate from different places with the help of the cameras including audio. Distance learners can have benefits from the virtual eye contacts in the virtual classroom platforms although the live screens take a small place on their monitors. The instructor is always there and ready to an aspect of non-verbal communication (virtual eye contact) to the distance clients in the synchronous meetings.**

**The distance learners can be lonely in the place which they connect to the synchronous learning meetings in general. Even they are not lonely and share the virtual classroom connecting place with another people like family members at home, friends in the office or colleagues in the job, the people which they concentrate, contact or interact during the synchronous meeting are not share the same place with them in the real world. The instructor and other clients are with them in the virtual environment. In spite of the meeting of the virtual environment, sometimes they feel lonely themselves in the real world. This situation is like a cliché in the distance education milieus: The loneliness of the long distance learner (e.g. Burns 2001, Gunawardena, 2004). The image of the instructor (and sometimes another distance learner's image if the technology is suitable and the instructor allows) including virtual eye contacts can help the learners reducing of the loneliness feeling in the virtual classrooms.**

**There is always a person in the image ready for answering their questions and comments or asking questions for them in the virtual classroom platforms. Besides, this people looking at them directly act like emphasizing them to speak or interact directly to them. Not only virtual eye contacts, but also the voices, chat-boxes, other non-verbal communications and readiness of the interactions in the synchronous virtual classrooms help the distance learners to reduce their loneliness feelings.**

**Virtual eye contacts can provide online workers to feel staying front desk. When opening the computer and connecting to a synchronous meeting, a distance learner can feel that everything is arranged or prepared for him or her only, because s/he stays in front of the monitor in which all the actions happen. This learner stays in front of the instructor, who is looking at directly to him/her, and ready to interact with him/her in every moment at the virtual classroom time. Besides, this distance learner does not see the bodies of the other learners who stay in front of him/her in the real classroom environments in which the desks are arranged line by line. Students stay front desks only see their teachers only (with periodic eye contacts) in a close distance as it happens in the virtual classroom.Emphasizing the important parts of the speech easily is another important issue of the virtual eye contacts like the real ones (it should be also remembered that other non-verbal communications can help this emphasis). The instructor can also use this non-verbal communication type in the virtual classroom meetings.**

**This effect can be showed to the distance learners when explaining some parts of the lesson session or when interacting with a distance learner. Besides, the instructor can confirm the explanations or comments of a student when speaking with him/her, or show that s/he is not sharing the same idea with him/her with the help of the eye contacts and other non-verbal communication instruments.**

## TRAINING OF THE TRAINERS FOR GENERATING POWERFUL VIRTUAL EYE CONTACTS

**The knowledge about virtual eye contact can help of the distance instructors to use this instrument more effectively and powerfully. An instructor may not know how to use this important communication and interaction opportunity within synchronous virtual classroom platforms. S/he can be encouraged to learn this communication style on his/her own or an in-service training program can be constituted in these circumstances. In-service training can be more beneficial not only the instructors but also the institutions and the organizations. First, because all the instructors have the same training and knowledge sharing, they can check themselves more easily whether they use this instrument powerfully or not with watching the performances of the others in synchronous meetings. Second, the in-service training teams of the institutions and organizations can observe their instructors' performances after the training and help them how to use the virtual eye contacts more powerfully.**

**The stimulation of the instructors to look at the camera when speaking or interacting with the distance learners is very crucial in the training. As it is mentioned in the technical aspects part, there may be important images or presentations on the screen of the monitor, but this situation does not obstruct the instructor looking at the camera and the screen at the same time during the meeting because of the closeness of the camera and the screen. The critical point is that the instructor casts a furtive glance at the screen when s/he thinks virtual eye contact is critical at any part of the synchronous section. This ability can be increased with using and joining the virtual synchronous environments more and more times of the instructors.**

**If example sessions are used in the training, these sessions will be very useful for the instructors to have this ability.**

**Although virtual eye contact is an important communication issue, the instructors do not have to look at the camera during the whole of the synchronous session. Fullwood and Doherty-Sneddon highlight that people do not look at the conversational partner's face for the entire length of a conversation. According to Argyle (1988) there is also a time difference for looking of the speakers and the listeners to each others. A speaker spends approximately 40% of time looking at the listener's face for having eye contact. However, the listener spends 75% of time for looking at the speaker's face. The times without eye contacts provide the instructors to look at the screen and arrange the fallowing content parts. Second, there is always a screen which is full with visual materials in the virtual classroom platforms. Distance learners can be directed these materials at any time of the meeting by the instructors. These directions always cut and impede virtual eye contacts. After the required time period for looking at the visual materials, virtual eye contacts can be generated again. Not only visual materials, but also chat-based communications affect virtual eye contacts. The instructors should be warned about virtual eye contact cuttings during the training.**

**The instructor's avoiding of saying "um" or "uh" is helpful to prepare a better communication among the learner clients. Singleton (2006) noted that many people use these words when looking at the camera and two or three brief pauses in which people are silent is better than using these words.**

**Distance learners tolerate these brief pauses and silent times without breaking the virtual eye contacts during a speech. Giving adequate information about camera and its nature will be very helpful for the candidate synchronous distance learning instructors. Understanding that the camera is one of the instruments breaking the walls which are important parts of the traditional classrooms and carrying the messages any place the world to the distance learners will be an important issue for their progressing of the new conditions. Besides, noticing that when their camera experience grows gradually session after session, their virtual eye contact skills will also grow and they use this character more powerfully. Explaining these points of views in the training helps the candidate instructors for their synchronous meetings in the future.**

## CONCLUSION

**Virtual eye contacts are a fact of video-mediated communications. People (especially communication workers) can choose to use this nonverbal communication instrument or not; but using these instruments provide a variety for their communications. Moreover, generation of virtual eye contacts in the synchronous Internet-based distance education milieus provide a progress about nonverbal communications both the distance instructors and the distance learners in the virtual classroom applications. Instructors have an extra non-verbal communication style with the usage of virtual eye contact instrument properly.**

**They can express some of their ideas with their eyes to the distance learners during the synchronous meetings when they are speaking about lessons or listening an explanation, a comment and a question from a distance client. These kinds of communications also provide a progress to the distance learners like thinking about their comments or ideas when they are speaking whether they are right or wrong or their questions concern with the ongoing lesson session.**

**Besides, they have a chance to have a nonverbal communication skill consciously or unconsciously with facing virtual eye contacts. They may use this skill in their further video-mediated communications. The impact of the virtual eye contacts can be different within different kinds of synchronous Internet-based applications. Virtual classroom applications have different instruments near virtual eye contacts like presentation screens or chats. Visual communications take place in the live screens near these instruments. There can be some extra applications or platforms in the e-learning milieus based on live and visual connections more or less than virtual classroom platforms. The effects of different applications through the impacts of virtual eye contacts is a challenged issue and can be researched in the future studies.**

## Author's Notes

**1. VisiClass is a virtual classroom platform which was used in a pilot project in Anadolu University.**

**2. This situation can be compared with some television applications like news programs; but Internet environments have different characters from television. Two-way-communications with the whole of the viewers is nonsense in the traditional television broadcastings when the news speaker is looking at the eyes of the viewers. One of the reasons of this situation is television is a mass medium. It is successful when it reaches the masses. There is not this kind of need in the Internet applications even it has a capacity to be a mass medium. Besides, a television screen can be watched more than one person at the same time like family members at the home. This criterion has a capacity to affect virtual eye contacts (at least it should be discussed with different aspects or dimensions). Contrary to this, a monitor of a personal computer is generally used by one user. This character make virtual eye contact concept more powerful in the Internet-based virtual classroom applications.**

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## REFERENCES

**Argyle, M. (1988). *Bodily Communication*. Routledge: London.**

**Benschop, Albert. (2005). *Internet Users: Demography and Geography of the Internet.* Retrieved December 12, 2005, from, http://www2.fmg.uva.nl/sociosite/websoc/ demography.html**

**Burns, R. (2001). *The Adult Learner at Work*. Allen & Unwin: New York.**

**Fullwood, C. & Doherty-Sneddon, G. (2006). Effect of Gazing at the Camera during A Video Link on Recall. *Applied Ergonomics*. Volume: 37, Issue:2, pp: 167, 175.**

**Gunawardena, C. N. (2004). The Challenge of Designing Inquiry-Based Online Learning Environments: Theory into Practice. *Learner-Centered Theory and Practice in Distance Education.* T.M. Duffy & J. R. Kirkley (Eds.). pp:143,158. Lawrence Erlbaum Associates: New Jersey.**

**Hofmann, J. (2004). *The Synchronous Trainer's Survival Guide*. Pfieffer: San Francisco.**

**InternetWorldStats (2006). *Internet Usage Statistics: World Internet Users and Population Stats.* Retrieved May 31, 2006, from http://www.internetworldstats.com/stats.htm**

**Kelley, D. H. & Gorham, J. (1988). Effects of the Immediacy on Recall of Information. *Communication Education.* Volume: 37, Issue:3, pp:198, 207.**

**Kerlow, I. W. (2004). *The Art of 3D*. John Wiley & Sons: New Jersey.**

**Ledbury, R., White, I. & Darn, S. (2006). *The Importance of Eye Contact in the Classroom.* Retrieved, June 01, 2006, from http://iteslj.org/Technics/Darn-EyeContact.html**

**Lucas, S. E. (2006). *The Art of Public Speaking*. Retrieved July 24, 2006, from http://highered.mcgraw-hill.com/sites/007256296x/student_view0/glossary.html**

**Millerson, G. (1985). *Video Camera Techniques*. Focal Press: London.**

**Moore, M. & Kearsley, G. (2005). *Distance Education: A Systems View*. Thomson Wadsworth: Belmont.**

**OnlineDegreeZone (2006). *Virtual*. Retrieved May 30, 2006, from http://www.onlinedegreezone.com/distance-learning_terms.php**

**Rourke, L., Anderson, T., Garrison, R. D., & Archer, W. (2001). Assessing Social Presence in an Asynchronous Textbased Computer Conferencing. *Journal of Distance Education, 14,* 51-70.**

**Sellen, A. (1997). "Assessing Video Mediated Conduct: A discussion of Different Analytic Approaches." In Finn, K. E., Sellen, A.J., Wilbur, S.B. (Eds.), *Video Mediated Communication*. Lawrence Erlbaum Associates: Hillsdale.**

**Speech Terms (2006). *Eye Contact*. Retrieved July 25, 2006, from http://www.riverdale.k12.or.us/~bmandis/english/spchtrms.htm**

**Suwita, A., Bocker, M., Muhlbach, L. & Runde, D. (1997). "Overcoming Human Factors Deficiencies of Videocommunications Systems by Means of Advanced Image Technologies". *Displays*. Vol:17, pp: 75-88.**

**Wikipedia (2006). *Eye Contact*. Retrieved July 24, 2006, from http://en.wikipedia.org/wiki/Eye_contact**

**Wordnet (2006). *Virtual*. Retrieved May 30, 2006, from http://wordnet.princeton.edu/perl/webwn**