

---

## ***Factors Of Distraction In A One-Way-Video, Two-Way-Audio Distance Learning Setting***

**Lowell A. Briggs and G. Dale Wagner**

### Abstract

This article describes the findings associated with learner distraction in a one-way-video, two-way-audio, four-site undergraduate nursing distance learning setting consisting of 48 traditional and non-traditional student learners. Respondents completed a 39-question survey focusing on environmental distracters, including physical noise, quality of transmission, and instructor interaction. Remote site students reported feelings of alienation in response to delayed instructor feedback and the perception that the instructor paid greater attention to students in face-to-face interaction with the instructor, whether or not this was actually true.

### **Introduction**

The focus of this research was to develop an instrument that could be used to determine to what extent negative perceptions to non-verbal cues were perceived as distractions or deterrents to learning in a one-way-video/two-way-audio (OWV/TWA) distance learning setting. The Instructional Television-Fixed Service (ITFS) broadcast originated at York College of Pennsylvania and was transmitted in real time to remote classrooms located at Holy Spirit Hospital, Camp Hill, PA; Harrisburg Hospital and Polyclinic Medical Center, Harrisburg, PA; and Chambersburg (PA) Hospital. Twenty-three adult learners enrolled at York College, and a total of 25 students attended the four remote sites. The distances from York College to the hospitals range from 25 to 75 miles.

The words "noise," "distractions," and "deterrents" all represent factors which may compromise an individual's learning ability within the

---

Lowell Briggs is Assistant Profesor at York College of Pennsylvania, and G. Dale Wagner is a Performance Technologist for the U.S. Department of Defense. This article was a refereed concurrent presentation at the Eastern Adult, Continuing, and Distance Education Research Conference at State College, PA, October, 1996.

instructional setting or learning environment. If noise is defined as distortion of the transmitted signal, then a distraction can be defined as that which causes cognitive concentration to be interrupted, if only momentarily, by other forms of stimuli. Further, distraction can be either internally or externally overt or a conscious deviation from a point of reference or thought. In this context deterrent connotes a restriction of the complete, first- or second-hand, cognitive, information-processing exchange (Ruben, 1988).

While environmental noise exists in every learning setting, it may not be overtly recognized, although it is received physically. Distractions may occur and be, at the very least, unpopular and unappreciated, or they can be the source for the formation of negative personal attitudes. This study investigated how noise and distractions are perceived against variables of age, years of professional experience, and number of courses taken via telecommunications. Learners tend to believe that they could learn more if they had the ability to view as well as hear peers at distant locations.

### **Literature Review**

Few researchers have concentrated their efforts in the areas of student satisfaction in televised instruction (Abel & Creswell, 1983; Barker, 1987; Biner, 1993; Harrison et al., 1991). Distance learner satisfaction is an inherently important criterion in judging instructional effectiveness of the learning setting (Biner, Dean, & Mellinger, 1994). These authors suggest that

maintenance of high levels of distance learner satisfaction within any televised distance learning program could result in the following direct and important program-related benefits: lower student attrition, a greater number of referrals from enrolled students, higher levels of student motivation, greater commitment to a distance education course, and better learning. (p. 61)

Wong (1987) suggests that too little study has focused on human-to-human interaction in distance education. Moore (1989) calls learner-learner interaction via audio teleconferencing valuable and sometimes essential in "a new dimension to distance education, that will be a challenge to our thinking and practice in the 1990s" (p. 4). Fowler and Wackerbarth (1980) further contend that audio teleconferencing, compared to face-to-face instruction, is "effective for information exchange,

discussion of ideas, problem solving, some negotiations and interviewing” (p 236). Moreover, their research indicates telephone communication to be at least equal to and not inferior to direct face-to-face communication. Smeltzer and Vance (1989) suggest a loss of nonverbal stimulation, interactive spontaneity, and nonverbal feedback cues when the sender and receiver cannot see each other during the audiographic teleconferencing process.

Saba and Shearer (1994) analyzed a hypothetical model of how distance education functions in terms of transactional distance dialogue and structure, learner or instructor control, the use of active or passive speech, and direct and indirect feedback mechanisms between instructor and student. Slightly more than half of their respondents preferred direct interaction with the instructor in close, immediate proximity to the students. Garrison (1990) identified only minimal peer distraction among those listening in a classroom lecture setting. These findings reinforce the existence of distraction, but they stop short of suggesting the extent to which learning is compromised or delayed as a result of distraction.

The process of physical hearing and attention to the perceived distraction requires listening energy, which, over time, diminishes, causing a lack of listening concentration (Watson, 1993). Heider (1944) submits that cognitive processing and distraction is rooted in attribution theory, wherein a person attempts to attribute a cause to the observed behavior. Rogers and Kincaid (1981) suggest that there is a dual responsibility of both the sender and receiver to continue to interact until mutual understanding is commonly achieved. Failure by the sender to attend to the level of receiver comprehension may cause the formation of a negative judgment by the receiver about the sender. Petty and Cacioppo (1981) advance the notion that judgment processing in communication leads to the establishment of attitudes and beliefs.

If someone identifies sound, language, or nonverbal cue as a distraction, it can also be referred to as “noise”: that which “interferes with the transmission of a signal from the source to the destination” (Shannon & Weaver, 1949). Their research on noise is grounded in the study of signal strength, clarity of transmission, and quality of the technology. If both sender and receiver recognize the existence of commonality in the context of their learning (age, life experiences, academic major, intrinsic or extrinsic motivators, etc.), communicated meaning will likely be understood (Schramm, 1954).

Fulford and Zhang (1993) tested satisfaction and interaction in the same ITFS delivery method as is used in this research and found that

perceptions of personal interaction are a moderate predictor of satisfaction among distance learners. Their findings suggest, as does much of this theory, that learner satisfaction is greater when at least interpersonal interaction is present in a distance learning environment.

### **Methodology**

The research objective for this study was to select data and devise a collection method that would allow for a statistical comparison of the distractions found in the physical environment of a traditional classroom to the same distractions found in a two-way-audio, one-way-video remote classroom. A 39-question survey was developed to solicit responses pertaining to student perceptions of the physical distractions. The analysis of the data involved a descriptive statistical approach with measures of central tendencies (means and medians) combined with measures of dispersions (standard deviations), allowing us to compare the perceptions experienced by the subjects located at York College and the remote sites.

This research attempted to clarify further factors which cause learner distraction in a one-way-video, two-way-audio distance learning environment. Our research question focused on the learner's perception of the impact of distraction. If environmental distraction is high, for example, is a learner's perception of comprehension necessarily low? Critical here is the issue of the learner's perceived ability to filter or screen out distraction. The presumption of this research is that distance learning students become accustomed to various types of distraction and do not perceive environmental distraction as a barrier to learning over time.

Using a five-point Likert scale, students were asked to rate the instructional effectiveness, instructor's preparedness for class, instructor's availability after class, technological concerns, and other distractions encountered within their environment. All participants in the study were given the same questions. Students attending classes at the remote sites were given three additional questions that queried their perception of their facilitator.

### **Analysis of Data**

Data in this research clearly depicts a remote site population ( $N = 25$ ) that is older and more mature than the originating site group ( $N = 23$ ). Remote site responses therefore, may reflect life and professional experiences and tolerance of ambiguity, distraction, and geographic distance or

separation. The converse of this demographic portrayal is clearly evident in the originating site, comprised predominantly of traditional-aged, unmarried students. Parity among the sample population occurred with respect to employment. Both groups represent a largely full-time working contingent; a significant portion of the originating-site population is working part-time as well.

### **Distance Learning Preference**

Slightly more than half of the remote students said they were satisfied with the distance learning orientation of the class. Only a quarter of the same group desired face-to-face instruction. While television screen quality, graphics, slides, and transparencies were accepted as clear, audio volume and clarity of peer responses to questions and instructor interaction were rated as poor. Remote site respondents rated the ability to hear their instructor as slightly better than was audio quality from remote site peers.

### ***Instructor Interaction***

Remote site students indicated the instructor's classroom instructional techniques (group discussion, lecture, demonstrations, and case studies) were only average in assisting students in understanding course content. By comparison, students at the originating site gave only a slightly higher rating. An interesting distinction was evident between the remote students and students at the originating site relative to the instructor's organization and apparent preparation for class. Students in direct proximity to the instructor suggested that his/her preparation was nearly outstanding. Remote students, however, perceived organization and preparation as only average.

Remote students perceived the instructor as paying more attention to students they could see versus those they only heard. Although the statistical differential here was less than 10%, this factor may signal feelings by remote students of alienation and geographic separation from the instructor. Perhaps of greater significance was the distinction of the extent to which the instructor made students feel a part of the class. Remote students felt isolated when they indicated only average sense of engagement by the instructor, while students in the York College classroom identified engagement as good.

Feedback to student questions by the instructor once again revealed clear separation between remote and on-site student groups. Remote students indicated that instructor feedback was average; students in face-

to-face contact thought immediate feedback was outstanding. This further points to the perception that remote students felt isolated.

### ***Environmental Distraction***

Students at the York College site implied that the internal classroom noise was more of a distraction than remote students thought of their own room noise. Transmission noise via distance was “annoying to tolerable” for remote site students, whereas noises associated with the distribution of the video and audio signal were only slightly noticeable to York students in face-to-face interaction with instructors.

### **Conclusion**

Respondents at both sites seem to be satisfied with the overall instructional integrity. However, concerns were noted in remote site responses which seemed to identify a sense of isolation and alienation from the instructor in favor of those students immediately in front of them. This points to a relative sense of distance, a sense that is, perhaps, psychological and emotional.

The findings in this study have immediate ramifications for the organization in which this research was conducted. Technicians should be advised of the lack of audio quality from the originating site to remote site locations. If, as indicated in this research, peers are having difficulty hearing peers at a distance, tests need to be conducted to determine whether or not receiving capability is adequate or if students simply are not speaking loud enough to effect discernible modulation via the ITFS system.

Program coordinators may want to review equipment operations with facilitators at remote sites to insure prompt and smooth signal delivery to their students. Systems procedures should also be reviewed to guarantee that all written course materials are delivered to remote sites in a timely manner and are available for distribution at the same time that originating site students receive materials. Further, instructors conducting classes at the originating-site should be provided with guidance on instructional and communication style and delivery techniques to involve remote students. Two publications that provide such assistance are Boisvert's (1988) “Helping Behaviors of Learners in a Telephone-Based Instruction Group” and Cookson's (1995) *Instructor and Participant Responses to Critical Conditions of Audioconferencing*.

Further study concerning the understanding of remote student feel-

ings of alienation and geographic isolation is warranted. Additionally, study into the verbal and nonverbal techniques of instructor inclusion of remote-site-students may be appropriate. One contradictory finding which requires continued study is remote site student perception of delayed feedback versus the same student group indicator of instructor fairness to all. While other studies reveal both attitudinal and satisfaction indices of one-way-video and two-way-audio distance education delivery systems, we believe this research identifies a specific dynamic heretofore largely overlooked. Further study of remote site learning outcomes or quantifiable performance assessment is necessary to determine if alienation or isolation is reflected negatively. Additional research should explore to what extent different reactions occur when students are exposed to different learning environments and learning styles.

### References

- Abel, J. D., & Creswell, K. W. (1983, October). A study of student attitudes concerning instructional TV. *Educational and Industrial Television*, 72-79.
- Barker, B. O. (1987). Interactive instructional television via satellite: A first year evaluation. *Journal of Rural and Small Schools*, 2, 18-23.
- Biner, P. M. (1993). The development of an instrument to measure student attitudes toward televised courses. *The American Journal of Distance Education*, 7(1), 62-73.
- Biner, P. M., Dean, R. S., & Mellinger, A. E. (1994). Factors underlying distance learner satisfaction with televised college-level courses. *The American Journal of Distance Education*, 8(1), 60-71.
- Boisvert, D. (1988). Helping behaviors of learners in a telephone-based instruction group. In D. Stewart & J. Daniels (Eds.), *Developing distance education* (pp. 121-124). Oslo: International Council for Distance Education.
- Cookson, P. S. (1995). *Instructor and participant responses to critical conditions of audioconferencing*. Unpublished manuscript, The Pennsylvania State University

- Fowler, G. D., & Wackerbarth, M. E. (1980). Audio teleconferencing versus face-to-face conferencing: A synthesis of the literature. *The Western Journal of Speech Communication*, 44, 236-252.
- Fulford, C.P., & Zhang, S. (1993). Perceptions of interaction: The critical predictor in distance education. *The American Journal of Distance Education*, 7(5), 8-20.
- Garrison, D. (1990). An analysis and evaluation of audio teleconferencing to facilitate education at a distance. *The American Journal of Distance Education*, 4(3), 13-24.
- Harrison, P. F., Saba, F., Seeman, B. J., Molise, G., Behm, R., & Williams, D. W. (1991, February). *Dimensions of effectiveness: Assessing the organization, instructional and technological aspects of distance education programs*. Paper presented at the Annual Conference of the Association of Educational Communications Technology, Orlando, Florida.
- Heider, F. (1944). Social perception and phenomenal causality. *Psychological Review*, 51, 358-374.
- Moore, M. G. (1989). Three types of interaction. *The American Journal of Distance Education*, 3(2), 1-6.
- Petty, R. E., & Cacioppo, J. T. (1981). *Communication and persuasion: Central and peripheral routes to attitude change*. New York: Springer-Verlag.
- Rogers, E. M., & Kincaid, D. L. (1981). *Communications networks*. New York: Free Press.
- Ruben, B. D. (1988). *Communication and human behavior* (2nd ed.). New York: Macmillan.
- Saba, F., & Shearer, R. I. (1994). Verifying key theoretical concepts in a dynamic model of distance education. *The American Journal of Distance Education*, 8(1), 36-59.



- Schramm, W. (1954). How communication works. In W. Schramm (Ed.), *The process and effects of mass communication* (pp. 3-26). Urbana, IL: University of Illinois.
- Shannon, C. E., & Weaver, W. (1949). *The mathematical theory of communication*. Urbana, IL: University of Illinois Press.
- Smeltzer, L.R., and Vance, C.M. (1989). An analysis of graphic use in audiographic teleconferences. *The Journal of Business Communications*, 26(2), 123-139.
- Watson, K. W. (1993). Listening and feedback. In L. L. Barker & D. A. Barker (Eds.), *Communication* (6th ed., pp. 49-77). New York: Prentice-Hall.
- Wong, A. T. (1987). Media as agents of interaction in distance learning. *Canadian Journal of University Continuing Education*, 3(2), 6-11.