

The "Blackboard-by-Wire" Training Method

Telephone Line Tie-in to Remote University Teaching

Robert G. Ristau

Technological change has its daily impact on all phases of industrial life. The challenge for all management is to use new concepts and techniques to bring forth applications that will contribute to the success of their company. R. E. Lewis, President of the Perkin Elmer Corporation, has stated this challenge well when he wrote, "From now on, the growth and success of a company will be determined by the creation of new concepts in products—not by rehashing old products steadily but slowly improved."

"Blackboard by Wire" training is a technique that uses new communications concepts that the training director can apply to a variety of teaching situations where it is more practical

and economical to have the instructor and his class at different locations.

This training method has also been called the "Electrowriter-telephone" method or "hotline" teaching system. The system, with the exception of the Electrowriter itself is relatively simple: A long-distance telephone line is used to bring an instructor's voice into a classroom where it is amplified by one or a number of speakers. Another telephone line is used for the Electrowriter that transmits written or drawn data onto a movie screen. Microphones are placed in the classroom to enable trainees to ask questions providing two-way communications and simulation of a live classroom situation. Installation of the system simply requires the availability of telephone line con-

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nections and normal AC current. The equipment takes a small amount of space and can be easily dismantled and stored.

Tie to Academic Resources

My company uses the system to provide graduate chemistry courses for our professional employees. Our Corpus Christi, Texas Plant and Research and Development Center are located in a community that has first-rate schools, however, college courses are available only on the undergraduate level in the engineering and scientific fields. It may be some time before graduate work is available in our city.

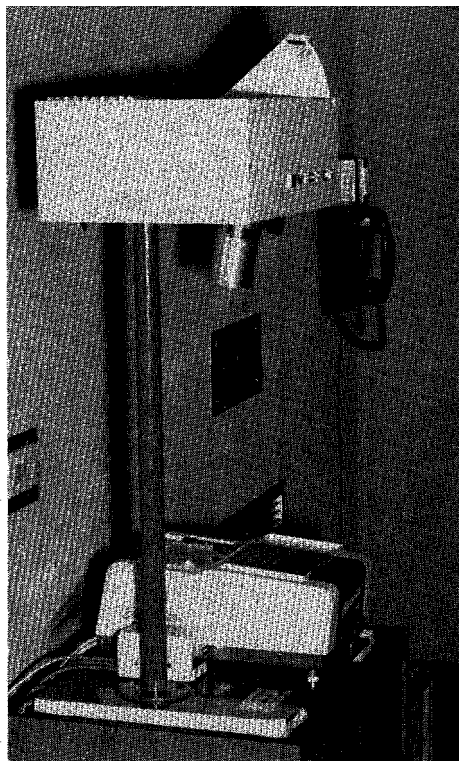
Our professional development problem was to provide our professional staff with graduate courses for advanced degrees and to help them combat technical obsolescence. Texas A&M University was sympathetic to our development needs, but the 250 miles that separated the University from our city made instructor availability a problem. Travel time to Corpus Christi would take a healthy time bite out of the professor's on-campus teaching demands. The solution to the problem was the start of our "Graduate Hotline"—long distance Electrowriter-telephone courses between Texas A&M and PPG Chemical for academic credit.

Pilot Courses Problems

A pilot five week, one-hour graduate credit course in Chemical Bonding was started in the Spring of 1965.

Some mechanical difficulty was experienced with the Electrowriter during the early phases of the course. The chief problems were ink clogging on the pen of the Remote Blackboard Receiving Unit and telephone line noise, which caused pen vibration on the receiving unit. The Electrowriter representative modified the pen on the receiving unit, which eliminated the ink

clogging problem, and the telephone companies worked out an improved traffic pattern to provide clear circuits when the class was in session.



Electrowriter Receiver in PPG Chemical Corpus Christi, Texas Conference Room.

The course instructor presented the first and last sessions in person to provide personal contact and enhance two-way communication. The audio portion of the system never functioned ideally during the course. The professor came through loud and clear. We had hoped that the mikes in the classroom would be strong enough to allow students to ask questions from any part of the room and be heard by the professor in his office 250 miles away. This kind of communication was only

achieved when the student spoke directly into the mike, which necessitated passing a mike to a student to enable him to ask a question or make a comment to the professor. This limited the desired full simulation of normal classroom communications.

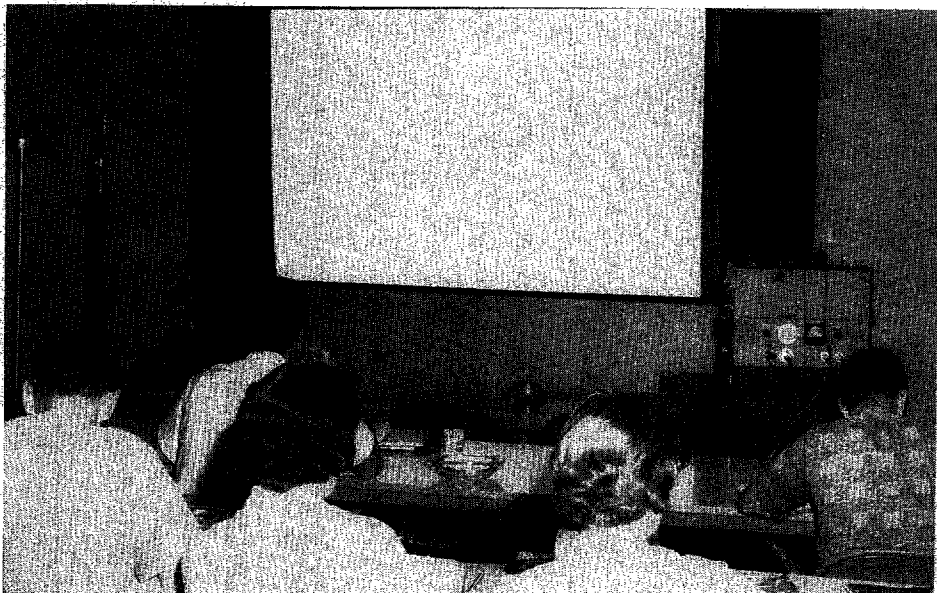
Further Applications

Full semester courses in Structural Inorganic Chemistry and Chemical Analysis have been conducted at our plant since the pilot program. Improved amplification equipment has been installed at Texas A&M that provides close to perfect two-way communications. Microphones are located at either side of our Conference Room, and students talk to their professor without moving from their seat or having a mike passed to them.

Our program was complicated by the fact that the long distance lines used for the course are not direct connections and involve two telephone companies. Test calls made on stand-

ard equipment of distances greater than that required by our program have resulted in the perfect two-way communications we eventually achieved, making microphone position less critical than it was during the early stages of our program.

Our success has led to other Gulf Coast companies starting similar programs with Texas A&M. Texas A&M presented one course simultaneously on campus and remote to a company location 130 miles away. Another chemical company in the East used the Telewriter-telephone system to present a two-hour conference from a university to its laboratory in the summer of 1965. A publishing firm used the technique for a mathematics seminar to update 500 elementary and high school teachers at several midwestern cities. As you can see, linking a university to an industrial location isn't the only application the Training Director may want to consider for the "Blackboard by Wire" teaching system. The train-



PPG chemists viewing notations projected on Conference Room movie screen by Electrowriter Receiver. Tele-conference Lecture Set is at right of movie screen.

ing director could present a corporate orientation program or a supervisory training program to several locations at the same time.

Equipment Factors

Why bring training personnel to the home office for the introduction of a new corporate training program? Sales training, a new data processing concept—plan your presentation and dial your trainees. The Electrowriter-telephone combination may do the job. Closed circuit television? Great, if your company can afford it. However, the “Blackboard by Wire” system may meet your needs for much less cost.

Your local telephone company can give you information on Tele-Lecture Conference Sets and Data Phones for the Electrowriter. The Victor Comp-tometer Corporation has information on buying or leasing an Electrowriter Remote Blackboard. Equipment rental and telephone call costs run approximately \$50.00 per teaching hour. This cost is based on normal long distance charges for our location. Our plant has Wide Area Telephone Service (WATS) for long distance calls and our “hotline” program uses this service

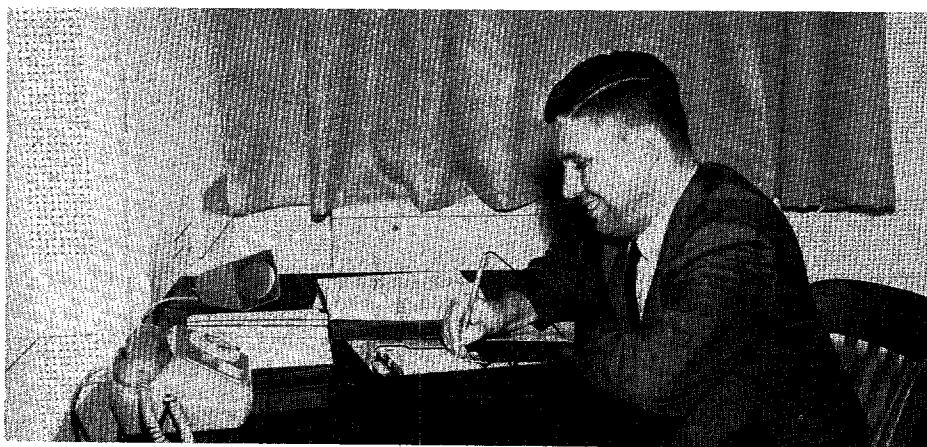
after normal working hours when WATS is being payed for but not used. Therefore, our training material cost is usually lower than quoted. Equipment installation costs will run approximately \$120.00.

Student Reaction

Now for the reaction to our “Blackboard by Wire” system. Each participant was asked to complete an evaluation questionnaire after our pilot program, indicating his reaction to the new teaching method. These were their viewpoints:

- On a scale where 0 was “Unacceptable” and 100 indicated that the system was “An Excellent Substitute for a Live Class,” the mean rating was 67.
- 100% said they would take another course using the “Blackboard by Wire” system.
- 87% felt the advantages of having a graduate “Blackboard by Wire” program outweighed the disadvantages of the system.

Other survey results that may be of interest to training directors considering this system for technical courses or seminars were that the great major-



Dr. Richard M. Hedges, Texas A&M University Teaching PPG Chemical employees from his classroom at the University.

ity of participants wanted more use of evaluation tools, such as tests and homework for future courses. We also found out that 95% preferred classes right after work rather than at night or on Saturday, and 82% liked two 1½ hour sessions rather than three 1-hour sessions or one 3-hour session.

Equipment Improvements

Telephone company representatives inform us that improved equipment is on the way for the "Blackboard by Wire" teaching system. A larger writing surface, reversible writing roll, a slide projection attachment, video ap-

plications, and high powered amplification are possibilities with future system modifications. With the current model, you have a permanent written record of instruction notes that can be retained for additional viewing after a session ends that can also be duplicated for class distribution.

The "Blackboard by Wire" system could mark the beginning of a training technique that would provide training directors with a tool for offering instruction to a great number of employees by simply dialing their students on their classroom electronic blackboards.

Chamber President Urges Business to Fight Poverty

The nation's businessmen have been urged to take a more active role in the fight against poverty and other social ills by M. A. Wright, president of the Chamber of Commerce of the United States. Mr. Wright said today's businessmen are well equipped to devise new and better approaches to many social-welfare programs — approaches which, he declared, could help prevent a habit-forming dependence on government.

"If we want to preserve the principles of individual freedom and private initiative," he said in a recent speech before the Chicago Association of Commerce and Industry, "we must devote an increasingly larger proportion of our time to meeting the nation's social needs. The day has passed when our public responsibility can be met merely by offering sideline criticism of the Government's efforts."

Businessmen should offer "constructive alternatives" when they are opposed to the Government's programs, Mr. Wright asserted. "At the same time, we must continue to encourage policies which will promote economic growth—still the greatest force in the fight against poverty."

Mr. Wright, who is board chairman and chief executive officer of Humble Oil & Refining Company, spoke on "Private Enterprise and the Great Society."

He said that Government's efforts in the social-welfare field are laudable in purpose but have too often been marked by waste and political expediency. "Poorly thought-out proposals and expensive stopgap measures have been accepted," he said, "when more carefully planned programs could have achieved greater results at a lower cost to the taxpayer."