1-1-2014

MPATI: The Midwest Program on Airborne Television Instruction (1959-1971)

Monica W. Tracey
Wayne State University, Monicatracey@wayne.edu

Jill E. Stefaniak
Old Dominion University

International Journal *of* Designs for Learning
2014 | Volume 5, Issue 2 | Pages 29-33

MPATI: THE MIDWEST PROGRAM ON AIRBORNE TELEVISION INSTRUCTION (1959-1971)

Monica W. Tracey, *Wayne State University* & Jill E. Stefaniak, *Old Dominion University*

It is 1964 and high in the sky, flying in a figure-eight formation over a 200-mile radius and six Midwestern states, is a plane with a large 24-foot antennae hanging from its belly. Transmitting 24 separate courses recorded ahead of time then played back to member schools in six states, the Midwest Program on Airborne Television Instruction (MPATI) was designed to meet the need of providing educational television to a wider audience. In the late 1950s, the FCC decided that certain channels would be allocated for non-commercial educational use. Schools were bursting with students; teachers were in high demand and educators wanted television classroom instruction to ease their burden. Offering simultaneous programs to schools across the country similar to commercial networks seemed impossible. Hence, the Midwest Program on Airborne Television Instruction, a not-for-profit consortium of educational institutions and television producers, was born.

Monica W. Tracey is an Associate Professor of Instructional Technology in the College of Education at Wayne State University. Her teaching and research focuses on theory and design-based research of interdisciplinary design including design thinking, designer reflection, and designer decision-making. Tracey has worked for over 25 years in design and on numerous design projects. Her work includes designing internationally and across disciplines.

Jill E. Stefaniak is an Assistant Professor of Instructional Design & Technology in the College of Education at Old Dominion University. Her research interests focus on theory, complex learning, situated learning, and informal learning environments. She obtained her Ph.D. from Wayne State University.

INTRODUCTION

The Midwest Program on Airborne Television Instruction (MPATI) was a bold experimental program attempting to disseminate instruction to areas where educational television was not readily available. To enrich educational programming, the MPATI provided standardized educational programming to elementary and secondary school students in rural areas. Aircraft flew for six to eight hours a day over Montpelier, Indiana (Figure 1) to transmit educational offerings across a range that was 200 miles in diameter (Perlman, 2008).

Instructional videos pre-recorded on videotape at several educational television facilities in the Midwest were aired from the MPATI planes (Figure 2). This allowed for instruction to be shared via telecasts to students in Indiana, Illinois, Kentucky, Ohio, Michigan, and Wisconsin. Teachers were provided with instructor guides to help facilitate lessons and assist students during activities.

Although a novel approach to distributing instruction, the MPATI officially ended after 10 years in 1971 due to an inability to raise enough money to fund the maintenance of the aircraft. This design case will highlight how the novel conception of the MPATI was the first form of satellite television

FIGURE 1. MPATI courses were transmitted to six states (Ohio State University, 1964).

FIGURE 2. Televised broadcasts were aired from the MPATI planes (The Ohio State University, 1964).

transmission, utilized principles of programmed instruction to educate elementary and secondary school students in the Midwest, and moved the audio-visual movement of instructional design forward. In addition, to support the case, an interview was conducted with an end user, a student participant of the MPATI. While the MPATI did not experience long-term success, it helped researchers in our field better understand the use and constraints surrounding instructional media and the design of instruction (Gibson, 2001).

THE GENESIS OF MPATI

Although experimentally launched in 1959, the MPATI program dates as far back as the mid-1940s when Westinghouse Engineer, Charles Noble, discovered that he could broadcast a television signal from an airborne aircraft. He maintained this would eliminate the existing line-of-sight transmitting limitation. Noble called his invention Stratovision, a network of strategically placed aircraft flying in the skies that could transmit television signals to homes. Because the FCC placed a freeze on new television stations in 1948, Stratovision never materialized (Jajkowski, 2004).

In 1958, the Westinghouse Corporation approached Phillip Coombs, the Executive Director of the Ford Foundation, to discuss the possibility of using the Stratovision concept for educational television. Working with educators at Purdue University in Indiana, along with financial backing from the Ford Foundation and a FCC agreement for a three-year experiment, the Midwest Program on Airborne Television Instruction was officially formed. The board consisted of superintendents of schools from Ohio, Michigan, and Illinois. The MPATI launched in 1959 and was housed at Purdue University. With a $16 million dollar grant from the Ford Foundation, regular service began in 1961. This was the first use of satellite communication for distance education. Six tons of broadcasting equipment (Figure 3) was stored on a propeller-driven DC-6 aircraft that flew in a figure eight roughly four and one half miles above Montpelier, Indiana to deliver a signal across a 200-mile radius (Jajkowski, 2004).

The broadcasting equipment allowed for 20 lessons to be broadcast every school day to students ranging from elementary school to college. Maintenance of televisions and antenna systems made television reception a dependable method for communication.

Developing the curriculum included soliciting the assistance of several universities to design and develop primary and secondary courses in English, foreign language, music, literature, science, the arts, and mathematics. A nationwide search was conducted to select teachers, and 20 teachers were hired to deliver the designed curriculum. Although engineers monitored the technical quality of the programming, course quality was assessed by educational academics.

MPATI IN ACTION

The purpose of the MPATI instructional television program was to provide schools with access to learning about subjects their students may not have otherwise experienced. Airborne teachers recorded lessons that were broadcast to schools across the Midwest (Figure 4). These teachers were knowledgeable in their respective fields and were able to teach course material at a level much more advanced than the typical classroom teachers at these sites. Classroom teachers were provided with an instructor guide to help facilitate instruction and carry out activities after the televised broadcasts.

Schools interested in participating in the MPATI televised program were responsible for securing their own funding. In 1963, the cost to participate in the MPATI program was $1.00 per student; however, these fees rose to $2.50 per student by 1966 (University of Maryland Libraries, 2007). Their budgets determined how many lessons they could offer their students.

Principals and teachers reviewed the MPATI curricular offerings together to determine if the televised instruction

FIGURE 3. Broadcasting equipment stored on a DC-6 (The Ohio State University, 1964).

FIGURE 4. A class prepares to watch a televised broadcast (Ohio State University, 1964).

FIGURE 5. The Flying Classroom was an elongated TV station with 6.5 tons of equipment (Ohio State University, 1964).

would meet the needs of their school. Airborne courses were not considered to be a "one size fits all" and it was the school's responsibility to ensure that the lesson plans would complement their curricular standards as set by their school district and state. Lesson plans were also selected based on the teacher's educational background in the classroom. Sometimes, a teacher was required to teach advanced Spanish and may have had only two years of training themselves. Having an expert teacher facilitate the course not only provided the instructor with additional classroom assistance, but also provided exposure to more advanced concepts for the students.

Each videotaped educational program was broadcast over UHF (ultra-high frequency) channels 72 and 76 every school day during school hours (Gibson, 2004). The TV broadcast antenna was lowered from the plane once it reached an appropriate altitude. Coined "the flying classroom," (Figure 5) the MPATI airplanes served the largest geographic region in the world, 127,000 square miles, with one television transmitting facility. Dublin, Ohio was an example of one community served by "the flying classroom."

Dublin, northwest of Columbus, was once a rural community, but in 1964 it was becoming a suburban community. The focus of a documentary on MPATI (The Ohio State University, 1964), Dublin suffered from similar educational challenges to other schools across the country. The Dublin Superintendent looked to MPATI to provide his fifth grade class instruction in introductory Spanish four days a week, as they faced increased enrollment and the need for additional teachers. The teacher prepared the class before the students watched the lecture using materials provided by the MPATI curriculum. She also served as a guide during the telecast. The Spanish teacher opened the program singing in Spanish wearing traditional Spanish attire. Elsewhere in the Dublin school district, another fifth grade class received science instruction, also from MPATI. The principal explained that prior to this advanced science program and all of the support materials, 4% of the students chose science as their favorite subject. After MPATI, 46% of the students chose science as their favorite subject. Students in an MPATI advanced math course in Dublin tested above average in algebra after one year of the MPATI course. The principal, providing this anecdotal evidence, stated that Dublin had a good educational program but the MPATI program added to the vitality of the curriculum. He further explained that educators must re-organize to determine how to meet the demand of the increased number of students and teaching students the additional things they have to know (The Ohio State University, 1964).

The film featuring Dublin, Ohio was created in part as an exemplar of MPATI to recruit additional participants. The Ford Foundation funded the first year of the three-year experiment, forcing the need to enlist ongoing financial support from member schools. The project was ultimately divided into eighteen districts across the six states. Each district acted under the guidance of a selected college or university that also served the MPATI staff.

One Student's Experience

Rick was an excited 11-year-old fifth grader in Indianapolis, Indiana. His class was informed that on this day they would not have their regular teacher but would watch television instead. The class was told they would get instruction through the television at a designated time, when a plane was flying overhead. Rick and his classmates were very excited as they were ushered out of their classroom across the hall to the Music Room in front of the only TV this private Lutheran school owned. After sitting down and waiting with great anticipation, the television teacher came on the screen. Their excitement was palpable as their teacher dialed the TV into the channel and then made fine tuning adjustments. Initially, the novelty of watching television at school and the

promise of a different teacher captured the interest of the students. To the disappointment of the students and teacher in the long run, the image was static and the television teacher mostly stood in front of a blackboard droning on, not making much sense to the students. Rick and the others enjoyed the new experience, but missed their regular teacher. Upon reflection, he recalled that the class only watched the television teacher two or three times, and then stopped viewing the program altogether.

Rick explained this private Lutheran school had a limited budget and his guess was that the school picked the program up for free. He had no memory of supplementary materials or special support activities for the broadcast. This was one problem with the MPATI program. Their broadcasts were not scrambled, so anyone with a UHF tuner could receive the programming, and this did not encourage schools to join and pay the required fees. Additional challenges plagued "the flying classroom" and ultimately caused its demise.

CHALLENGES

Challenges contributing to the termination of the MPATI televised instruction program included technology and logistics. While television reception had been highly dependable, the maintenance on the broadcaster's side posed much difficulty for the technicians responsible for overseeing the equipment on the plane. Keeping in mind that this program took place in the early 1960s, all lesson plans were videotaped. The early video tape recorders were subject to overheating and other malfunctions (Jajkowski, 2004). The technicians on the planes had great difficulty addressing maintenance issues with all of the equipment being stored in the plane. The 24-foot antenna was also an issue, as it was constantly moving. An innovative solution to this issue was discovered. When the aircraft reached its position, the 24-foot antenna mast was hydraulically extended in a straight down position and a gyroscope would keep it within one degree of the vertical position regardless of the position of the aircraft (Jajkowski, 2004). All of this equipment—the videotape players, the antenna, and the technicians—operated out of the back of the plane.

Retaining pilots was also a challenge for the MPATI program. Flying 2,000 miles per day in the same figure-eight pattern proved boring and redundant for the pilots. Although MPATI attempted to fix this problem by hiring part time pilots who worked infrequently, pilots also were challenged by the Midwest weather. Although there was little MPATI could do about the weather, it purchased a second plane so if the first one was grounded due to mechanical difficulty, a second plane was ready to fly to keep the educational programming flowing.

In the classrooms, not every television set had UHF receivers with individual channels listed. At this time there were only three major broadcast television stations so finding the MPATI channels on the television sets was a challenge for the teachers. Scheduling lessons posed logistical challenge for schools that participated in the MPATI program. The equipment on the airplane was limited to broadcasting 20 lesson plans every school day due to the number of channels MPATI had access to. While the six states participating in the program were in the Midwest, they were spread across the Eastern and Central time zones, which made scheduling difficult. Class schedules varied from school to school which caused scheduling to be problematic and generated great levels of dissatisfaction among membership schools (University of Maryland Libraries, 2007).

MPATI was plagued by a lack of membership and the technical limitations inherent in the project at the time. The final blow for the program appeared to be in the mid-1960s when the FCC refused to grant additional UHF channels to the project. By this point, advancements in satellite technology were being made, and by 1966 the FCC stopped issuing any licenses for television stations above channel 69 (Jajkowski, 2004). MPATI, once thought of as a giant leap in technology advancement, was ultimately hurt by the advancements in technology. It became a tape library, returning the two DC-6 aircraft and surrendering its broadcast licenses to the FCC. It would serve as a library to its member schools for the next three years, before the entire project was dissolved in 1971.

IMPLICATIONS

While the MPATI experienced success for a brief period, its greater contribution was that it pushed the boundaries of distance education by being the first form of satellite television transmission. Distance education is defined as being "institution-based, formal education where the learning group is separated and where interactive telecommunication systems are used to connect learners, resources, and instructors" (Schlosser & Simonson, 2009, p. 1). The videotape and televised instruction used by MPATI was a precursor for online instruction and the distance education that we are familiar with today. MPATI broke down the preconceived notions that students could only learn if they were in a face-to-face environment with their instructor.

MPATI was a novel and innovative approach to instructional technology because the program allowed for curriculum to be disseminated via television signals 10 years prior to the Public Broadcasting Service being launched in 1969 (Jajkowski, 2004). By the late 1980s, interactive satellite distance learning had become commonplace both in education and in business. Since that time, distance education has evolved from MPATI to interactive satellite to the Internet. Students can now participate in synchronous and asynchronous learning with individuals located all across the world. The MPATI existed at a time when instructional designers were not accustomed to using terms such as

asynchronous versus synchronous, but these terms are now used frequently in many learning environments, particularly distance education, as instructors have a variety of instructional tools, activities, and strategies at their disposal. In this instance the practice of MPATI drove the development of the theory of distance education. While the MPATI was an early attempt at disseminating curriculum from a distance, we have seen the field of instructional design grow to include best practices for web-based instruction in part because of numerous iterations of distance education initiatives.

The MPATI provided opportunities for schools in remote areas to stretch their curricular offerings and provide students with learning opportunities they would not have access to otherwise. While MPATI offered a variety of elementary and secondary lesson plans, the onus was placed on the school districts to identify what lesson plans would enhance their preexisting curricula. This was an early example of how learner-centered design was being used in distance education.

Membership schools affiliated with MPATI were constrained by having to access televised broadcasts according to a dissemination schedule. In the 1960s, feedback regarding the effectiveness of MPATI instruction was collected once a year through teacher surveys and discussion groups. This prevented the instructor from recognizing when groups of students were struggling with course content and constrained their ability to customize the instruction to meet their individual needs. It also imposed significant challenges for the designers to update the curriculum, as this too was done annually and based on feedback from all membership schools. Technologies today, however, allow the end user or learner to participate, have freedom and flexibility in their learning time, and provide timely feedback to the designers in an effort for continuous improvement. Applications such as chat rooms, blogs, journals, discussion boards, and e-mail allow for students to communicate with their instructors and peers instantaneously and report any challenges they may experience with subject materials or other aspects of a course.

Much like the MPATI, 50 years later, we are still faced with similar design and curricular concerns. While technological applications appear to be growing at what seems an exponential speed, teachers, school districts, universities, and businesses must identify options that will enhance their specific needs. These technological innovations require instructional designers to continually approach design through a new lens. For example, interaction, as we have previously defined it, is no longer a descriptor of one form of communication. Technologies provide for numerous forms of interactions and designers must grapple with designing for different types and levels of interaction taking place between the learner, content, and the learning environment.

This design case highlights how the novel conception of the MPATI was the first form of satellite television transmission, utilized principles of programmed instruction to educate elementary and secondary school students in the Midwest, and moved the audio-visual movement of instructional design forward. There is still a growing need for useable and affordable technology, well-designed instructional materials and resources, and people in and outside of the classroom available to facilitate learning (Gibson, 2001).

SUMMARY

Although we look at the MPATI program now and see all of the challenges its designers had, it was an innovative use of the airborne television technology available in the 1960s providing school children to be educated in ways otherwise not available through their school. We learned through MPATI that distance learning via television was viable and could be effective if technology and human support was in place.

REFERENCES

Gibson, D. (2001). The way we were…Education on the fly. Technos Quarterly, 10(3). Retrieved from http://www.ait.nt/technos/tq_10/3gibson.php

Jajkowski, S. (2004). MPATI: The flying classroom. The Video Veteran. Retrieved from http://www.chicagotelevision.com/MPATI.htm

Perlman, A. (2008). Flying classrooms in the Midwest: The MPATI's experiment in regional educational television. Retrieved from http://mediacommons.futureofthebook.org/imr/2008/02/28/flying-classrooms-in-the-midwest-the-mpatis-experiment-in-regional-educational-television

University of Maryland Libraries. (2007). Midwest Program on Airborne Television Instruction (MPATI) Records, Special Collections, University of Maryland Libraries. Retrieved from http://hdl.handle.net/1903.1/1591

The Ohio State University. (1964) Airborne Television: Profile of a School. A Series of Motion Picture Documents on Communication Theory and the New Educational Media.

Schlosser, L., & Simonson, M. (2009). Distance education: Definition and glossary of terms (3rd ed.). Charlotte, NC: Information Age Publishing.