Modern Technology in Foreign Language Education:
Applications and Projects

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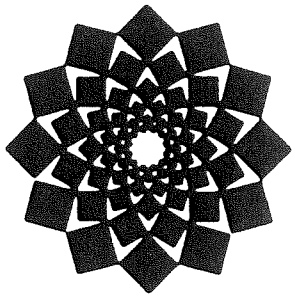

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The Language Laboratory in the Computer Age

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Introduction

Twenty-five years ago the term "language laboratory" referred to a room equipped with audio recording machines and headsets. In those media-naïve times, the laboratory was acclaimed as the "magic wand" that would revolutionize language learning. Experience has altered this perspective greatly, however, and we now admit that "Le laboratoire de langues n'est plus l'instrument-miracle et unique." (Richterich, 28, p. 18) Nevertheless, through improvements in recorded materials and refinements in the techniques of using audio, the lab has earned a permanent role in foreign language education. At the same time, new technologies have emerged that can support language instruction. For this reason, audio is no longer considered to be the sole component of an effective language-learning laboratory. Many institutions have transformed the traditional audio laboratories into foreign-language-learning centers that offer a variety of international media resources—audio, computer, and video—and assist learners at many levels and in many disciplines. While the term "language laboratory" is still used to refer specifically to audio classroom equipment, in the pages that follow it should be read with a broader definition in mind. Except when modified by the words "audio" or "traditional," which are meant to specify the narrow interpretation (audiotape machines, headphones, teacher console), the denomination "language laboratory" is not distinguished from other terms such as "language resource center," all of which are used interchangeably to designate the multi-media facilities that have evolved to meet the demands of contemporary language teaching and learning. This chapter (1) offers a brief review of the insights gained from early experiences with audio labs, then (2) examines in detail the changing face of the language

laboratory in the computer age—its expanded instructional role, its current and emerging technologies, and its personnel.

Reflections on the Past

The generalized use of audio equipment began in the post-Sputnik era; subsequent funding provided by the National Defense Education Act bought many language laboratory installations for colleges and high schools. Conventional language laboratories had a teacher console linked to student booths that were equipped with audiotape machines specially designed for working with recorded materials. Professionals touted the combination of this hardware and the audiolingual method as the solution to the foreign language deficiency in American education (Brooks, 2; Gionet, 7). But the results of using the new audio equipment fell far short of expectations; the machines produced minimal gains for the learner and frustration for uninitiated teachers. It was unrealistic to expect dramatic success instantly; it takes time for materials, techniques, and strategies to evolve around any technology (Capretz, 3).

Unfortunately, language lab technology became associated in the minds of many language teachers with the most mechanical aspects of the audiolingual method. For those practicing ALM, the goal of laboratory work was to provide students with models of native voices and drills in order to internalize pattern structures and foster the ability to respond automatically. The taped materials devised for this purpose centered upon exercises that were passive intellectually, uncontextualized, and boring in format and content. It was actually possible to respond to the drills without thinking or without understanding what was being said. Students and teachers viewed the lab as a place devoted to creating linguistic automatons. The unpleasantness of lab usage via the audiolingual approach was compounded by the drawbacks of a technology in its early stages of development—clumsy tape decks and consoles, uncomfortable headsets, and frequent mechanical breakdowns. As the popularity of ALM waned, so did the use of the language laboratory.

Language learning during the 50s and 60s is frequently remembered in grim scenarios of students herded into rooms, deposited into impersonal niches and turned into parrots, yawning or doodling in boredom, ultimately incapable of producing spontaneous utterances. By the 70s many labs had fallen into disrepair and disuse, apparently doomed like the dinosaurs to fail the test of time. Since then, critics of technology for language learning have admonished us to avoid the mistakes of wasting money on costly equipment when the key to effective language instruction lies in good teachers using better methods toward clear goals (Grittner, 8). The lab was the convenient scapegoat in explaining why, even with a large infusion of money for equipment, desired results were not achieved. Problems that rightfully should have been attributed to deficiencies of the approach or the materials

and their underlying theory were blamed primarily on the hardware (Davies, 5, p. 6).

Yet, despite an inauspicious beginning, the language lab has survived, and the experiences of the first decades of language lab use have yielded a number of important insights. High-quality materials that engage the student's mind are essential. As Rivers (29) observes, "Technological wonders cannot assist learning without... a carefully designed and executed language sequence that provides authentic language materials which are interesting enough to retain the student's attention and encourage perseverance" (p. 5). Production of such courseware requires time, resources, imagination, and thoughtful application of pedagogical principles to media.

Expectations concerning the role of the technology must be realistic; tools are used only if they are used approrpiately. Machines do not replace the teacher; they are generally incapable of providing a "complete" language experience because the true give-and-take spontaneity of conversational interaction cannot take place between a person and a machine. Technology does offer, however, real advantages of other kinds. As Dodge (6) notes, technology can increase efficiency in teaching large numbers of students, provide greater diversification of learning activities, and effectively motivate students who live in a technologically developed society (p. 102).

Certain long-standing convictions about valid reasons for using technology in the language laboratory have been sustained, regardless of changes in methodology: it is still important to be exposed individually to a variety of native voices speaking, to practice on pronunciation and listening comprehension skills, and to work in privacy with the best possible acoustic control (Hocking, 13, pp. 13-14).

Current Trends

This chapter contains no blueprints for the ideal language lab in the computer age. Decisions about what to include in an effective lab for any given institution are contingent on a number of factors: (1) the teaching methods the faculty subscribe to, (2) the number of students to be served, (3) the size of the institution, (4) the general availability of resources from other units (computer center, library, video center), and (5) the administration's philosophy on technology and education. However, there are several discernable trends in the kinds of facilities and services that modern language laboratories typically offer.

The traditional audio lab primarily served language students in first- and second-year courses and pronunciation classes. Students were expected to outgrow it, advancing into literature studies and composition and conversation courses that focused on activities outside the lab. As resources broadened to include computers for foreign languages, video, and periodicals, the lab has come to provide more relevant services to language students in upper-level and special-purpose courses. Intensive and extensive work with authentic

video documents, for example, can be integrated at many levels of instruction, but it is particularly suitable for meeting the demands of advanced learners. Translation and business language students benefit by using computers because they can work more efficiently on assignments and projects; in addition, they gain experience with computer tools used by professional translators and business people.

The recent hypotheses and movements that have made an impact on current methods of foreign language instruction include Krashen's Second Language Acquisition Theory, Asher's Total Physical Response, the Communicative Approach, the Natural Approach, and the proficiency movement and communicative competence (Oller and Richard-Amato, 23). While some language professionals devote themselves exclusively to the techniques of a single theory or movement, the majority develop an eclectic approach, adopting aspects that suit their pedagogical convictions and teaching styles. In general, collective wisdom dictates eliminating mechanical grammar-oriented practice from the classroom and concentrating on more meaningful activities that can occur only through student-teacher interactions (Blair, 1, p. 7; Hammerly, 10, p. 585). In addition, current theories emphasize development of the receptive skills—particularly listening comprehension—before requiring extensive performance in the productive skills (Winitz, 31). These trends translate into increased reliance on media to support individual learning activities. For teachers who have not totally rejected any kind of repetitive practice of grammar structures and pronunciation, the lab with audio and computer resources remains the ideal setting for drill and practice. Even those who do not believe in the efficacy of mechanical drills support the notion that the lab can provide important sources of listening comprehension materials. For example, Krashen (16) remarks that "Comprehensible books and tapes are the components of the language lab of the future" (p. 21). He notes further, "The language lab should be a place where students can go to get a healthy dose of comprehensible input on topics of their choosing. They should be able to select from a variety of topics and hear and read input at their own levels of competency" (p. 21).

The emergence of programs that cut across curricula has created some significant changes in the use of campus resources. A case in point is the proliferation of international studies curricula that have brought together faculty from a number of disciplines while diversifying the language lab clientele. Names like "international media center" and "humanities resource center" replace the standard "language laboratory" designator to reflect the expanded role of international media in the liberal arts. These centers serve faculty and students from communication studies, journalism, history, political science, and foreign studies programs in addition to language departments. More than ever before, building an archive of varied and easily accessible materials constitutes an important mission for the lab. Foreign media—video, audio, and print—can enhance many areas of study, although each area's intended goals for the same material might be quite different from the other

areas'. For example, a German student might work intensively with a news broadcast to understand the language, while a journalism student might well be focused on the style of the broadcast proper. (See Vines, Part II, Report 2, pp. 179-86.)

The metamorphosis of the one-technology language laboratory into a multimedia language-learning center implies a greatly enhanced capability to serve the needs of the independent learner. It seems perfectly feasible to expect, as does Davies (5), that the laboratory should support self-instructional language programs (especially for less commonly taught languages) and that a highly motivated learner can achieve a basic communicative competence through a program of self-study supported by a textbook, audio and video tapes, and the computer (p. 8).

Self-instructional curricula suit the purposes of a number of learners in special circumstances: the professor who is going abroad and wants to acquire some language skills before leaving; the student who comes to the university with a skill level that does not mesh with the courses offered and who needs some remediation or additional work to fit into the program; the person who has taken formal coursework in the distant past and wants to get back in touch with the language.

Finally, self-contained courses aside, a language center with a good media library will naturally attract a number of browsers, who come in to use audio, video, computer, or printed materials for pleasure and enrichment. This kind of informal use convincingly demonstrates the power of media to engage our attention; similarly, it serves to corroborate the belief that media-based instruction can significantly motivate and sustain interest in learning.

Audio Technology

The audio equipment found typically in the language laboratory of the 1980s ranges from regular consumer machines (radios, record players, and tape recorders) to hardware specifically designed to meet the particular needs of language instruction. The shortwave radio, a technology not originally designed for purposes of language instruction, has many advantages as a language-learning tool. It is cheap, portable, and reliable and provides access to an abundance of authentic listening comprehension materials in a variety of languages (Wood, 32). Nevertheless, radio stands as an excellent example of a technology that has not attracted a large following of language teachers. Random exposure to language via any medium is not efficient; it takes a great deal of time and effort to cull out suitable material from the air waves, especially if scheduling is not obtainable. Further time is required to produce support materials and integrate the finished product into the course syllabus. Many labs no doubt provide radios for evening and weekend use by learners eager to get as much exposure as possible to live language. While there is much to be said about the applications and benefits of having these generic

audio tools available in the lab, the major focus in this section will be the current state of specialized language laboratory equipment.

Audiotape technology has changed radically since the early days of language laboratories. Reel-to-reel decks with control knobs that clack loudly when rotated, dial-access systems with multiple banks of playback machines, and endless-loop tape cartridges have joined the ranks of wire recorders and record player/headset configurations in the museum of obsolete language laboratory tools. In his monograph on language laboratories, Hocking (13) offered an interesting and detailed account of the evolution of language laboratory technology, describing equipment and applications used in language teaching from the turn of the century through the middle 60s. Two decades later we find language laboratory technology heavily influenced by the computer revolution with its silicon chips and microprocessor-driven functions.

Language Laboratory Consoles

In particular, the teacher consoles available for modern classroom laboratories reflect the impact of microchip technology on lab design. A console with the familiar function of old-style models can be produced as a portable unit about the size of a briefcase. Essentially a control center wired to a number of student booths, the compact console allows the instructor to monitor and communicate with individual students, address the whole class or some portion of it as a group, broadcast programs to all or part of the class, record student responses, and pair students so that they can converse with each other and work together. Typical features of other state-of-the-art consoles are control over automatic high-speed duplication of tapes at student carrels, full remote control of student decks, flexible random pairing or grouping of students, and the capacity to manage simultaneously inputs from as many as sixty-four stations.

Although most consoles bear a definite resemblance to their 60s predecessors, a few models integrate radically different technologies. For example, one manufacturer (Sony) has produced a multi-media system incorporating a microcomputer with a CRT display (a small TV-like screen). Instead of pushing buttons or flipping switches on a panel, the instructor makes selections and controls activities by simply touching one of the choices printed out on the CRT. This system features the capability to (1) sense student responses keyed in on a number pad (suitable for multiple choice, true/false, discrimination tests, etc.), (2) score, record and analyze them, and (3) print out results on a built-in printer. A video projection unit that combines the capabilities of opaque, slide, and overhead projectors can be purchased as an accessory. The student tape deck can be tied to a microcomputer for interactive audio programming. The price tag, even without the projector and interactive audio components, is probably more than most institutions can currently handle. Furthermore, the skeptical

consumer of language lab equipment might dismiss a system combining computer, audio, and video as "technical overkill." Yet this multi-media concept represents a real effort on the part of industry to respond to the laboratory needs arising from current methodologies and new perspectives on what functions the lab performs best.

It is now the exception, rather than the rule, that instructors take their classes to the lab and spend the whole period working with taped drills, as was common practice in earlier times. Class time is simply too precious to waste on mechanical tasks that can be done almost as well individually, outside of class with mediated courseware. The perception of valid group use of the lab has shifted toward activities that require close one-on-one interaction with the instructor or that benefit from a controlled environment with greater security, improved audio quality, and flexible grouping of students. Included in these activities are intensive work on improving pronunciation, small group work with dialogues, skits, and question/answer exercises, and testing of listening comprehension and speaking skills. Often these are not and should not be hour-long activities. Multi-media consoles and lab classrooms enable the teacher to move easily from audio-based activities to others focused on video or person-to-person communication without changes in location.

Student Audio Decks

The look, feel, and functions of student tape decks have also changed dramatically in the past twenty years. The old reel-to-reel machines have been replaced by fast, quiet, compact, microprocessor-controlled cassette decks with light-touch controls. Unlike their predecessors, these new machines are reliable and easy to use; and their accompanying headsets are reasonably lightweight and comfortable. Standard features allow moving from function to function with the press of a single button, automatic sentence repetition (quick scanning for the pause before the sentence), the capability of rewinding a short distance corresponding to the length of time a button is pressed (skip-back), automatic resumption of the play mode following skip-back, and function displays that provide graphic confirmation of current machine mode or activity. In addition, manufacturers are developing a variety of innovative options for their decks. One good example is the "visual text" feature (P/H), which provides a way to display text for the student as the tape is playing.

The recording mechanism of a student deck determines how it records the student voice. Decks are available in either half-track or quarter-track format, both of which use regular audiocassettes. Half-track, the standard for many yerars, uses half of the tape surface for the master program and the other half for the student recording. Because the half-track format uses the whole width of the tape during playback of the master program and recording of the student voice, a ninety-minute cassette can accommodate

only forty-five minutes of program. When the tape is turned over and played in record mode, the student recording is played backward and the master program gets erased. Since students naturally turn the tape over to work with side 2, accidental obliteration of the master program is a frequent occurrence and is, therefore, one of its major drawbacks. Furthermore, a student recording made in the lab on half-track equipment can be played back only on lab equipment, so teachers who wish to evaluate recordings made by students during practice sessions or tests must come to the lab to do it (lacking half-track playback machines in their homes or offices).

Quarter-track format makes it possible to record master programs on both sides of a cassette, using two tracks for the master program and the remaining two tracks for student recording. Student tapes recorded on quarter-track can be played back on standard equipment outside the lab. But the major advantage of quarter-track technology from the lab's point of view is the considerable savings in the number of cassettes purchased and in the amount of space needed to store them. Many commercially recorded lessons are longer than 45 minutes; therefore, the format can mean storing and handling only one cassette rather than two. Some audio quality is sacrificed in quarter-track format because a narrower track means lower fidelity. But because of continued improvement of the quarter-track technology, the relatively minor loss in audio quality is far outweighed by factors of convenience and practicality.

Portable Labs

For those instructors who do not require that student responses be recorded onto tape, a portable laboratory configuration consisting of a teacher console and headsets for students is a more suitable alternative than a full-function laboratory classroom. If the lab is used only to administer listening comprehension tests to which students respond on paper or to define groups of students working together on oral activities, then expensive recording decks are a waste of money. Portable labs are less expensive than their permanent counterparts by a factor of 4 or 5; they also make it unnecessary to displace the class to the language lab for audio-based work and, thus, may encourage the routine use of audio materials to enhance in-class activities. Portable labs are categorized as wireless or hard-wired. Wireless systems employ headsets that allow communication with the console through a built-in receiver/transmitter; hard-wired systems rely on cabling to connect headphones to the console.

Portable labs have suffered from bad press in the past because of a number of technical problems that persist in many models: size is a problem with some; they are portable in the same sense that a refrigerator is portable. The real interpretation of the term "portablility" is that components are not built into the room. Headsets for wireless models tend to be heavy, can pick up extraneous signals, or suffer from inferior audio fidelity. On

the other hand, the hard-wired approach lends itself to spaghetti-like entanglements of cables and cords. Nevertheless, many of these difficulties are being solved by advances in technology. For example, one portable unit on the market (Tandberg) has a briefcase-size console that weighs less than 20 pounds. A series of junction boxes is wired to the console, into which students plug headsets.

The problem of tangled wires can be solved by combining installed components with portable equipment. When junction boxes are installed permanently in the classroom, all the instructor must do is bring in the console and headsets, which can fit on a cart or in a carrying case. The instructor connects the console to the installed wiring with a simple cable and students plug their headsets into the junction boxes to become linked to the console. A combined system like the one described above would be improved greatly by replacing the wired components with lightweight, high-fidelity, wireless headsets. Infrared technology shows promise in meeting these requirements and will perhaps find its way into language laboratories when it becomes less expensive and if sufficient channel separation can be achieved to provide two-way communication with individual students (Moseby, 19).

Individual Audio Carrels

In building a modern installation with audio workstations, few institutions can afford the luxury of spacious private listening rooms for individual audio practice, although they do exist in some laboratories. The cost of equipping an audio carrel with a recording deck and headphones ranges from three hundred to several hundreds of dollars. The costs of each station in the carrels vary similarly, and depend on material and relationship to other carrels (how many shared partitions there are). According to Ramsay (26), a specialist in media systems, facilities, ergonomics, and communications, the optimal size of a work station for individual study has a work surface that is 42″ wide and 24″ deep. Ramsay comments that narrower carrels do not provide enough room for the student and that wider carrels waste space. Although traditional audio language laboratories and listening rooms were configured with straight rows of carrels saturating the space, modern designs give a higher priority to less confining layouts and more appropriate furnishings to produce a better, more inviting place to work. The layout of the listening facility and any other group of individual lab areas should take into account the special needs of users in wheelchairs. Extra aisle space and an increased work-surface height (31-32″ rather than the standard 29″) must be planned to accommodate a wheelchair for at least one station. New arrangements of four or six carrels (Figure 1) lessen students' feelings that they have been pigeonholed in long rows. Stations can be constructed to curve around the student to improve privacy. Completed with a comfortable chair, the station provides a pleasant environment for undistracted individual study.

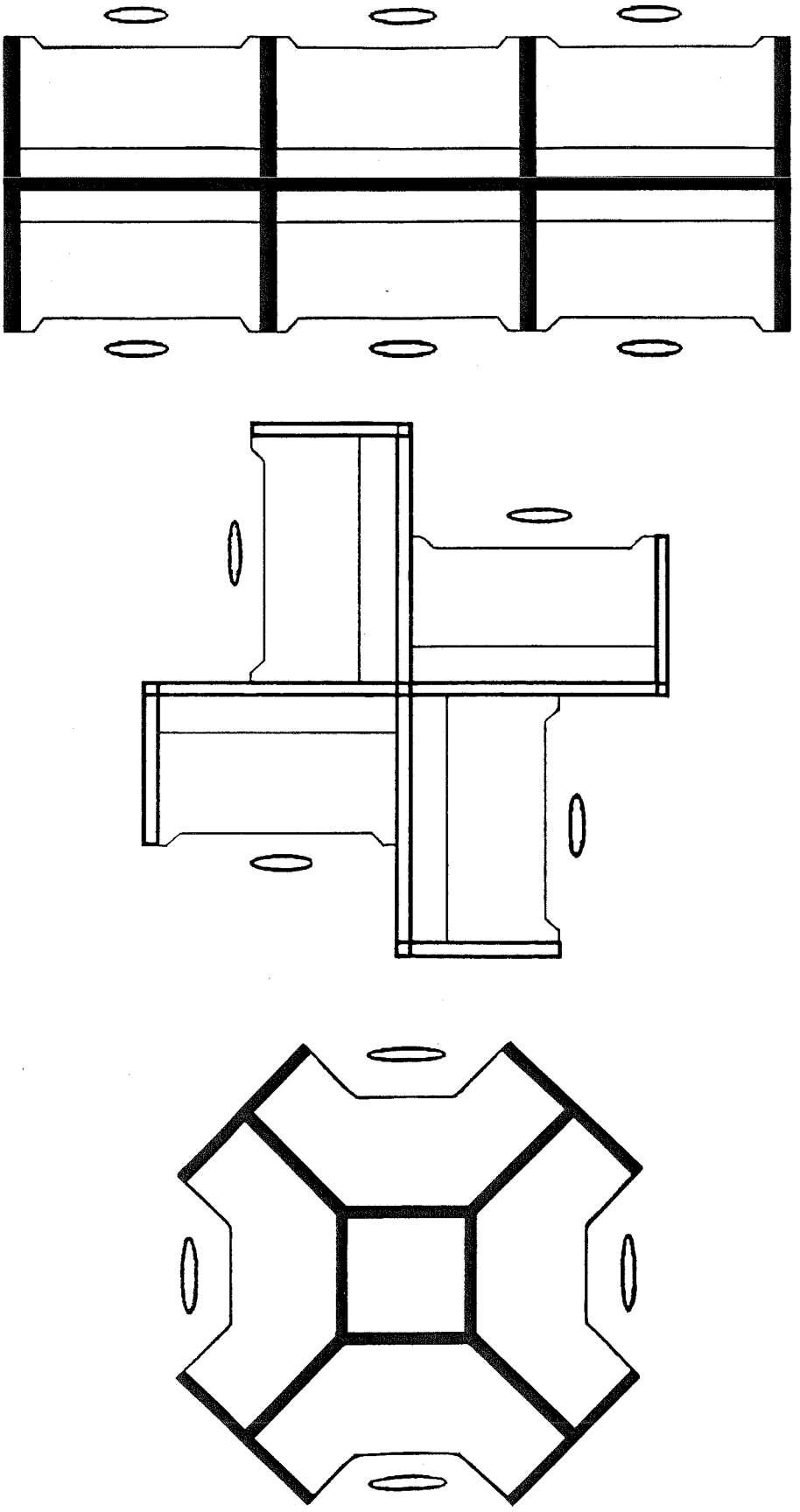

Figure 1. Carrel Configurations.

Whether arranged in clusters or other, more traditional linear patterns, the overall sense of spaciousness—of not crowding listeners together—will dictate the number of work stations a given area will hold. Building many small carrels close together may seem a more efficient use of space; but if students do not have work room for arms, books, and papers and are constantly distracted by traffic and nearby users, they will not feel encouraged to use the lab.

The "Walkman Phenomenon"

On campuses these days, belts and backpacks abound with cassette players connected to students by the ubiquitous earphone. These student-owned machines can be exploited as portable audio labs. Language learners can be released from the bonds of language lab carrels by learning centers or libraries that provide copies of audio programs for use on personal tape players in a variety of disciplines. The advantages of this alternative greatly outweight the disadvantages. For many learners it is psychologically uncomfortable to sit in a carrel. They prefer the flexibility of working where and when they wish or spreading out tasks over a convenient number of short sessions. Some of them are therefore more motivated to listen to the materials repeatedly. Students avoid having to schedule themselves into the open hours of the lab, which is sometimes difficult for those with a heavy course load during the day. Moreover, they do not have to compete with other students for use of laboratory equipment. When students are first assigned to do lab work at the beginning of fall semester, long lines at the listening center typically frustrate a significant number to such a degree that they simply refuse to subject themselves to the experience again.

In an experiment conducted at Harvard (Mueller et al., 20), fifteen students from three parallel sections of beginning French were provided cassette materials for a semester to use at will where and when they chose. Students filed weekly reports on the length and location of their listening sessions and submitted an evaluation of their experiences. The response to the "Walkman Operation" was generally very favorable; four out of five preferred the advantages of the portable alternative—particularly the flexibility of time and place.

Personal players, which are essentially passive, obviously do not constitute the most effective technology for some kinds of language practice where there is an advantage to recording responses and comparing them with the prerecorded native voice, as with phonetic and intonation drills. But it is a well-observed fact that otherwise students seldom take the time to record, play back, and compare their responses with those on the tape, nor are they particularly good at self-correction (Higgins, 12). Many laboratory activities require no more than a playback system: cloze exercises, dictations, multiple-choice comprehension questions, sound-discrimination exercises, and playing texts and dialogues to strengthen listening comprehension skills.

One can debate whether the totally unstructured "Walkman approach" is the best. The distractions of the free environment are likely to be much more disruptive than those encountered in the laboratory. Just being in a laboratory environment where all activities focus on language practice may make it easier for less disciplined learners to stay on task. In addition, some students find that the extra functions on laboratory decks, such as automatic sentence repeat, make listening work easier and more effective.

With few exceptions the lab remains the place where lesson tapes are duplicated. One model for distributing materials is the tape exchange, a program for providing copies of lessons to students for home use. Typically, two blank tapes are needed for each student. Students begin with a copy of the current lesson. When finished, they exchange it for a tape recorded with the next one. The first tape in the meantime is re-recorded with the lesson after that. Such a system can be implemented with a small amount of high-speed cassette duplication equipment (or perhaps in a laboratory classroom with high-speed duplication capability) and unskilled student labor. If the number of students and the financial situation of the lab warrant, an enrollment fee might be charged to defray costs.

A second model is defined by the inexpensive packaged sets of textbook tapes that publishers have produced on cassettes for sale in bookstores. This is an attractive alternative for students who want the flexibility of owning a complete set of tapes. Students can keep or resell them at the end of the course.

Publisher-Produced Audio Materials

The textbook and related materials adopted by a language teacher usually serve as the centerpiece of class instruction, providing most of the exercises and activities for the course. What comes from the publishers has an enormous impact on what is taught and how. For years, textbooks have been sold with at least two standard ancillaries: a workbook of written exercises and a language laboratory program consisting of a set of audiotapes and a student lab manual. One would be hard pressed to find a first- or second-year language textbook published in the last two decades that does not have accompanying taped materials for language laboratory work. Countless hours of inappropriate and uninspired audio exercises derive from the fact that tapes have been viewed as an obligatory supplement to language textbooks, regardless of the book's methodological orientation or the author's interest in and ability to create valid audio materials. A particularly unfortunate case in point was a German grammar review book published with an audio program consisting entirely of translation exercises. The cues were rather lengthy English sentences, and the student was to respond spontaneously during the pause with a translation. Fortunately, such flagrant disregard for methods and media is not characteristic of recent audio programming.

Publishers, realizing that no single approach has won the hearts and minds of the profession, have compensated by offering a variety of texts, all targeting specific groups (e.g., third-year college Spanish, first-year high school French). Some materials reflect a strong focus on a specific approach or theory currently in vogue; others are best described as "eclectic," incorporating the elements from methods that show the most promise for a given topic or activity.

Houghton Mifflin's new German textbook, *Deutsch Natürlich! A Communication-Oriented First Course* (Clausing and Rings, 4), provides an excellent example of one effort to respond to a specific philosophy of language instruction—communicative competence. Special emphasis has been placed on authenticity of language, on contextualization, and on complete integration into the course of all skill-building activities, including the tape-based ones. This orientation has resulted in a tape program with some very interesting differences. The audio activities have not been packaged as a separate program; rather, the main textbook refers directly to them and they, in turn, are made to form the basis for a number of in-class and individual activities. The tapes comprise a series of prose texts, dialogues, listening comprehension exercises, and songs—all of which were recorded in Germany by a variety of native speakers from different regions. No grammar drills have been included. Some of the dialogues are recordings of genuine, unrehearsed conversations taped on the scene and include all the interruptions, pauses, and repetitions common in conversational speech. Other dialogues were produced from unaltered transcriptions of real conversations between native speakers, re-enacted with realistic sound effects and background noise. Whether or not one agrees with this innovative approach, the *Deutsch Natürlich!* audio program represents a healthy trend for language laboratory tapes. In short, materials have been carefully planned and professionally produced; special emphasis has been placed on interest, authenticity, and effectiveness in building communicative skills; and the audio materials have been completely integrated with other components as an essential aspect of the instructional concept.

A cross-section of beginning language textbooks from major publishers reveals several additional discernible trends, regardless of the methodological orientation. Most textbooks and their supplementary programs attempt to cover all the bases in some sense by including more traditional grammar-related structural exercises as well as those associated with the current emphasis on proficiency in communication. Lab activities are frequently combined with workbook exercises under soft cover to afford a system of management for individual work outside of class. There is a greater variety of activities that deal with language in a context, especially those that relate to practicing and testing listening comprehension: cloze exercises, dictations, presentation of a text or dialogue followed by true/false, logical/illogical, multiple-choice, or short-answer comprehension questions. Pronunciation practice still follows familiar formats—dialogue repetition and sound-discrimination exercises. Traditional oral grammar drills (substitution,

transformation, etc.) have not disappeared from the program nor have they been improved substantially. Nevertheless, their continued presence is evidence that some still view them as an effective way to provide the repetitive practice necessary to internalize the forms of the language toward automaticity.

Major publishers of language textbooks, responding to the interest in new forms of media, have begun to add computer and video software to the repertoire of materials. Although it is too early to predict the extent of their success, major publishing houses have an important edge over the independent computer and video software vendor since adjunct courseware has been planned with a specific textbook in mind and, thus, comes with recommendations for integrating texts and software into the course curriculum.

not to mention a budget for production

Locally Produced Materials

Although production of programs to support a given text has been largely the province of the author and publisher, some language teachers prefer to write courseware themselves. Disappointed by the quality or scope of the commercial product, they consider it a worthy effort to invest time and energy in producing materials that are more interesting and more consistent with their program goals. In a recent project at Ball State University (Indiana), for example, faculty took up the challenge of applying some "first aid" to the lab program in German by reworking commercial language tape programs and producing activities of their own (Johnson and Dvorscak, 15). In an effort to generate a program that was more "interactive, communicative, and true-to-life," the authors streamlined pattern drills to eliminate predictability, alternated between written and oral activities, made extensive use of songs, created new exercises with game and story formats, and experimented with nonstandard cues such as sound effects and pictures to evoke student responses. Not surprisingly, students reacted well to the improvements.

we're as good as Rad

Overhauling an audio program cannot be accomplished in an afternoon, however. The team of Ball State faculty and technicians spent twelve months producing the tapes and accompanying worksheets; but their considerable investment of time and work to plan, develop, and produce the materials resulted in an audio program that suited their needs and objectives precisely.

Special projects like the Ball State initiative need special support both from the administration in the form of faculty release time and from funding of programs to promote research and development. The language laboratory must also be in a position to supply assistance in instructional design as well as technicians, equipment, and the leadership to coordinate a major effort in materials production.

Video Technology

If one technology currently dominates the media spotlight in language instruction, it is video. The language laboratory is faced with the challenge of adapting to the demands that accrue from video-based activities. The use of foreign video in language teaching provokes a number of different responses. Some find video frivolous, pointing out that study is "hard work that should be done with sweat and tears. Education is not a show. If they want a show, let them go to the cinema" (Odum, 21, p. 80). But others feel that video can enhance language learning in a significant way. As Davies (5) comments, "nothing makes a situation as real as seeing it, and television can contextualize language in a way no textbook or even audio tape ever can" (p. 9). (Chapter 2, this volume, and the project reports on television and distance learning, pp. 171-203, offer further information on this topic.)

Most labs have had at least some video equipment for years, used almost exclusively in the classroom as a more flexible version of the film projector. Video cameras for taping class skits and other kinds of presentations have traditionally formed the other facet of video for language learning. In-class video is still a common lab-supported service provided by video equipment on carts or by large-screen projection systems, but this is not the only way the lab can give learners access to video. Teachers have broadened the use of video documents for intensive study by assigning students video-based tasks to be completed outside class.

Video Viewing Stations

Individual study with video can be done in a carrel with the same dimensions as a generous-sized audio booth. Although a video workstation can be equipped for about the same cost as an audio workstation, some aspects of a video operation are considerably more expensive for the lab. For example, playback machines are more complex and more costly to maintain. Commercial video software is much more expensive than audio materials, and videocassettes needed for check-out copies cost more. Duplication costs are higher because more staff hours are required for copying, which is done at normal playing speed, rather than at the high speeds possible in duplicating audio recordings.

Working in a carrel with a headset, video player, and small monitor, the student can watch and repeat segments of the tape at will in a private environment. Facilities for small-group video viewing are also important. A typical group video facility should be configured as a separate room so that students can confer and converse without being constrained by headphones and without bothering other listeners. The small-group viewing room must be large enough to accommodate the video player, a large monitor and seating for up to six students. A small group of students (2-6) watching a videotape can work together to understand and interpret the content. Often

students helping each other and discussing what they are viewing produce better results than individuals working alone.

Satellite dishes and cable TV have become common installations on campuses, providing access to video programming in an increasing number of foreign languages. Through subscription fees (for cable) or simple permission arrangements, many cable and satellite broadcasts can be viewed legally from laboratory video carrels and viewing rooms. Considering copyright restrictions, this resource should not be abused in an attempt to build a video archive. Nevertheless, it is an excellent way for students to be exposed to significant amounts of authentic language through video that has not been watered down or tampered with to suit an educational situation. Access to foreign language video programming is probably the best service a lab can offer the advanced student, whose greatest need is to learn to cope with authentic models of real-life speech.

Foreign Television Standards

It is a well-known fact that video suffers from problems of machine-software incompatibility (see also Part I, Chapter 2, this volume). Just when we had VHS, Beta, and U-matic figured out, we are confronted with NTSC (National Television Standards Committee), PAL (Phase Alternation by Line), and SECAM (Séquence de couleurs avec mémoire). NTSC, PAL, and SECAM refer to the major standards or systems used to generate color TV signals; they were developed by the United States, West Germany, and France, respectively. A confusing number of variations of these three systems exist in different countries around the world (Shubin, 30). Frustration joins confusion when it becomes clear that tapes from most foreign countries will not play on American equipment. Incompatibility of standards has victimized many unsuspecting language teachers, who have brought videotapes back from their travels, planning to use them in their language classes. Equipment for conversion of standards costs a great deal of money and commercial conversion fees are high. Therefore, the most direct and most economic approach to software with different standards is to purchase multistandard VCRs and monitors. No self-respecting language laboratory should be without at least one player/monitor combination that handles NTSC, PAL, and SECAM.

Copyright

One of the most confusing and emotional issues facing language laboratories is copyright. Copyright is the legal right to duplicate, distribute, perform, and modify a work such as a book, composition, or film or videotape (Reed and Stanek, 27). Interpretation of the laws and guidelines available for observance of copyright is often clouded by certain dispensations granted

to educators for nonprofit instructional use of materials. There is a wide range of opinion regarding what is legal and what is not. What follows is an attempt to comment on and clarify some of the issues involving copyright and the use of copyrighted materials in the language lab. No claims or statements made here should be used to judge the legality of specific practices. Consulting a lawyer is the best way to make sound decisions about copyright matters.

Software (audio, video, and computer) purchased through regular commercial channels almost always carries a clear statement of what restrictions exist in regard to the right to make and distribute copies. Copyright permissions may state that the user has no right to make any copies, the right to make one backup copy, license to make as many copies as necessary for a given site, or rights to make unlimited copies, normally with a stipulation that credit be properly attributed to the originators of the material. In most cases there is little doubt about the copyright restrictions on a given product, at least as far as the private consumer is concerned. The same applies to products sold to institutions by vendors of educational media; agreements and restrictions that accompany these materials are written clearly to address the specific situation of schools and media centers and the way they serve patrons. However, many products marketed for home use are bought by educational institutions, which use and circulate them in ways not covered specifically by the restrictions stated on the copyright notice that accompanies the product. The two options in these cases are to negotiate agreements with the company and to observe fair-use guidelines.

Obtaining permission to duplicate and distribute commercial audio materials, such as textbook series, is a long-standing and familiar practice. Similarly, licensing of computer software is also a reasonably straightforward procedure. It is in the realm of video that many questionable practices arise, specifically in the legal retention of off-air recordings and the circumstances under which copyrighted materials can be used by individuals and groups on media center equipment.

The proliferation of VCRs and satellite dishes has contributed heavily to the temptation to keep videotape copies of off-air programs; there are no labels on blank cassettes warning of possible prosecution for copyright infringement and it is legal to own a satellite dish and watch the signals that it receives. By and large, most of what comes through the air waves, foreign or not, is copyrighted. In some cases copyright clearance for keeping and using copies of broadcasts can be obtained easily—sometimes for no charge, usually for a fee. But even in cases where copyright has not been or cannot be obtained, some allowances have been made for educational use of off-air recordings. In 1981, the "Guidelines for Off-Air Recording of Broadcast Programming for Educational Purposes," written by a committee consisting of representatives of the television industry, performers' unions, and educational organizations, were presented to Congress by Representative Robert W. Kastenmeier (Wisconsin) and published in the *Congressional Record* (9). Generally, these guidelines allow nonprofit educational institutions

to record programming to be used in the classroom for ten days; the tape may be kept for a maximum of forty-five days but may be used only for teaching evaluation (to make a decision about the program's value and whether to pursue copyright permission) and not for student use after the first ten days. There are other restrictions regarding how many times the recording can be screened, how many copies can be made, how far in advance the request is made for recording the program, alteration of content, and inclusion of copyright notice. For exact details of these guidelines, as well as ones for the copying and use of books, periodicals, music, and computer software for multiple stations, consult *The Official Fair-Use Guidelines* (22) compiled and published by Copyright Information Services.

Given the effort required to develop supporting instructional materials for video programming, most teachers will be unwilling to invest the time to produce even one vocabulary list or worksheet exercise from a program that will have to be erased after forty-five days. The answer to this lies in buying materials for which copyright clearances have been negotiated and in using off-air sources for extensive listening comprehension practice or foreign-language entertainment rather than for intensive work requiring development of support materials. In cases when off-air recordings are deemed indispensible, copyright clearance should be negotiated.

Legitimacy of the copy aside, there are questions about the showing (performance) of copyrighted materials. Public performance of copyrighted videos requires that a performance license be secured. There are, however, exemptions for educational situations. In his discussion of the Copyright Revision Act of 1976, Miller (18), an expert on copyright issues, outlines the conditions under which educators can fairly use copyrighted videos intended for home use in the course of face-to-face teaching activities. Miller's interpretation of the definitions and provisions of these rights holds that it is legal for a student or group of students to come to a library or media center to view video materials if the performance of the video forms part of the instructional activities of a course. Under these circumstances, the media specialist is considered to be part of the teaching team. Miller suggests, however, that it is an infringement of copyright for libraries (and media centers) to check out videos to individuals to watch at their own initiative on library equipment, citing that this is public performance and is not sheltered by the educators' exemption. Not all copyright experts are as conservative on this issue. The general disagreement on the definition of the term "public" has led some to classify viewing a video by one person or one family at a time as a "private performance" and, therefore, a legal library service (Reed and Stanek, 26). Clearly, the legality of this service needs to be more precisely defined.

Many teachers (and technicians) in foreign languages fail to observe copyright restrictions that involve off-air recording, since ignoring them saves money and time. Experience has taught, albeit erroneously, that the chances of prosecution are rather slim. No lab or media center, however, should be asked to take the risks of performing illegal services.

In the final analysis, everyone's best interests are served when acquisition and copying of language archive materials are handled legally. If educators ever expect to negotiate with producers of materials for agreements that meet their needs and financial resources and if they hope to be able to exchange video-based instructional materials with colleagues, then copyright laws must be respected scrupulously.

Computer Technology

Computers are present in more and more aspects of modern life; the language lab is certainly no exception, taking advantage of instructional as well as administrative applications of computer technology. Many have viewed with dread the addition of computers and computer-assisted instruction to the lab, for the spectre of past "failures" of the language lab cautions them not to embrace computers too optimistically. Some teachers fear that the computer will "replace the language lab of the 60s with the same utopian expectations and probably the same dismal results arising from a lack of interesting [language lab] programs." (Park, 24, p. 54) But any new technology with some promise of application to language learning must go through a period of experimentation, of elaborating methods, materials, and protocols. The best use of the technology is not always intuitively obvious; advantages and limitations can be discovered and proven only with time and testing.

Laboratory Support for Instructional Computing

Computer-assisted language learning (CALL) has been a part of the educational scene now for some time. Computers were hailed as the ideal, endlessly patient drill master (and, therefore, a perfect tool for language study): capable of true individualized programmed instruction with performance-sensitive branching and remediation, able to provide instant diagnostic feedback for student responses (Higgins and Johns, 11; Hope, Taylor, and Pusack, 14). In a frightening rush to repeat the pedagogical mistakes of audio history, early forays into CALL produced programs that suffered from many of the same problems and drawbacks as early taped materials: they were boring, not highly contextualized, not well integrated into the curriculum, and not designed to strengthen any real practical communicative aspect of language—productive or receptive. Everything software authors knew about language pedagogy took a back seat to their view of the machine's strengths and to their level of programming sophistication. (The use of CALL and its place in the foreign language curriculum are topics of Chapters 3-6, and of a majority of the reports in Part II in this book). The following paragraphs will explore the support needed to deliver computer-based materials and the lab's potential role in the development of CALL.

The inclusion of computing (in the form of terminals or microcomputers) in the language laboratory setting is consonant with the traditional view of the lab as a place for individual machine-supported study. Computing equipment does not mix well with other media in laboratory carrels. Audio patrons are bothered by keyboard and printer noise and by the distraction of computer users consulting among themselves. Audio patrons' voices and the noise of their decks starting and stopping, in turn, interfere with the concentration of students doing CALL. Computer work demands a self-contained environment.

Probably the most common configuration of computing facilities in the lab is a designated computing room with terminals or micros arranged on tables. A common rule of thumb is that each station requires a minimum of 25-26 square feet. Sufficient space beside the machines is needed for users to arrange materials they might require for reference during the work session. The computer room should be monitored by staff who can troubleshoot basic equipment problems, answer questions about use of the machines and software, and guard against abuse or theft.

A microcomputer facility has some additional concerns beyond those of a special area equipped with standard terminals. Micros are more complicated than the average terminal, so staff and users need more training to understand the computer's operating system, to care for and handle diskettes, and to troubleshoot problems with multiple components. The software library can either be a collection of diskettes checked out to users or, budget permitting, held within a hard-disk system networked to the computers. Allowing students to check out diskettes is feasible when the software holdings and the number of stations are fairly limited, but shuffling hundreds of diskettes in a facility with many computers is not an effective approach. Easy access to a large program library can be accomplished with a hard disk-drive connected to the micros via a networking system, a configuration which provides as well the only viable avenue for comprehensive recordkeeping for a large number of students. Some programs cannot be transferred to a hard disk because of licensing restrictions or copy-protection; therefore, a diskette checkout system must still be maintained even if the investment in a hard disk and network is made.

Complete, clear instructions ("documentation") for use of the systems and software should be available on site to users. Good documentation will include instructions for operating the equipment, the procedure for using the program, a synopsis of the special commands used by the program, and an index of lessons or exercises. If students are to use micros or computer terminals outside the lab, documentation should be provided in handout form.

Despite the popularly held impression that today's students have a great deal of computer savvy, the chances are remote that they know what CALL is and how it might benefit them in their studies. For this reason, hands-on demonstrations of procedures and materials to students are important, particularly if program use is voluntary. A brief demonstration during the class period will succeed in breaking through barriers of apathy or anxiety,

where a thousand words of explanation and encouragement will fail. In any case, not all students instantly love the computer; it strikes some as being too dehumanized and others as too much like "Big Brother." Surprisingly, these people are not always the same ones who criticize the udio lab as being too sterile and mechanical.

Even the most conservative evaluators of CALL will agree that a well-designed computer program with a variety of exercise materials, good error feedback, and student recordkeeping makes the traditional paper-and-pencil workbook obsolete. In light of this, the language lab in the computer age offers a valuable and popular service to students and teachers in the form of the electronic workbook. (See Domínguez and Paramskas, Reports 16 and 17 in Part II of this volume.) In language teaching nothing is less rewarding than evenings spent marking student workbook exercises, knowing that the delay in providing corrective feedback keeps the assignment from really helping the learner. At the University of Iowa, some students in the first-year courses of several foreign language departments use electronic workbooks for assigned homework in lieu of standard paper-and-pencil exercises from the workbook. The computer keeps a complete record of each student's session, including the specific exercises done, the student's scores based on correct responses in one and two attempts, the amount of time spent in completing each exercise, and the date and length of the session. Lab personnel generate weekly reports for individual instructors. Most students (and all instructors) are pleased with this arrangement. It would not work, however, if students did not have good access to the computer program. Besides the computer facility or cluster in the language lab, there are twenty satellite clusters in other campus locations, including the main library and several dormitories. The homework exercises are accessible from any of these clusters.

The development of personnel with special computer expertise is a necessary step in establishing a working computer operation in the lab. The basic responsibilities associated with the routine administration of a computing facility include (1) hiring, training, and supervising monitors; (2) conducting demonstration and orientation sessions for students and faculty; (3) overseeing maintenance of equipment: (4) providing documentation for software and its use; and (5) maintaining and managing the software library.

Computer-Managed Media Libraries

The role of computers in the lab extends beyond instructional applications into important administrative activities. Many standard computer tools can simplify and expedite administrative tasks—word processing, budget management, compiling and representing usage statistics, and scheduling. These tasks alone justify placing computer equipment on the desks of laboratory staff. However, a somewhat more specialized application of computing has far-reaching implications for the language lab, namely, library

management by means of computer databases—the electronic files that store a vast amount of information that may be managed and manipulated by a computer program. One can request that the program search for and retrieve quickly and easily specific information from a database. In the past, when the laboratory library consisted primarily of commercial tape series, miscellaneous tapes and records (mostly music), and a few slide and filmstrip packages, the catalog of materials often resided comfortably in the minds of laboratory staff. Potential users of the collection found out what was in the library by personal interrogation: "What do you have in Spanish music?" As language laboratories evolve into language resource or learning centers and the building of significant collections of material becomes a high priority, effective systems to catalog and retrieve information about media holdings become a critical need.

In a library of printed materials, it is still common practice for patrons to peruse the card catalog briefly, go to a particular area in the stacks, and browse through the books to find what specifically suits them. This is not a productive strategy for the nonprint media that fill the libraries of language laboratories, especially if the collection is very large. The computer-managed catalog provides the best option currently available to solve the problem of adequate access to resources. More than just an alphabetized inventory of holdings, the catalog functions as a flexible resource that potentially meets both the needs of the laboratory and the demands of teachers, researchers, or casual browsers. A database catalog can quickly find and display all the catalog entries for German videotapes of news broadcasts, for second-year French pronunciation audio tapes, or for materials in any format pertaining to Spanish music.

Formulating the database is straightforward. The same information that is put on cards is entered into the computer using a database management program: ID number, title, author/artist, technical data (format, length, etc.), production information, subject and genre classification, language, level, contents, and miscellaneous comments. Once keyed into the computer, the information becomes more than a mere replacement of the standard drawers full of catalog cards. A catalog in database form provides multiple benefits: fast, thorough, efficient searches of entries to find materials that suit specific needs; easy generation of printed catalogs designed specifically for individuals or departments; automatic label printing; a management system for check-out materials; and remote access to media library information (if the computer on which the database resides is configured to communicate with terminals or other computers).

Computer-Controlled Media

Audio and video have been familiar language-learning tools for a long time. The search for effective uses of computers in language instruction has engendered a number of hybrid systems that deliver computer-controlled

("interactive") audio and video. Their natural habitat, like other forms of intensive individual work with language materials, is the language laboratory. Their proliferation in modern facilities is no doubt just a matter of time. (See chapter 3 of this volume and reports 5 through 11 on interactive audio and video, Part II, pp. 205-61.)

These hybrids are very much in the experimental stages and are fraught with all the accompanying difficulties that restrict the impact of any new technology. The hardware is expensive and complicated, support staff often lacks sufficient expertise to work with it, and there is a dearth of software for the computer and recordings for the associated audio or video machine. Nevertheless, these realities have not appreciably dampened enthusiasm for the concept of computer-controlled media.

Interactive video has particularly attractive possibilities, even for those who reject other forms of CALL as being mechanical or ineffective. Video—generally accepted as an effective medium for exposing students to authentic, contextualized language experience—can be enhanced significantly when linked to the computer. Among the features provided by the computer are precise, flexible control in playing and replaying any portion of the program, built-in help utilities (glossaries, hints, transcriptions, critical commentaries, etc.), comprehension-checking mechanisms, and usage and performance recordkeeping facilities. In short, computer-controlled video is a very efficient way for a student to work intensively with a video document.

An interactive audio system linking an audio player/recorder to a computer offers many of the same benefits as interactive video: precise control of playing and replaying, on-line help utilities, comprehension-checking, and usage and performance records. It can also add an audio dimension to standard computerized drill and testing applications, thus satisfying those critics who object to the silence of the computer. Voice-recognition devices and speech synthesizers constitute an additional dimension. By the start of the next millenium, students may be able to speak with a computer just like the ones seen in the movies. Considering what real progress has been made in teaching computers to interpret and respond to natural human language, however, conversation with a computer seems very unlikely.

Compared to interactive video, which has captured the imagination of many language professionals, there is little progress being made toward real implementation of interactive audio for language learning purposes. One system (EIS), which has been on the market for nearly a decade, utilizes a 15″ floppy disk with a storage capacity of approximately 23 minutes of audio (either program recordings or student responses). The device provides extremely accurate, flexible random access of recorded material and can respond in less than half a second to instructions to play or record any segment. Although high-priced, the unit is far superior technically to the computer-controllable cassette decks now offered for sale at about half the cost by established manufacturers of language laboratory equipment (Sony; Tandberg). Interactive audio tape decks cannot offer the precise accuracy of the floppy disk system and demonstrate long access times owing to the

linear format of materials stored on cassette. Even though advertisements highlight the use of standard audiocassettes, the recording must have significant pauses between segments (one system requires four seconds) to be able to find and play them accurately. This precludes direct use of most commercial tapes, which would have to be edited extensively to include pauses long enough to satisfy the specifications of the system. One of the most serious drawbacks to any of the interactive audio machines is the lack of good attendant computer software—the perennial problems of all computer-based applications. Authoring programs are being developed for interactive audio CALL (see Henry et al., Report 6 in Part II), but this takes time, and the technology has not evolved or stabilized enough to make development of software tools a good risk for major software developers.

Forecasting what kinds of interactive media labs will be using a decade from now would be foolhardy. The appearance of compact disks on the market has prompted many to speculate about their educational potential. The CD-ROM (compact disk read-only memory) has been joined by the CD-I (compact disk interactive), and CD-V (compact disk video) all of which have amazing capacity for information storage and retrieval. The compact disk is a flat, silvery disk that measures about 5″ in diameter and stores up to 540 megabytes (540 million characters) of information (Miller, 17, p. 21). It is hard not to be stunned by the capacity of CD-ROM, especially when those megabytes are described in understandable terms. Pournelle (25), a computer columnist, describes CD-ROM as the medium that has made the Library of the Month Club a potential reality and provides us with these elucidating equivalencies: "Nearly 100 million English words. A quarter of a million pages. A thousand average-sized books. All that on a nearly indestructible disk you can carry in your coat pocket and produce for under $2." The CD-I format offers the same enormous capacity to store digitally encoded data with the additional benefits of built-in programming to retrieve and use the information. While the attributes and advantages of this new tool will probably inspire significant interactive educational projects, it is too early to predict how the technology will evolve or what impact it will ultimately have on language instruction.

Personnel for Operations, Research, and Development

Although a great deal of money was invested in equipment in the early days of language laboratories, not much was invested in staff to operate the lab or to provide vigorous leadership for its use. The lab director was usually a language department faculty member who was assigned responsibility for the lab in addition to other duties. The support staff, if there was any at all, consisted of student monitors and a part-time technician to fix the equipment. The primary goal of laboratory personnel was to keep the facilities working and available.

Today's laboratory has a twofold mission: to support routine operations and to engage in research and development. No longer can a draftee with minimal technological expertise and a full teaching load be expected to direct the lab effectively. Neither can the director be a media technician with no background in language instruction. Such an individual is invariably dismissed by faculty members as a "technician that has encroached upon the academic field." (Gionet, 7) The director must be a language professional with significant technical experience, a person who can form strong bonds of collegiality with faculty members in exploring applications of technology to language instruction, and who can effectively administer the laboratory.

Sustaining an effective and vigorous program of operational support for a facility that includes audio, video, and computing equipment and programming can be more than a full-time job. Typical responsibilities include the following: (1) planning the facilities, (2) orienting students and faculty in the use of equipment and programs, (3) training and supervising students who will monitor work areas and check out materials, (4) scheduling equipment and laboratory classrooms, (5) maintaining and replacing the equipment, (6) managing the collection in the media library, (7) providing faculty and students with working copies of materials, and (8) generating documentation to help users operate equipment and access materials. Because continuity is essential to smooth operation, these support services cannot be provided by transient student workers, but rather require a permanent staff with a commitment to the important role of media in language instruction.

As technologies become more varied and complex, lab personnel must assume a more active role in instructing and advising faculty in the use and potential of the new tools at their disposal and in fostering research and development projects that involve media. To do this, the lab staff must be a team of professionals who keep up to date with technological advances, are expert in language instruction, and are in tune with current directions in language teaching methodologies. The director plays a pivotal role, taking the lead in establishing programs to educate faculty, building and shaping the media collection, evaluating new technologies, and initiating pilot projects to develop staff expertise and illustrate possibilities to faculty.

The lab staff must be prepared to reach out to other faculty, who are not inclined or equipped to explore new technologies alone. Offering demonstrations, workshops, and short courses is a good way to encourage faculty interest in media and to develop their knowledge enough to become working partners in using and generating effective media-based instructional materials. The lab must follow through by providing consultation in instructional design, help in selecting and acquiring equipment and materials, a work environment for project participants, assistance in technical areas (e.g., computer programming, recording, and editing), help in piloting the new materials with students, and support in conducting evaluation.

Many projects are strengthened if they are undertaken by a team of faculty members; such teamwork takes advantage of common interests and goals,

of complementary backgrounds and expertise that cross narrow departmental boundaries. A busy faculty member, reluctant to direct a large project alone, may be willing to take part in a team endeavor. Laboratory personnel have a unique vantage point because they have contact with members of many departments, and often they are in the best position to help colleagues discover each other and form productive alliances.

Actively promoting research and development activities leads ultimately to participation in writing grant proposals and supporting grant-funded projects that involve media and language instruction. Grants serve to create a framework for production that could not otherwise be carried out, given the ordinary constraints of the academic environment. Development of valid materials takes time—a commodity most faculty do not have in sufficient quantity to devote to large-scale projects. Through grants, faculty members can negotiate release time for sustained intensive work. The language lab benefits through gains in both technology and personnel. Although most grants do not provide for massive purchases of equipment, receiving a grant is an effective means of persuading administrators to spend institutional funds to buy needed project-related equipment. Project experience builds staff expertise, boosting the scope and caliber of their work. Staff may be strengthened in numbers, too, when the demands of grant activities cannot be handled sufficiently by existing personnel. Above all, grants stimulate the growth and improvement of media-based materials that ensure the continued vitality of the language laboratory.

Conclusion

In the mid-80s, language laboratories have been redefined as multi-media learning centers that deliver computer and video services to faculty and students in addition to familiar audio resources. These expanded laboratories provide a variety of services to a broader segment of the academic community, including foreign language departments, international studies programs, and independent learners.

Audio has retained an important role in language learning, although it is no longer the only laboratory medium. Equipment has improved dramatically, as have techniques for using audio programming. Experience with audio has revealed that new technologies must be regarded realistically and given time to evolve. Furthermore, success with hardware is contingent primarily on the development of effective software, a time- and resource-consuming process. In both commercial and locally produced audiotape programs, traditional structural drills have been complemented, if not replaced, by a variety of listening-comprehension and contextualized language activities that are designed to be interesting and challenging for the student. Although learning centers will continue to have permanent full-audio classrooms and individual carrels, portable classroom-labs and programs that provide students with lesson tapes for use on personally owned

equipment promote audio work outside the laboratory setting and reduce the number of classrooms and workstations the lab must provide.

The interest in video—particularly foreign TV materials—for language instruction has grown rapidly. Video has wide applications in many levels of language learning and attracts more advanced learners to the laboratory. The laboratory supports video-based learning by providing facilities for individual, small-group, and classroom work as well as access to broadcast programming (via satellite and cable) and prerecorded tapes. Problems of incompatibility with foreign television standards and with copyright matters are solvable and do not significantly hinder progress in using video in the classroom or the lab.

The computer is a powerful tool for the language laboratory. Computer-assisted language learning fits naturally into the language lab, which delivers other kinds of media for individual study as well. Laboratory support for CALL includes maintaining computer workstations, providing program documentation, and introducing students to the machines and materials. Computer-controlled audio and video show great promise for enhancing the effectiveness of these media for intensive language work. Computers can also benefit the laboratory operation in management of the collection and routine administrative tasks.

New technologies have placed new demands on language laboratory personnel. Directing the operations and development of a multi-media center requires a professional staff with expertise in both language pedagogy and the technical aspects of the equipment. They, in turn, must collaborate closely with faculty members in exploring promising new instructional technologies and developing media-based materials vital in building strong laboratory programs. In taking an aggressive role in research and development, language laboratory personnel will ultimately fulfill their potential to become important and respected partners in foreign language instruction.

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