

# Opening Keynote

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## **ORGANIZATION CONTRIBUTORS**

It's an honor to participate in the 30<sup>th</sup> anniversary conference of CALICO. Special thanks to the University of Hawaii-Manoa for hosting our conference and to Texas State University-San Marcos, Bob Fischer, Esther Horn, Senta Goertler and Gillian Lord for their extraordinary efforts in planning this symposium. Everyone knows that what we do is the result of a team process. I'll be thanking many leaders today, including some who have unfortunately passed. My comments are based on a variety of career experiences with outstanding colleagues who provided exemplary mentorship over the years. Mrs. Minnie Kenny served as the Assistant Director for Training at the National Cryptologic School (NCS) in the National Security Agency (NSA), was known as Mother Language on Capitol Hill, and became CALICO's primary supporter and developer of funding for many projects that applied interactive multimedia (IMM) technology to teaching and learning Arabic, French, German, Hebrew, Korean, Russian and Spanish for the Department of Defense community.

Many leaders on the Hill have championed our cause over the years. Minnie's main ally was Congresswoman Barbara Mikulski who kept everyone informed about CALICO's goals and projects. Congressman Leon Panetta actively sponsored CALICO and our development programs at the Defense Language Institute (DLI), Fort Ord and the Naval Post Graduate School. Senator Paul Simon hosted presentations in the Senate chamber.

Numerous agencies, institutions and corporations provided continuous support, none more than USAFA, thanks to unfaltering leadership provided by Mike Bush and his team. They hosted a CALICO conference as did the Naval Academy. As Executive Directors, Frank Borchardt and Bob Fischer expanded our reach in numerous ways. Jim Dodge and Edna Kaufmann hosted CALICO Summer Institutes at Middlebury and Michigan State as did BYU where Larrie Gale, Randy Jones and Hans Kelling excelled. Cal State-Chico hosted three interactive international teleconference broadcasts. Paul Duke hosted three interactive world-wide PBS broadcasts on the role of technology in teaching and learning languages. Rupert Murdoch's International Learning Systems of Japan co-hosted CALICO's international

symposium in Tokyo. SONY funded Flight 505 to prepare Japanese businessmen to attend meetings in English-speaking countries. Linguabox and Quick English were developed for Japanese students. The Goethe and Pushkin Institutes co-hosted the first international CALICO symposium held in Germany. Jim Pusack, Sue Otto, Joan Jamison, Carol Chapelle, Ruth Sanders, Willard Ticknor Daetsch and Udo Jung were indispensable. Darlene Burnett (IBM), Andrea Charman (BBC), and Fred O'Neal (WICAT) helped us enormously. Andy Paquette and Ed Scebold (ACTFL) were always willing mentors. Jim Alatis of TESOL contributed advice and seemingly endless effort. Lathrop Johnson, Mike Levy, Phil Hubbard and Mike Bush continue to provide leadership as we go forward. What a team!

How was the name of our organization chosen in 1982? Minnie Kenny was talking about a calico cat that she and her husband Herb enjoyed. The Computer-Aided Language Learning and Instruction Consortium was born, we assembled a constitution and by-laws, called for articles for the first CALICO Journal (June, 1983) and papers for the first CALICO Symposium (October, 1983). I promise to limit my stories.

## **SOME HISTORY AND INTERACTIVE MULTIMEDIA**

My topic is Teaching and Learning Languages with Interactive Multimedia (IMM): Future Challenges. The use of IMM enables us to significantly improve language teaching and learning. We need to understand more about second and foreign-language acquisition, learning styles, skill retention and internalization. As developers and managers of learning experiences, we need to focus on goals, skills and specific activities that are uniquely enhanced by creative applications of IMM. How can we effectively place, instruct, pace, motivate and evaluate students in ways that yield desired program improvements that might not otherwise be possible? A unique advantage of IMM is that, when optimally integrated with our textbooks, it maximizes our ability to personalize instruction. A brief overview may be helpful.

Familiar acronyms and sample programs illustrate applications of language instruction that personalized learning between 1958 and 1980: II, Individualized Instruction — The English 900 Series of programmed textbooks that allowed students to skip ahead if they already understood a concept or regress if they required review; CAI, computer-assisted instruction — TICCIT ESL (Mitre/Hazeltine/Ford Aerospace) which used the computer primarily to present and reinforce grammar through examples of usage followed by extensive practice; CALL, computer-assisted language learning — PLATO ESL (Control Data Corporation) which was an extension of CAI that included a wide variety of activities and a primitive record keeper. By 1990, because of quantum leaps in hardware-platform possibilities, researchers were beginning to discuss two new developments and their acronyms: IMM and LM (Learning for Mastery).

I'd like to comment briefly on the CAI hardware platform used to present Montevideo at the annual FLINT Conference co-hosted by DLI — many thanks to Al Scott and Alan Rowe, the Goethe Institute, kudos to Peter Grune at the DLI campus in Monterey, CA in 1981.

Since Montevideo (Department of Education) was the first computer-assisted interactive videodisc language courseware utilizing original film footage (shot in Hermosillo, Mexico) to teach Spanish, there were no videodisc interface cards commercially available, nor were there any interactive videodisc systems. We had to develop two interfaces: one for interfacing two videodisc players with the computer as well as switching between them, and another for interfacing the computer-controlled audiocassette recorder with the computer. The hardware configuration used to deliver Montevideo consisted of a computer and its color TV terminal on top, a microphone for students, two videodisc players — one for the events and situations disc, and another for the surrogate (learning partner/“learning buddy”) disc — a computer-controlled audiocassette player (Tandberg), and the interfaces mentioned above. It’s interesting to note that, because most students didn’t choose to access the surrogate videodisc, they missed serious errors in usage and pronunciation that required remediation. By 1990, in subsequent IMM applications, we replaced the surrogate disc with a split microphone that allowed two or three learning buddies to work together. Initially, this approach addressed a cost issue and accommodated more students who needed additional practice time; eventually, this solution was preferred because it allowed students to work together rather than alone with a machine. Students formed study teams based upon levels of proficiency and their preferred pace of learning. We simply tracked outputs from two or three jacks independently for our expanded record keeper.

In all subsequent student orientation programs with IMM systems, we indicated that our primary instructional goal was LM through practice, and that closure was achieved by role playing through topics, events and situations accepted as culturally authentic by native speakers of the target language. We increased exposure with activities that measurably improved student proficiency, motivation, retention, confidence and satisfaction. Since all videodisc programs presented full-motion sequences at 30 frames per second while movies ran at 24 fps, resolution, definition and audio fidelity were spectacular. Students always had options. With Montevideo, for example, they had a choice of four options for males and females so they could interact based on gender and age: child, adolescent, adult, and a wandering Russian sailor who escaped from his/her submarine off the coast — a purely goofy and hilarious option. We wanted everyone to have fun, were surprised that many students tried all roles, and learned that it is critically important to encourage and reward patience. More later.

## **WHAT DO WE KNOW ABOUT SECOND AND FOREIGN LANGUAGE ACQUISITION?**

We teach listening, speaking, reading and writing, but we know that students do not progress evenly in mastering these skills. Since listening comprehension is the most time-consuming and difficult skill for a foreign-language student to acquire, we must provide significantly more exposure. I observed this fact repeatedly in research studies but particularly from personal experience. After two years of high-school and four years of college Spanish, I went to the University of Wisconsin (UW) in the Spanish M.A. program as a teaching assistant. I didn’t realize that the only native speakers that I had heard previously were my teammates during a brief sojourn playing baseball in Mexico almost four and a half years

earlier. When I attended the first staff meeting at UW, I could barely function in a conversation. It was worse in my classes where truly great professors spoke idiomatic Spanish at full bore. I took a reel-to-reel corded tape recorder (the only kind available in 1958) to classes and connected it through an extension cord to a wall plug. Can you imagine my dismay when I couldn't understand the tapes any better than the lectures in class? My listening comprehension skills were woefully inadequate. If it hadn't been for incredibly patient and caring friends, I would have left the program. Although I'm now proud of my Spanish and have thoroughly enjoyed living, working and traveling in many Spanish-speaking countries, I soon decided to get my Ph.D. in Applied Linguistics and Materials Development

Mimicry-memorization is not a panacea. Soon after Sputnik was launched, the federal government placed a priority on the teaching and learning of math, science and foreign languages. My colleague at UW and I wrote an NDEA proposal for a grant to "train" Spanish teachers. (What an offensive word! I hope we agree that we "educate" teachers and "train" pets.) I'm embarrassed to report that we thought we had all the answers but am forever grateful that we didn't; otherwise, we wouldn't have enjoyed our careers as much as we did. In 1961, we were convinced that recipes for conducting specific classroom activities (dialog presentation, vocabulary building, idiomatic usage, grammar study, reading and writing) would equip teachers for success. Many believed that students should memorize dialogs verbatim. At the conclusion of the institute, my colleague led a group of interested teachers to Mexico. During the bus trip from Madison, they memorized 20 dialogs that covered typical situations. When I asked how the trip went, he smiled and said "Those Mexicans didn't know their lines."

We know that identifying with the target culture and its native speakers is highly motivating. IMPATI was a program that provided exposure to France and native speakers of French by broadcasting *Parlons Francais* from a DC-3 flying over twelve Midwestern states for two hours Monday through Friday during the academic year. Anne Slack's series of 20-minute programs was subscribed to by many school districts and was used very successfully in grades 4-6. Heath de Rochemont, a division of D.C. Heath that later became Raytheon Education, funded my Ph.D. dissertation research to investigate three popular alternative approaches to staffing FLES (Foreign Languages in the Elementary Schools).

The question everyone wanted answered was: What's the best way to teach foreign language? The choices available at the time were either the audio-lingual (habit formation) or the grammar-translation (cognitive code) method. The Pennsylvania Project (PP) was the basis of Al Smith's doctoral dissertation at The Ohio State University and became a benchmark study. Its purpose was to measure the results of instruction by comparing these methods, clearly anticipating that one was superior. After a year involving students in first- and second-year classes of Spanish, French and German, the result was no significant difference. When this result was initially reported in the professional journals, few believed it. The replicated study yielded the same result! Why? Bob Roeming, editor of the *Modern Language Journal* (MLJ), devoted the October, 1969 issue to an analysis of the PP. After gathering information for my article on the role of the teacher in the PP, I concluded that most teachers did not follow the guidelines of the method chosen as stated in the original agreement; teachers with target-language facility were three times more interactive with students in the language; students of teachers with target-language facility were four times more interactive with other students in the language. There really was no significant difference because teachers adapt recommended classroom activities to match their preferred styles even when they are given performance guidelines in an empirical-data research study. (Personally, I believe it's a natural manifestation of academic freedom that we all cherish.) We also learned that students have preferred learning modalities and respond accordingly.

It's interesting to note that five "new" methodologies were introduced within five years of the PP, each claiming to be the definitive solution to our quest for the best approach to teaching foreign languages. How's your memory? If you can identify and describe these programs, you're either an experienced teacher educator or you've been associated with the profession as long as I have. Please note that no one asked the following questions: Which is more important, linguistic or communicative competence? Do language students in general have favorite learning activities and preferences regarding features of their instructional program? If so, what are they? Do we need to supplement existing textbooks? How do we increase student proficiency, retention of skills, morale and satisfaction?

After hundreds of interviews, we know that students enjoy games that challenge them to acquire skills involving language usage. Motivational games have always attracted attention and loyalty. Bill Norris, the founder of the Control Data Corporation, the developer of PLATO, came from IBM and believed that CAI should play a key role in education. Since he was convinced that English would be the primary language of all high-tech world-wide conferences, publications and communications, he funded PLATO ESL. He also marketed one of the most challenging and competitive group games ever developed. Empire was the first system-wide, self-contained, multi-level computerized game. (The PLATO system connected all terminals via telephone links to mainframe computers at CDC's headquarters in Minneapolis in 1976!) Registered players piloted a spaceship, survived by navigating the galaxy without being shot down, shot down other space ships in order to have money deposited in their accounts that could be used for repairs, fuel, lodging and food, could play at any time of the day at any of three levels, earned points and were ranked by state, region and country. Our employees on the CDC PLATO ESL project lost their office access to Empire after a janitor called me after midnight to report that about a dozen members of our grant staff were drinking coffee — not permitted at BYU — and playing some sort of game in our lab. I invited the PLATO programmers, most of whom were hired for their expertise from the University of Illinois at Urbana-Champaign, to play Empire on their own time, thanked the janitor repeatedly since our productivity increased remarkably, and resolved to build a performance game incorporating as many quantifiable linguistic skills as possible at the beginning, intermediate and advanced levels. The rules governing the development of a challenging game are the same used to build multi-level banks of items for practice.

In order to truly individualize instruction, our goal is to monitor each student's progress in each skill by measuring performance that is paced incrementally into manageable chunks of information that can be mastered at an acceptable pre-determined level of mastery. (We used 80%. You and your team may set whatever level you choose.) This goal is unattainable without computer-assisted monitoring and testing driven by integrated IMM courseware. You need to identify the budget available, choose the hardware, software and courseware that you can afford, and determine how this package will be integrated into your curriculum. Your team will probably want to build and assess your program in affordable stages. Whatever you and your team decide, I am convinced that you will need to become involved with materials development.

Having just completed my M.A. in Spanish language and literature, I was assigned to teach Spanish and to direct the new 30-station reel-to-reel language lab in the high school that was on the superintendent's VIP visitors' list. My question was: "What do we have to put on the machines?" His response: "We don't have any funds available. Whatever you want to do is fine." The challenge remains the same whether videodiscs, computer-controlled audiocassette recorders, or other innovative hardware components including portable learning devices are introduced. As future chip miniaturization allows these devices to become ever more affordable, the use of a seemingly endless array of these devices can be helpful only if we integrate the materials on them ("whatever you want to do is fine")

into our instructional program. Forget about using these tools in ways that do not lead to synthesis classroom experiences led by a teacher. Practice activities should be available in an open-access on-demand environment that accommodates flexible student schedules. Students should have as much control of these learning-center and device activities as possible.

## **WHAT SPECIFIC LANGUAGE-ACQUISITION SKILLS ARE IDEAL?**

We know that we may be able to evaluate open written and spoken responses in the future, but let's focus on one of the most basic skills: auditory discrimination (AD) — the ability to differentiate between two critical sounds that change the meaning of a word. By demonstrating AD items with single words (beginners), short phrases (intermediate), and in context (advanced), we can develop three banks of items at three levels of difficulty for practice as well as for our game.

A good AD item for beginners would involve single words: "Listen to the model and choose A or B. Chair. A. Chair, B. Share" (for Spanish speakers). A good item for native speakers of Japanese is "Read. A. Lead, B. Read". Identifying the last word in a phrase would be a good item for the intermediate level: "Listen to the phrase and choose A or B. What's the last word you hear? Where's my share? A. Share B. Chair". Items at the advanced level could ask for the choice of an appropriate short response to a question. "Listen to each question and choose A or B. "Where's my share? A. It's in the oven. B. It's in the kitchen."

Since this isn't a materials-development or game-building seminar, let's just list skills essential to language acquisition that require practice and can be included in our game:

- 1) vocabulary and idiomatic expressions involving various contexts;
- 2) pronunciation and accent-reduction — differentiating between minimal pairs involving sounds that are difficult to produce, delivering phrases incorporating typical syllable-juncture boundaries commonly encountered in every-day speech, and recording words after hearing them or seeing them in print;
- 3) reading — identifying key words and topic sentences from texts, choosing the best summary of a reading passage, and choosing responses to questions about a reading passage;
- 4) listening comprehension — choosing responses indicating an understanding of what is heard, choosing a gesture to accompany a comment, choosing a statement to match a question;
- 5) speaking — giving a summary of a story that is heard or read, making a comment to accompany a gesture, responding to a statement, opinion or question;
- 6) writing — matching sounds and symbols, summarizing a story that is heard or read, responding to a letter, outlining a topic, and writing a brief presentation
- 7) grammar — studying patterns of usage and answering simple questions will allow your students to develop their own "rules" of grammar through discovery.

Learners internalize and retain more information derived from analysis and synthesis based on discovery activities than they do from the rote memorization of rules. If you are interested in materials development, work with your colleagues, use your imagination and build item banks in these skills for practice as well as games. Have fun!

The role of a language teacher utilizing an effective IMM program has changed from chief dispenser of knowledge and information to leader, diagnostician and objective evaluator of a learning process that encompasses all areas of language acquisition and skill retention. Teachers have used this technology to become catalysts and problem solvers in the classroom. We are the critical warmware who answer questions, provide synthesis, and make the hardware, software and courseware components of IMM come alive in the classroom. Teaching experience allows us to anticipate most questions and problems that arise in the process of learning. Well-integrated IMM courseware enables us to guide students through alternative paths that match their learning styles and challenges them “at level” as they strive to improve their languages proficiency.

Interviews with second and foreign-language students indicate that there are at least five stages through which they progress as they acquire proficiency: 1) total confidence; 2) satisfaction that they are making adequate progress; and 3) frustration that they might not be able to achieve their expectations. Because language acquisition is an incremental process requiring daily exposure, systematic review and practice with activities that build communicative competence, students must accept the fact that patience is golden. As they are exposed to more language, especially in foreign-language situations where they are not surrounded by the target language spoken by native speakers, they experience 4) doubt. Doubt often then becomes the final stage 5) resignation, that results in compromises with language performance that make further substantial progress unlikely. The best example is my friend who owned an advertising agency in Mexico City. He knew that he fractured pronunciation and usage but had resigned himself to speaking Spanish “as is — take it or leave it”. The result was a challenge for everyone, especially native speakers who strained to understand someone who had reached his resignation stage too soon. One of our primary tasks as teachers, designers and developers is to challenge students to work comfortably in ways that build enough confidence to overcome feelings of doubt and to delay resignation as long as possible.

Existing and emerging technologies, delivery systems and innovative learning-design strategies allow us to provide an adequate variety of activities that result in quality time on task. How do we optimally integrate these and other newly-emerging technologies in ways that maximize the advantages of each: streaming audio and video, DVD video, MP3 audio, websites, podcasting, intelligent string processing...? We become involved as a member of a team that develops computer-adaptive materials that allow teachers to help students tailor their learning experience to match their preferred styles with a comfortable pace to achieve mastery. We already know that home kits and create-a-path options are very popular. We also know that, with the myriad of hardware possibilities at our disposal for presentation, practice and on-going evaluation, we need a new acronym: IIMM — Integrated Interactive Multimedia. There must be a part-whole relationship to accommodate all components.

Now, let's dispel some myths and fears regarding teaching and learning languages with technology. A fear that we have dealt with since we began using technology is that it will ultimately replace the teacher. Remember the importance of warmware and synthesis. A popular myth is that students in an academic program can't learn without a textbook. Really! Another myth is that technology may be useful, but who can afford it? The fact is that it is cost effective. Students enjoy technology because it gives them flexibility that they would not otherwise have. They want to learn with others at their level of proficiency and patience. They want to have some control over their learning environment. Have you heard that we don't know enough about how students internalize a skill? We're learning. Is the alternative that we give up? We don't want our students to have this attitude. Any problems with tech apps will be solved if we just wait a little longer. The sooner we get actively involved, the more direct input and control we will have over the design, implementation, and improvement of our system.

While addressing these and other myths and fears, we must also be aware that there are irreconcilable facts that are present:

- Changes to any instructional program require more time, effort and budget than originally projected because choosing and integrating optimal solutions take longer to accomplish. It's like building a prototype. It's a sifting and winnowing process that you and your team will tweak often, especially during the initial stages.
- Our goal is to convert as many treatments as possible into templates based on carefully-designed prototypes that withstand on-going evaluation; otherwise, we are compelled to reinvent the wheel.
- There is a readiness factor that determines the extent to which any major change is accepted by your colleagues. Take the pulse of the educational community before you attempt to significantly change or upgrade the system. Explain what your goals are and why you chose them.
- Educate the doubters by getting them involved in guided discussions as fellow change agents. Answer questions, elicit support and get commitments.
- The instructional materials that you have available when you begin the process will need to be upgraded and evaluated regularly. We don't have a crystal ball that enables us to make all the right decisions the first time. Make sure you spend time around a table discussing options and treatments with technicians and programmers because they ultimately have to make it happen on the delivery station and devices chosen. Make a list of what you want to do and ask them to rank the items in terms of time required and cost to implement so that you can build your program in affordable increments.
- Get your students' reactions whenever you need confirmation and want to build trust.



- If your program meets your expectations, is debugged, and is considered by others to be exemplary, think about commercialization. If it solves your problems, meets your needs, and challenges your students, others may want to use it.

As teacher educators, teachers, designers, developers, programmers and evaluators, we all need to recognize our roles as agents of change through creative applications of state-of-the-art IIMM strategies and solutions that significantly enhance language teaching and learning. I wish you the best and hope you have as much fun as I've had. Thanks for the great experience, many fond memories, and the opportunity to work with so many gifted leaders.