IT'S NOT THE DISTANCE: IT'S THE DESIGN

CALICO ’96 KEYNOTE ADDRESS

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Following is the written, and somewhat revised version, of the keynote address given Wednesday, May 28, 1996, to open the CALICO ’96 Symposium.

Welcome all to Albuquerque. We hope you find this area as wonderful as we do. Someone mentioned last night that my wife and I have had a chance to live in some great areas. That seems to be still holding true.

It is a distinct honor and very humbling at the same time to be invited to give a keynote address to a CALICO symposium. CALICO provided a defining environment that supported many innovations and experiments at the Defense Language Institute. The organization’s people set an example for a whole new area of study and endeavor for me. The work done by CALICO is pioneering and applies far beyond the field of language learning.

The work being done here at the University of New Mexico by Dr. Bill Bramble as Director of UNM’s Distance Education Center and Dr. Hallie Preskill’s Organizational Learning and Instructional Technology Program is very much in the direction of the best I have experienced in working with CALICO. Keep your eye on UNM in instructional technology, the adult learner, distance learning and language learning. These two university activities are among the most innovative I have seen.

The theme of our Symposium is "Distance Learning." During this talk we will first look at a general view of technologies available. We will summarize some of the history of where we were and are going now. Then we will touch on the role of the computer with its implications for CALICO. We will discuss why distance programs are necessary and look at distance learning with its implications for instructional design.
Figure 1.  

There are various fiber approaches. The computer is present with the Internet, the World Wide Web, and various conferencing systems. Then we have various degrees of interactivity. The most desired is two-way video and audio. There is one-way video, two-way audio, or one-way video and one-way audio (as in broadcast or cable television), and one-way audio as in radio. Recently, we have seen both video and audio transmitted over the Internet. Computer Mediated Conferencing permits sharing of text. Eventually, there will be audio and video conferencing routinely conducted over the Internet involving several participants.

We know technologies can work (Figure 2). We began in 1990 with our reaction to Desert Shield and Desert Storm. Since that time there have been earth shaking events requiring us to reopen instruction in Balkan languages. We are on the ground in the former Yugoslavia using Serbo-Croatian. We are supporting forces logistically from Hungary. We do joint maneuvers with the Bulgarians. There has been increased demand for Haitian-Creole. The Ukraine became a major nuclear power with the breaking up of the Soviet Union. DLI has worked well with other pioneers. These efforts continue to expand.

In the civilian sector, there is often a need to make do with a little less (Figure 3). We are using one-way video with some kind of callback very extensively. We offer over 60 courses a year, mostly in engineering and nursing but lately branching out into education and public administration.

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**Technology Available**

- Satellite: C-band, Ku-band
- Educational access cable channel
- Fiber Optic, ISDN, T3/T1
- Two-way video, audio, data, text
- One-way video, two-way audio
- One-way video, one-way audio (TV, radio)
- Audio and Video over the Internet
- Computer Mediated Conferencing
- Texts, student support material, correspondence

**Defense Language Institute and TRADOC TNET**

- Two-way video and audio
- Satellite delivered/half duplex
- Desert Shield (1990)
- Ukrainian (1991)
- Serbo-Croatian/Somalian (1992)
- Hawaii/Middle East
- Language acquisition/maintenance
- Instructor development

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One interesting effort has been the Oklahoma State University’s fourth, fifth, and sixth grade satellite delivered German programs. There are over 2000 children involved in that program. We scored over 900 pretests that showed that they had very little experience. The first post-tests have been received showing doubling and tripling of scores. At any rate, there is a large number of budding linguists out there as a result of this program. EDEN is a consortium here in New Mexico using the same technology and working together cooperatively to offer non-competing courses desired by the public. We had 11 courses this spring and will have more in the fall. The Electronic Bridge is a partnership with the National Science Foundation, University of New Mexico, Museum of Natural History, and the Northern NM Network. Finally, Educating Amy is mentioned to anyone starting a distance program as a source of valuable information.

This approach has the advantage of being very low-cost. A Ku-band downlink can be purchased and installed for approximately $3500. The delivery corresponds to the most conventional means of delivering instruction. It is the system of the teacher transferring information to a group of students taking notes. It is analogous to the lecture hall and people tend to be very comfortable with it.

Figure 3.

One or Two Way Video
Two-way Audio

- C-band
- Hispanic Educational Telecommunications System (HETS)
- American Indian Higher Education Consortium (AIHEC)
- Black Satellite Network (BSN)
- Video, Voice, Text, Data capable

Figure 4.

Please note the interactive capability and recognize that the networks will be markets for language training. English and Spanish will be used over the network. German, Japanese, and Chinese will be in demand, along with the languages of many emerging economies, due to their commercial importance. The equipment is being procured now for the Native American and Hispanic networks.
Distance capability will play a major role in the future (Figure 5). It will give teachers and school systems resources to expand their offerings. There will be a more seamless integration from kindergarten through college, graduate work, and the life-long approach to learning necessary both to maintain professional competencies and to enrich personal life.

Two-year colleges will be able to import programs leading to a four-year capability. Research universities could de-emphasize the first two years and concentrate more on upper level and graduate work. The availability of distance media is leading to more flexibility with less invested in moving and travel for military education and training.

Finally, we see a very aggressive move on the part of the Western Governors' Association to establish a virtual university, now called the Western Governors University. It will open in June, 1997.

Dramatic is not enough of a word to describe the advance of computers in instruction. Certainly CALICO people are among the most aware and among the most pioneering. Computers can be used as a medium to deliver anything already delivered by the technologies we have discussed so far.

It is surprising how complete a learning experience can be when delivered through a computer mediated conferencing system such as COSY used here at UNM or CONVENE used by the University of Phoenix.

Text based Multi-user Dungeons (MUDs) or Multi-user domains, Object Oriented (MOOS) are methods of group conferencing. They have great potential as a means of group language practice. Cornell University’s CU-See Me allows transmission of audio and video over the Internet to multiple platforms. Systems using the Internet as a medium for audio delivery, as in telephone or radio, permit very clear transmission of voice. I have attended a meeting at the virtual...
Diversity University in Arizona through a MOO. HTML and Web pages also can be used locally as a hypermedia device.

Now that we have a picture of the technology available to provide distance learning opportunity, let us look at what we mean by distance. Then, we will look at what we mean by distance learning (Figure 7).

We know that distance is equal to rate times the time. Time is very important when delivery occurs at slow speed. When using quanta or electrons however, we are talking the speed of light. Very large distances are covered in very short times. Delivery occurs in the time of transmission plus the time of access with access time being far longer than delivery time. Nevertheless, because the rate is so high, time becomes very short, and distances may be very large. For example, if you stop to work it out, the time to transmit a piece of information around the world, assuming that the circumference of the globe at the equator is approximately 25,000 miles, is about an eighth of a second.

Taking a rather rough view of things. We might say that in the world of CALICO, distance is the time it takes to procure information and display it for use. After that, there is no separation of the learner and the information (stimulus) to be applied or incorporated. In the Middle Ages, the constraint was the distance to the nearest monastery and the laboriously put-together information that was there. There were also few checks on the quality of that information. Then, the constraint was the distance to the nearest university starting with the universities of Paris or Bologna or Prague or Heidelberg. Still, not very much of a check on quality. Then it became the distances to the local public school and public library with research being evaluated in terms of the 11 scientific method.”

However, with the access achieved with public educational facilities, even we were limited to the information on-hand. Libraries were the results of our choices of delivery and had technological capability to produce materials. We had to plan on long lead times. We had to pay large amounts for what we wanted. The book has served us well and will continue to do so.

At the same time we can have information we want very cheaply, information that can often provide us the real world or a very close simulation of it. We can have almost everything for next to nothing occupying almost no space, and deliverable almost anywhere. We have the computer and the Internet and with the exception of very special
In most cases, we can get almost any piece of information we need to solve almost any problem. In a high tech world it is not the distance, it is the design. It is not the where or the when, but the how and the what.

Let us summarize. We are saying here that for the last hundred years we have been chipping away at physical distance as a barrier to learning and have succeeded. We deliver at the speed of light. Accessing the information from our disks takes a few seconds longer, but in reality distance is the time it takes us to access information and display it. Distance is no longer the problem, or shall we say, the excuse. We must work on content and design.

The further challenge of the conference is to investigate what should be delivered to far-flung places. What is necessary to deliver is determined by many things. Availability at the point of learning is deciding. Objectives and goals are important. Limiting our thoughts to language learning we have to ask ourselves certain specific questions having to do with purpose and level: Are we trying to do initial acquisition? Are we doing proficiency maintenance and improvement? Are we extending our cultural knowledge? Are we conversing, learning, or persuading using a second language?

We should look at what is meant by distance learning. According to Barry Willis, distance education takes place when a teacher and students are separated by physical distance and technology (audio, video, data, and print) is used to bridge the gap (Willis 1994).

Willis says that distance learning and distance education are used interchangeably. I would maintain distance education is an opportunity provided by some agency and taken advantage of by a prospective learner. Learning, however, is not a provider act, but something done by the receiver. Learning can be looked at as behavior change, changes in perception or attitude, or in constructivist terms which we will touch on, willingness to renegotiate meaning. *It occurs based on what the learner does with information available.* Therefore, distance learning is learning that occurs with information delivered from a distance-distance being several thousand miles supported with technology, or going over to the bookshelf and getting it out of a book.
Thus, the teacher may use a distance medium to enhance local resources. A student might use information provided from a distance to assist in achieving a learning objective or goal. A group might undertake a learning project using a teacher separate from them, while using information that is on hand as well as that provided from a distance.

**Figure 9.**

As we project language learning opportunity, we reach more people who are bilingual, who grab onto languages and develop proficiency very quickly. New Mexico is a case in point. We are multilingual and multicultural. The people are very energetic and desirous of moving up. These people deserve the opportunity to learn. Distance media are key to that opportunity.

Given that we accept that providing distance learning opportunity is a worthwhile goal, and that information necessary to language learning can be provided from a distance (a nontrivial question), let us look at the elements of a learning situation translated to the distance environment.

Let us look first at the elements of a learning situation (Figure 11). The bulk of the list shown in the figure was developed by Dr. D. N. Perkins, Harvard School of Education (Perkins 1992).

We can sum up here by reiterating what we know learning to be and what can be done with a distance medium (Figure 9). The important thing is that we keep in mind the learner focus. Learner “needs and deeds” must be the central concern.

There are certainly a number of reasons to develop national language competence (Figure 10). Using distance media gives more people the chance to participate and apply their inclinations and talents.
The ideas of information banks, symbol pads, construction kits and phenomenaria are straightforward. The important elements are the task managers. Task managers can be teachers and tutors. They have the function of assessing readiness, prescribing or suggesting work to be done to assist the learning process, and acting as an accountability mechanism to insure that the prospective learner keeps at the various tasks. Some of these functions may be undertaken by a computer in computer assisted learning processes—although this expectation of computers has not been fully realized. A learning group could perform the functions of support to insure that tasks are practiced and completed. Or, there could be a process of task management involving group, computer, and teacher intervention. The important thing to keep in mind, and they are implied as part of Perkins' model, is that there needs to be (1) some accountability mechanism to insure that the learning candidate continues to participate; and that there is (2) an evaluation mechanism to assess the degree to which a desired level of proficiency has been reached or the degree to which some cognitive or metacognitive skill has been achieved.

We have to know our goals and have developed enabling and terminal objectives. These are certain defined competencies that the learner should have and include proficiency levels; content mastery; listening, speaking, reading, and writing skills, conversational fluency, and cultural competency.

When goals and objectives are determined, we are brought into the arena of instructional design. There is a very important debate going on about instructional design. The military is well aware of the use of instructional design models to develop training programs. In academia, deliberate design is not very often experienced. Nor is there extensive use of technology outside of departments concerned with training and learning technologies. This is understandable since faculty are engaged as subject matter experts more often to increase research capability rather than as trainers or instructors. Aside from that, even in colleges of education and where considerations of the use of instructional technology are important, there are educators who question the Instructional Systems Design approach, especially when the goal is to increase metacognitive skills—the area of knowing how we learn. This is the debate between Objectivists and Constructivists.

Addressing these philosophical views thoroughly is beyond the scope of a short presentation or article. However, in the overlap of the two constructs there are some very useful things to consider. A reductionist
approach involves simplifying reality so that one can begin. One generally needs to practice musical scales on the way to mastering concertos. In languages, this approach might be used to reduce a skill to its component elements in developing "building block" approach toward achieving a defined skill level. Getting to Levels 1 and 2 on the Inter-Agency Language Roundtable proficiency scale would be an example.

Reality based, constructivist approaches could be used to extend the learner and to develop skills to use current potential to solve language challenges, to expand proficiency, and to increase command of content and cultural knowledge. Therefore, we have to know what is desired or we have to set that ourselves. Then we look at our array of technology and capability. We look at the elements of the learning situation. We develop a design approach that gives us what we want and insures that the learner or group of learners does what is necessary. Then we evaluate outcomes and develop a plan, with the learner, to continue. The following illustrates differences in design approach depending on the outcomes we want.

Instructional design involves viewing learning from the learner's perspective (rather than from a content perspective) and using a systematic process to create instruction. (Johnson 1989). The bottom line here is that specific objectives, competencies and proficiencies require one type of design approach. Goals that permit multiple outcomes require another. If it is desired that people not only have language skill but also content and cultural proficiency, then a more open-ended approach is necessary. In general, especially in language learning, both types of learning occur, especially when realia are being used. The important thing is to recognize the possibilities and apply them as we experiment with media.

We could say that the Objectivist approach is a training approach, while the Constructivist orientation is an "educating" approach. The Objectivist would say there is an objective reality, i.e., a standard, to train to. There is a demonstrated need and an assessment of learner competency. Content is analyzed. Terminal objectives, the desired demonstrated behavior, are developed. Decisions are made on methods of delivery and instructional materials. A criterion- or norm-based evaluation is used to assess how much the learner has learned and how well the instructional process went, through comparison of people with measured abilities. We are talking of the approach used for the Defense Language Proficiency Test.
The Constructivist model is really not an instructional systems design (ISD) model. An ISD approach assumes an objective standard to train to. The Constructivist would say that reality is the meaning a learner attaches to experience from inside themselves. What is important to the Constructivist is the intake, processing, and interpretation of information. The outcomes would not be predictable, but would be the result of the tools available to the learner and the meaning the learner develops.

Going back to the learning situation then, I would like to show you how we are applying some of this in using a prepared video series. The project here is to use the ALLES GUTE German series as a learning vehicle to bring people into contact with German through a distance approach. In this case, teacher intervention for accountability, assistance, and conversational practice will happen in an audio- or videoconferencing mode. We could use anything from a speakerphone to satellite delivered two-way video/audio means. One very interesting way is through something like Internet Phone or CU-SeeMe.

This program above is Objectivist in that the goal is to improve specific skills. At the end we want to use standardized tests such as the Goethe Institute Series or DANTES which has a test for first year German, at least in reading and listening. Of course, an ACTFL OPT (Oral Proficiency Test) or a Defense Language Proficiency Test would be of great value also.

On the Constructivist side, if we wished cultural competence we would design an open-ended approach and test to see if learners developed cultural competence, increased content knowledge, and metacognitive skills.

We have many possibilities to apply at the point of learning. As we move to client server technologies we can realize our dream of having materials stored which can be used or re-purposed. Could not CALICO become both developer and repository of material to be used by students and teachers alike? We already have many “objects” through our work with LIBRA, AUTHORWARE, WINCALIS and many others. We are talking of public, reusable material on demand formatted for major authoring environments. We are talking of CALICO being a major source of design approaches to learning languages at multiple levels of competence.

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**Figure 14.**
Distance learning programs are not trivial undertakings. Faculty and learners need orienting. There are four complex aspects of a distance learning environment. They are learner-technology, learner-material, learner-teacher, and learner-learner interfaces.

Distance programs are often "good ideas" imposed from outside the organization. The programs must be need driven and perceived as such by students, faculty, and administrators.

Actually, the task of delivering effective learning experiences over distance is only slightly more complex than classroom delivery should be. The point though is that you cannot muddle through a distance learning event. The effects are immediately felt.

Second, people may say they want this type of material, but look at that very carefully. It is amazing how opinions change when faced with the task of repurposing traditional material. For example, the use of articles and tape recordings becomes very public in a distance mode. Copyright issues simply must be dealt with as they often are not in the isolation of the traditional classroom.

It is very necessary to practice communications, especially on the part of those who must deliver support materials or facilitate on site. Silence does not necessarily mean that things are going well. It might mean that no one is using your product. In the '70s when we began the task of getting the Army back into shape after Vietnam, the first thing we had to do was practice communications, first at tables in a gym, then with Jeeps, then with communications vans, and finally with organizations.

The distance program in the civilian environment must also be recognized as part of a school's standard educational offering. All must agree that such programs have a rightful claim to organizational resources. Distance programs cannot be regarded as something extra or temporary. There must be goals, objectives and a resourcing plan.

Finally, evaluation must be built into the entire packet. Teleconferences must be practiced with those involved and started with them early. Communicating throughout the system must be practiced.
Learner needs differ from client to client. We have to inventory those needs and the various media available to us and relate that inventory to the elements of a learning situation. Once we see how to deal with those elements, we have to figure out the goals either the system has for the learner or the goals the learner has determined. Then, we deliver, or, the learner chooses to receive the necessary information to develop the skills. We should regard the interplay of need, goals, learner, and delivery systems as continua on which we aim our design of the instructional process (Figure 16).

These continua allow quite a few options and overlap. We have technology to deliver. We have information everywhere at low cost. We decide what we want in a framework of the elements of the learning situation. Then we execute and evaluate.

The last line, the continuum from the Desert to the Mountain (and back again) comes from Mr. Alan Rowe. Alan is a retired Air Force Major who used to be in charge of instructional technology at DLI and the Monterey Institute of International Studies. He has since completed a doctorate at Utah State with David Merrill. Dr. Merrill incidentally is an Objectivist acknowledging much of what Constructivists say, meaning that there is much interplay of the two constructs in between the extremes.

I was preparing for this address and looking through piles of papers when I found my old in-box, even now untouched since 1990. This box is that special one we have for actions we reserve until we have the time to think about them. They contain those really meaningful issues that are at the heart of what we do I but are of such depth that our fast paced, short turnaround lives do not permit us the space to work them out. I remembered the day, only six years ago, when, after experiencing the 'talking Macintoshes,' I said that multimedia would replace teachers. The absolutely justified pain in Alan's eyes was evident. He provided me with a series of interviews he constructed between a Major Terrapin and Captain Asheel.

Terrapin, in response to Asheel's question as to why would anyone want to study a foreign language, asks why everyone wants to study a foreign language and be a musician. His answer is "to get to the other side—not of the road but of the desert." The mountain top is the fluency to deal with complex topics, to discuss.
the highest of ideas and ideals, to be expert in the nuances of cultural competence. The problem is that most die on the desert-the desert of drill and practice. It happens with music. It happens with language.

We, CALICO, can extend the opportunity for a better chance to cross the desert. We can help people reach those very necessary oases where they can pause and realize they are advancing. We can help them stay on the mountain top, exploring the trails, valleys and canyons of other languages and cultures. We can help, as Terrapin envisioned, with our experience integrating knowledge of how people learn languages with technology that can make practice and communication possible. We can bring the world to the learner.

We know computers. We know language. We can deliver anywhere. What do we need now? We need to look at what we do; analyze what we have to accomplish; and move out to perform the task. CALICO members have led the way for the past thirty-one years. I hope you have gotten some ideas to think about for the future. Thank you for this wonderful chance to talk to you again. Let us have a great symposium.

*Learning, even languages, is not a matter of distance.*
*It is a matter of design.*

**REFERENCES**


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