Integrating Technology and Literacy: Digital Video Dictionary

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Introduction

Literacy has become a top priority of many deaf education programs today. The strategies used to teach literacy vary from program to program and there are often obstacles to successful implementation. A class of 3rd, 4th and 5th graders at the Laurent Clerc National Deaf Education Center has found a way that is successful for them. The class is taking a bilingual approach to literacy by creating their own digital video dictionary.   The digital video dictionary (or Class Dictionary as the class fondly calls it) has helped them to build their vocabulary and improve their reading and writing skills. It is an electronic collection of pictures, English words, signs, fingerspelling, ASL sentences and English sentences. This project is possible through the use of technology, using a presentation software package on the computer and including multimedia elements such as text, graphics and video clips. Since the project has begun, the students are recognizing and using words they have learned from the class dictionary in their dialogue journals, morning message and reading books.   This project is helping the students make the connection between sign and print, decreasing their anxiety toward reading and writing in the classroom, improving communication skills, and increasing both student and teacher confidence in using technology.

> My favorite class is Class Dictionary.
>
> --a student wrote on a worksheet entitled "About Myself"

Background of Project

In the fall of 2000, Francisca Rangel, a Teacher/Researcher at the Laurent Clerc National Deaf Education Center, began each school day with a morning message that would include the events for the day and any news the students wanted to share. She felt it was important to provide structure in the day, but also wanted the students to utilize their reading skills to access this information. She discovered that her students were not making the connection between what she signed in ASL and what was written in English. They did not recognize everyday words such as "school" and "class". She shared her concern with Rosemary Stifter, the Academic Application Specialist and asked about using some technology to create a dictionary to help the students build a bank of vocabulary words. Ruth Reed, the American Sign Language (ASL) Specialist, was already working with students in the class using correct ASL signs for words. Francisca, Ruth and Rosemary decided to

incorporate the English words, ASL signs and technology into one project. Through their collaboration and the motivation and enthusiasm of the children, the Class Dictionary was born.

Background of Students
The class consists of seven deaf and hard of hearing students from the 3rd-5th-grade team at the Kendall Demonstration Elementary School (KDES). Each student comes to the class with diverse home language backgrounds and personal experiences. Throughout KDES, both English and ASL are used. The students' ages range from 9 to 12 years old with a majority of them reading at a 1st-2nd grade level. Two students are from El Salvador and have attended Kendall for less than 2 years. Two students are from China and have been in this country less than a year. One has some knowledge of Chinese sign language and written Chinese and the other has some knowledge of written Chinese.

> One student just moved here from China and was very frustrated learning ASL his first few months of school. Since he was involved with the Class Dictionary, he now analyzes his signs and sees what is wrong with his ASL skills. He can easily communicate with his peers and adults using ASL.
>
> ---Ruth Reed, ASL Specialist

Two students are African American. One has been in Kendall for more than 3 years and the other transferred to Kendall from an oral program less than 2 years ago. The remaining student is of Caribbean ethnicity and has been in the program for more than 3 years. Four of the students receive ESL services and three of those students receive ASL services as well. The former oral program student also receives ASL services. Only one of the students in the class comes from a deaf family. This interesting mix of students made this project exciting yet challenging.

Project Goals
The main goal of the project is to develop ASL and English literacy skills. A secondary goal is to increase their technology proficiency. As the school year progressed the project had an impact on many other areas of this project, such as community building but these areas will not be discussed in this paper.

Process
The class dictionary has gone through many stages of change during the school year. It was a learning process for the students as well as the teachers involved. The steps listed here are those that are presently used. The steps provide a framework that can be adapted to any classroom. Each step in the process is conducted in a specified instructional area.
- The Classroom is the students' regular classroom.
- The ASL Center is part of the media room with a camcorder, tripod, VCR, and monitor.
- The Computer Center is located in the media room and includes a SMART board (interactive white board), digital projector, and laptop computer.
- The Computer Lab is where the multimedia computer, which is used for digital video, is located.

The area where an activity (step) occurred is identified at the beginning of each numbered step below.

To illustrate the process of creating an entry into the class dictionary, we will use a fictitious student named John who has selected "school" as his word.

1. Classroom: John selects the English word "school" to include in the class dictionary. John practices signing and fingerspelling the word and creates his own ASL sentence that includes the new sign "school".
2. ASL Center: The ASL Specialist or a student videotapes John signing and fingerspelling the word "school". John manipulates the speed of the VCR to analyze his signing. He repeats this step until he creates a video clip with no mistakes. This process is repeated with John signing his ASL sentence with the word "school".
3. Computer Lab: The Academic Application Specialist converts the analog videotape clip into a digital video file that is copied onto the laptop computer. (Students do not participate in this part of process.)
4. Computer Center: John uses the SMART board connected to a laptop computer and digital projector, to create a new slide in PowerPoint. He types the word "school" in the title box, inserts a picture and inserts the movies (digital video clips) of himself signing and fingerspelling the word.
5. ASL Center: John uses glossing (written text of English words in ASL word order) to write his sentence on an index card with teacher and peer assistance.
6. English Center: John writes each English word from the ASL Gloss of the previous step on individual cards. The teacher asks "Wh" questions to aid in the construction of the English sentence. John hand writes the English sentence onto paper and places it in his Class Dictionary folder.
7. Computer Center: John inserts the movie of his ASL sentence, adds a text box and types the English sentence on the corresponding PowerPoint slide. John labels each of the parts of the slide. A finished slide is shown below in Figure 1.
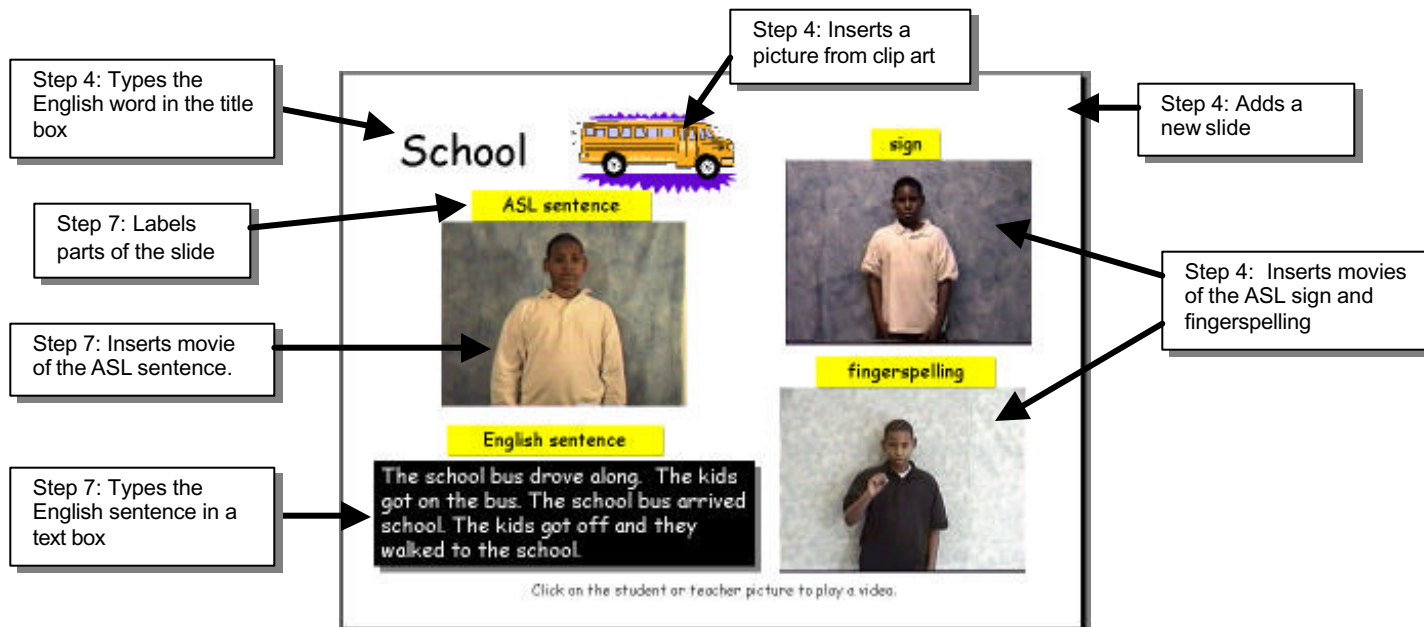
Step 4: Inserts a picture from clip art

Step 4: Types the English word in the title box

Step 4: Adds a new slide

Step 7: Labels parts of the slide

Step 4: Inserts movies of the ASL sign and fingerspelling

Step 7: Inserts movie of the ASL sentence.

Step 7: Types the English sentence in a text box

Figure 1

Experiences and Benefits

The benefits of the Class Dictionary are endless. The students' quotes portray a class with increased confidence and a sense of personal pride. The teachers maintain that the inclusion of technology has increased student motivation to learn something that has been frustrating for them in the past: reading and writing. Their vocabulary base has broadened and they are now seeing the importance of spelling. This project has carryover to other areas of the classroom as well. Teachers report the students have improved the clarity of their communication. The most significant benefit is the students' empowerment through their use of the technology and their involvement in the creation of the digital video dictionary from start to finish.

"I learned a lot…I absorbed a lot. I am smart! I enjoyed it!"

--a student expressed when walking to the cafeteria for lunch

ASL and English Literacy

It is important that deaf children expand their knowledge of ASL and English and appreciate the differences of two separate languages. Many supplemental activities were used to emphasize the two languages. In the classroom there is an ASL/English Bulletin Board where students use yarn to match the illustration of the ASL sign with the English word. In the Computer Center the students label the video clips as ASL and the words as English by writing on the SMART board.
ASL gloss words are written in CAPITALS, to identify them as an ASL sentence as opposed to an English sentence.

"I want to buy this book (a sign language dictionary) to communicate with my mom."

--a student said when he was finding pictures of ASL signs to match with English words

Once the concept of two languages was established, the students began to analyze more closely their signs and fingerspelling and that of their peers. The ASL Center is the place to learn the importance of eye contact, facial expressions, palm orientation, handshape, and the location and movement of signs. When the students see themselves expressing sentences in ASL, the students and ASL specialist can begin a basic discussion about ASL grammar and syntax. At this stage their watching and attending skills greatly improve and they come to realize how imperative it is to communicate clearly.

Last November, your students' signing was awkward and unintelligible. Now they have improved and sign much clearer.

-- Jennifer Furlano, a substitute teacher for Francisca's class

Spelling has taken on new meaning now that the students are asked to fingerspell the words for the Class Dictionary. One student asked, "How do you spell 'Thank you'?" when he was writing a letter to the principal. Another student was thrilled that he could spell a guest speaker's last name.

One student met a guest speaker and read his nametag. He learned how to spell his last name and came up to me and signed M-A-T-H-I-S. He expressed that he can spell his name. He was impressed with his own fingerspelling. I saw him say, "I can sign very well," with a confident look, "I know!" I thought to myself 'WHOA!'. He was not a speller when he first started in our team last fall. He expanded…his knowledge. It made me feel good to see his growth.

--Francisca Rangel

The relationship of the two languages plays a large role in the English Center. When the students arrive at the English Center with their final product of a videotaped ASL sentence, they begin the process of translating it into English. During the translation of the ASL to English there are many opportunities for mini-lessons such as, capitalization, punctuation, verb tense, pronouns, and simple sentence structure. These mini-lessons, presented in the context of their own work, encourage student ownership of their use of language. To expose the students to the English words, Francisca writes the morning message that includes a few of the vocabulary words. Students are asked to circle the words they recognize in the paragraph or she creates the message with blanks and students are asked to fill in the correct English words. At this point they start to make sense of language and

how it is used to communicate. This is not a simple task and the students have not completely built the bridge between ASL and English, but they are making the connections between signs and print in their writing in the morning message and their dialogue journals.

> **"I know how to spell it!"**
> **--a student exclaimed when he was reading a fill in the blank message on the Morning Message board.**

Technology

Ownership and personal involvement to what you are learning are two major components to integrating technology into instruction. In the past, the students at KDES had experiences with technology that tended to be passive or for entertainment purposes. The digital video dictionary project actively involves each student in using technology and raises their awareness of the possibilities technology has for them.

> A student was so anxious for his turn to use the SMART board that he sat on the floor near the board while the others sat on their chairs.
>
> --Francisca Rangel

The students have gained valuable technology skills while using the PowerPoint application. They are able to create slides, insert text, search for clip art, and insert images and movies into presentation software. They can manipulate the background color, text color, size and style and change the views of the presentation. The students also apply spelling skills when they add text for a new entry or when they search for clip art. Since the implementation of this project some students have used words such as "save" "picture" and "computer" in their dialogue journals. The use of language when working with technology has made a definite impression on the students.

> In the beginning of the school year the students had very little confidence when using the SMART board. They were very tentative and often looked to an adult before touching anything. This has changed dramatically. They are more assured when using the technology now and are developing thinking skills as they solve problems that may arise in their use of technology.
> --Rosemary Stifter

The process in creating this dictionary is very structured, but is not difficult and can be done with a few extra pieces of equipment. The technology equipment used in this project is listed in Appendix A. See Appendix B for more information regarding the equipment used for this project as well as other brand names on the market.

I miss Ms. Rangel because she tell me good job. Class Dictionary

--a student wrote this in his Dialogue Journal while Ms. Rangel was out of town.

Conclusions and Future Work
The digital video dictionary shows how technology can be used successfully to create a bridge between ASL and English to improve literacy skills. The technology has been an important link for reading and writing. The student growth was so inspirational that the team of teacher, ASL Specialist and academic application specialist hope to continue their work together on this project in the next school year. There are plans to expand this project to other classes in 3rd-5th grade and the earlier grades. The digital video dictionary concept can be applied at different levels where some students can create a thesaurus, a multiple meaning or idiom dictionary. The dictionary could also include other languages and videotape segments of visitors from other countries using their native sign language. This digital video dictionary project has opened many doors to integrating technology and literacy into everyday learning and hope to inspire many deaf and hard of hearing children to improve their reading

APPENDIX A

System Requirements for Multimedia Computer and Estimated Costs

	Minimum	**Recommended**
Pentium processor or compatible	166 MHz	600 MHz or higher
System memory (RAM)	32 MB	128 MB
Free hard disk space for video capture	300 MB	2 GB
Hard Disk Requirements	**Recording time**	
Length of video clip	1 minute	30 minutes
High Video Quality	120 MB	3.6 GB
Internal or external 250 MB disk drive and/or	$150-200	
CD-Recorder	~$200	
Video Capture Card		
Matrox Marvel G400-TV	$299	
Video editing software		
Adobe Premiere	$549	
MGI VideoWave III	$99	
Video equipment		
Panasonic AG-456UP Video Camcorder	~$1,000	
Panasonic AG-1980P Hi-Fi Video Cassette Recorder	~$500	

Computer Center equipment

SMART board	$1,500 with SmarterKids Foundation grant
NEC VT540 Digital Projector	$4,000 with SmarterKids Foundation grant
Dell Inspiron 5000 Laptop	$3,000

APPENDIX B

Hardware
SMART boards
http://www.smarttech.com/

SMARTer Kids Foundation - technology grants for SMART boards and NEC digital projectors
http://www.smarterkids.org

NEC
http://www.nectech.com/presentationproducts/vt/index.htm

Dell
http://www.dell.com/us/en/gen/default.htm

Video Cards
Matrox
http://www.matrox.com

ATI All-in-Wonder
http://www.atitech.com

Dazzle
http://www.dazzle.com

Video Equipment
Panasonic
http://www.panasonic.com/

Sony
http://www.sony.com/

Software
Microsoft
http://www.microsoft.com

Mayer-Johnson
http://www.mayerjohnson.com/

Adobe
http://www.adobe.com/

MGI VideoWave III
http://www.mgisoft.com/

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