Integrating Visual Tools Online for Deaf Learners

Synthesis Paper

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Abstract

In this paper I will discuss the connection between the theory of behaviorism and the integration of visual online learning tools to achieve a Universal Design for Learning method which can reach a broad range of students (as illustrated by the difficult barriers encountered in the deaf and hard of hearing communities) to enhance the learning environment and aid in the development of social skills.
Visual Learning

Someone once said “a picture is worth a thousand words,” which is why it is easier to understand the concept when viewing a picture. A deaf learner learns better when given instructions in a form of a picture rather than to try to conceptualize instructions in written or auditory form. Visual learning helps the learner to process the information and integrate the concept with other senses, like emotions. The schema focused on here is that the concept the deaf learner perceives, helps develop a personal experience when making use of visual tools online. Feurestein describes two categories for educational development: learning through direct exposure, and learning through mediated exposure. Direct exposure produces behaviorism and mediated exposure produces stimuli with experience (as cited in Keane, 1984, p. 4). I will explain how exposure to mediated stimuli will develop a behavioral concept to enhance the learning process of the deaf learner through the use of visual tools.

When teaching online, instructors can influence how a deaf learner perceives the instructor through facial expressions, body language, and appearances. This sets the mood, either positive or negative, and the tone for the deaf learner when learning online. Though most deaf learners use a visual language called American Sign Language (ASL), which is a unique language in itself, visual tools can be just as unique and enriching for the deaf learner. To receive a better understanding of how a deaf learner communicates in their native language, here is an example of ASL and Standard English. When signing, the deaf learner may sign: GO STORE, YOU? In Standard English the deaf person is saying: DO YOU WANT TO GO TO THE STORE? When the online instructor is aware of this type of ASL language syntax, then the instructor can use online visual tools to help the deaf learner develop his or her learning concepts. In Moores and Martin’s Deaf Learners Developments in Curriculum and Instruction
(2006), deaf and hard of hearing (HOH) cultural studies and their way of life, their history, and their language is oftentimes referred to as an ethnic or cultural study. One of the cultural differences between the hearing and non-hearing communities is that deaf learners have been taught to respond well with visual communication and cues, which allows an easy transition to online visual learning.

**Behavioral Changes**

B. F. Skinner introduced the concept of “operant conditioning” citing that end users are affected by their outside influences, resulting as a prop for learning (as cited in Lacey, 2006).

Skinner correlated that behavior was linked to stimuli, responses, and feedback. Additionally, visual pictographs, videos, and animated characters can provide stimuli to a deaf learner, allowing the learner to develop higher order thinking and respond to online educational forums.

Previously it was understood that some students were limited in the way that they learned. Hannafin & Reiber, 1989, stated that “individuals have presumably limited processing capacity, respond to external stimuli based on the selective perception, transfer and decode selected stimuli to working memory, and so forth” (as cited in Jonassen & Land, 2000, 3). However, in modern technology, online communication such as video relay services (VRS), iPhones, iPads, and other visual handheld devices have opened doorways for deaf learners to communicate with the instructor and their peers.

According to Hyerle (1996) “Since the 1950’s, our culture has moved from the mechanical into the Information Age, from Newtonian to quantum physics, from a “hearing” culture into a highly networked, interactive “seeing” culture” (p. 13). In modern times, technology has become highly interactive by using things such as speech to text, universal visual
icons or cues, automatic computerized assessments, online multiple choices, automated voice recognition menus, and mobile devices which support the “seeing” culture.

Deaf Multimedia

W.J.T. Mitchell cites that visual media is always a mixture of sensory and semiotic elements, mixed or hybrid formations that combine sound, sight, text, and image. Even so, vision is not purely visual, for operations can be a coordination of optical and tactile impressions. Visual media is a revolving culture that can either be seen as wonderful or threatening (p. 16). The Deaf culture has evolved around mediated visual cues, such as mobile texting or color coded instructions. However with English used as the Deaf culture’s second language, their language could come across as garbled or limited, so limited texting would be acceptable just as much as mediated multiple choice answers would. Video blogging (VLOG) has become a popular visual tool for Deaf and HOH students, which would support virtual learning portals for deaf and hearing students alike. The VLOG program allows the deaf instructor to provide instructions for the classroom environment in addition to a written transcript which allows the hearing students to follow along in their native language in order to understand and complete the required classroom activities. The deaf student would benefit from the facial expressions and body language that the instructor is conveying, while at the same time, the hearing student would benefit from the visual text instructions that the instructor is providing. However, live video conferencing could create a challenge for the hearing student who does not understand sign language, as real time text would not be available.

Visual Behavioral Learning
To support the behaviorism learning theory, Boise State University’s program called “Second Life” connects students by remote computer to a virtual world where they can interact with one another which helps students to develop and strengthen social interaction skills. Furthermore, students with disabilities are linked with a group called Virtual Ability, Inc., a “Second Life” program that has provided the opportunity for Deaf and HOH learners to experience a full range of virtual learning such as role playing, visual and tactile instructions, color-coded visual aids, real-time peer interaction, and behavioral concepts. In the role-playing activity the deaf student would learn to solve problems, develop concepts, and strengthen language skills – thus supporting the behaviorism theory. Carlisle (2009) supported the third theory in social learning, which consists of a synergy between the learner and environment – this supports higher order thinking skills (p. 2). For instance, the hearing culture may hear or detect the vocal inflections of the speaker that would help distinguish words or stress the meaning of the word. The deaf culture only has visual cues to rely on. These visual cues include movement, color, texture, and shapes. To incorporate social learning activities in Second Life, the deaf learner has an opportunity to explore personal boundaries, discuss which behaviors are acceptable, have a sense of collectivism, develop tactfulness rather than being direct or blunt, and become involved in an educational integration with their peers.

Dawley (2009) commented that “students are learning through technology itself that they have a role to play in the development of knowledge” This has a profound impact on how deaf learners would associate, learn, and exchange information (p. 110). When deaf learners are engaged in role-playing activities, it helps the deaf learner develop high-order thinking skills by connecting with other like-minded individuals. Second Life breaks down the barriers of isolation or social inconveniences and allows the deaf learners to be a part of a virtual community that
would support their learning environment and allow them to socialize and make friends worldwide. Visual tools such as textual cues, color-coded hot spots, cursor movements, graphical emphasis, and other visual graphics help the deaf learner interact in virtual social environment for group discussions, to develop higher order thinking, and to communicate his or her learning styles to the instructor and peers.

Multimedia Support

Deaf learners benefit from using visual learning tools and literacy. In the book, *Visual Tools for Learning*, Hyrel (1996) states that “visual tools are ever more inclusive to showing potential for transforming how ideas, knowledge, dialogue, and meaning are created, communicated, and assessed” (p.vi). When deaf learners use visual tools in a mediated format, the student is encouraged to think beyond the traditional setting of a classroom. As an illustration, using mediated visual tools helps break down the communication barriers that deaf learners face and helps them focus on learning the concepts by receiving visual feedback.

As the deaf or hard of hearing student benefits from each achievement and receives positive feedback from the instructor, it is then that the student receives the next level of instruction. This would support Q. Faryadi’s (2007), “Behaviorism’s theory of positive reinforcement (rewards) deals with the concept of motivation” (p. 6). When deaf learners observe the behavior of a mediated format, it helps the deaf learner to develop a mental process of how a concept occurs, for example accounting or science that consists of behavioral patterns that are consistent.

Erting quoted “Deaf teachers who often were responsible for rekindling curiosity and a desire for learning through information not previously accessible. They wanted children there to
have this experience in their formative years so they would develop the positive self-image and
eagerness to learn important to their future academic and linguistic success” (Erting, 1985). Deaf learners are motivated by positive reinforcements that lead to an ongoing progression of learning. Negative reinforcements can hinder the deaf learner to stay immobile in his or her state of development.

Overcoming Mediated Barriers

Educators can design positive behavioral support to help increase the student’s quality of life and education (Falvey, 1997). Smith and LeConte discuss the challenges of meeting multiple student needs and learning styles. Oftentimes instructors attempt to “retrofit a situation or environment to meet the needs of a specific student or group”, but in reality, each student receives information and learns differently. The Universal Design for Learning (UDL) approaches innovative methods to teach a diverse group of students. This also includes applications of technologies, instructional networks, and manipulation of digital content.

The civil rights movement of persons with disabilities such as Rehabilitation Act of 1973, the Americans with Disabilities Act of 1990, and the Individuals with Disabilities Education Act of 1997 has helped create a UDL educational approach, without singling out a student with disabilities, and meets the needs of the students. Smith and LeConte discuss that instructors “do not need to know how to operate a vast array of assistive technology devices and services, but they should be aware of how they and the students can access them – as well as where and how to receive training in these technologies.” In addition, teachers and support personnel should have access and training for technologies that allow media to be transformed in various ways.
such as text-to-speech, text-on-video, sound maps, and so forth. This will enable teachers to incorporate the appropriate educational technology to promote a better environment for learning.

To support this, The Universal Design for Learning encourages teachers to incorporate various strategies in educating all students (Smith, & LeConte, 2009). The framework would help educators to identify student strengths, needs, and preferences, adjust for curriculum and classroom barriers by offering multiple avenues to express and engage in assistive technologies. Based on documented research, “the effective use of technology does increase students’ motivation; time on task; amount of work completed; critical thinking, research, and organizational skills; self-confidence; and interest in content” (Cradler, 2002; Heafner, 2004).

Two of the determining factors were; how well was technology applied, and what context it was used in. Four barriers affect integration of technology into the curriculum for deaf and hard of hearing students. These barriers are; time, a lack of support both technologically and professionally, budgetary concerns, and the inability of new teachers to affect instructional strategies as opposed to their more experienced peers. (Moores, & Martin, 2006, p. 234).

Conclusion

Educating instructors about the Deaf and HOH cultures and the barriers they face will help instructors to use positive feedback to help the student develop concepts and problem solving skills, thus improving the learner’s self esteem. Integrating technology that supports mediated visual learning tools will help deaf learners to develop social skills and achieve the higher education that will give them the tools they need to enhance and enrich their lives. This has been put into practice at Boise State University’s program “Second Life” which helps deaf learners develop concepts through role-playing and mediated instructions, and supporting the
learning theory of behavioral interactions. The use of technology for visual learning helps break through the barriers of isolation that affect both hearing and non hearing students and brings education closer to achieving a Universal Design for Learning that reaches a broad range of students.
References:


