

Technologies that Capitalize on Study Skills with Learning Style Strengths

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This article addresses the tools available in the rapidly changing digital learning environment and offers a variety of approaches for how they can assist students with visual, auditory, or kinesthetic learning strengths. Teachers can use visual, auditory, and kinesthetic assessment tests to identify learning preferences and then recommend students use technological tools that match those strengths. To assist in this process, new software- and hardware-based digital study tools will be profiled and categorized as visual, auditory, and kinesthetic resources. It is hoped that this will help generate new thoughts and approaches for educators and learners.

FOCUS ON STRENGTHS NOT JUST WEAKNESSES

How many students today graduate from college knowing, using, and celebrating at least one of their learning strengths? Today, when students struggle in learning, schools focus primarily on assessing, identifying, and developing a profile built around learning weaknesses. Labeling students, however, with a title that identifies their learning deficiencies is necessary to identify academic interventions.

The best-case scenario is that early attention to the learning problem will eventually allow students to shed the label. However, if the problem is not fixed early, students may carry these labels throughout their school years and even beyond. If these labels are a life sentence, perhaps it should be mandated that before any student is labeled with a weakness, he or she must be first labeled with a strength. The idea is to get students and their teachers to focus first on student strengths, before addressing weaknesses. In fact, teaching a student through his or her strengths should be the first intervention considered for remediation of weaknesses.

If we look closely enough, some disability weaknesses have a strength embedded in them. An interesting example of this can be applied to students that are labeled with ADD (Attention Deficit Disorder). Psychologist George Dorry, executive director of Denver's Attention and Behavior Center (as cited in Freed & Parsons, 1998), states that ADD learners have strengths in a number of areas. He states that they are right-brained, visual learners that process information randomly. Additionally they are creative, can do difficult math problems in their heads, and are excellent speed-readers. Unfortunately, Dorry observes that these strengths rarely stand out and these students struggle in school because educators tend to be left-brained, detail-oriented, auditory processors who view visual learners as flawed. What would happen if educators began helping ADD students by first focusing on their strengths?

Clifton and Nelson (1992) highlight the idea of focusing on strengths in order to overcome weaknesses through the story of the Chinese table tennis team that won the gold medal during the 1984 Olympics. A reporter asked them how they were able to win the Olympic title and to continue to dominate the sport. During the interview, the team indicated that the secret to their success was that they spent eight hours a day perfecting their strengths, which overwhelmed their weaknesses. They pointed out that while their best player had an extremely weak backhand, his forehand was so fantastic he could not be beaten.

ASSESSING VISUAL, AUDITORY, AND KINESTHETIC STRENGTHS

One of the easiest ways to assess learning style strengths is to begin with sensory modalities. These modalities have to do with our five senses: sight, hearing, touch, smell, and taste. These are our major sources for obtaining information. Although there are five senses, the senses of smell and taste are generally overlooked in the learning process. In most schools, the primary learning senses are visual, auditory, and kinesthetic.

Visual learners are those who tend to learn and recall information best when it is presented visually. Auditory learners are those that learn best by using the sense of hearing. Kinesthet-

ic learners are those that learn best by using the sense of touch. They may learn best through the hands-on haptic sense in which they are actually touching or manipulating material with their hands. They may also learn best by being actively involved in their learning. This process of learning while in motion is more accurately classified as kinesthetic (Howell, 2005). For the purpose of this article, both haptic and sense of motion are classified as kinesthetic.

To make the sensory modalities come alive in the classroom, instructors should employ the following four-step process:

1. Instructors should first identify their own learning modalities. There are numerous online modality assessments that are automatically scored and can quickly identify one's modality strengths. A link to a review of a dozen sensory assessments is given at the end of this article in the resources section.
 - a. Since the test-retest reliability of most sensory modality instruments is often suspect, it is recommended that more than one test be taken.
 - b. A more accurate categorization of learning modalities is to identify both the primary and secondary sensory preferences. Six sensory learning strength profiles emerge: visual-auditory, visual-kinesthetic, auditory-visual, auditory-kinesthetic, kinesthetic- auditory, and kinesthetic-visual (Markova, 1996).
2. After identifying their own learning strengths, teachers need to take time to reflect on how their learning preferences impact their teaching. For example, a teacher with a primary auditory preference might rely on lectures. An auditory teacher might consider how his or her own learning preferences and consequent teaching styles affect students with visual or kinesthetic preferences.
3. At the beginning of a course, teachers should ask students to identify their learning strengths by taking an online sensory modality test. Upon receiving their results, students would write a couple of paragraphs indicating how they will apply their sensory strengths to study for this course.
4. A class brainstorming session would allow students to share and identify tools and strategies that are useful for each of the sensory

strengths. Students will gain new ideas about how to study from this session. Teachers will also gain insight into the learning preferences of their students.

USING TECHNOLOGIES THAT CAPITALIZE ON LEARNING STRENGTHS

Technology is a resource that allows students with disabilities to catch up to their peers. From laser surgery to hearing aids to prosthetics and electric wheelchairs, technology has helped provide a more level playing field for those with sensory weaknesses. What if technology could be viewed instead as the great enhancer? In this case, technologies that allow students to capitalize on their strengths are recommended. What follows are a number of technologies that educators and students may find beneficial in the learning process for each of the sensory modalities.

Visual Resources

Visual Search Engines. As an instructor, I encourage visual learners to use search engines that organize information visually. This is especially true when introducing a new topic. Search engines such as Grokker, KartOO, Webbrain (PC only), and Girafa, a visual outline of how the topic is categorized. This is incredibly useful in helping visual learners be more specific with their search terms before using a more accurate engine like Google to finish a search.

Visual Thesaurus. *Visual Thesaurus* (<http://www.visualthesaurus.com>) has over 145,000 English words visually mapped. Find exactly the right word with this tool that combines definitions and synonyms in a visual format that is both intuitive and customizable. On the visual map that appears, the closer a word is to the target word, the more strongly they are related in meaning. Controls for nouns, adjectives, verbs, and adverbs on the right of the screen allow for more detailed results. For students that overuse the word *cool*, have them type this into the visual thesaurus and challenge them to choose more suitable replacements.

Reading. *Acereader* (<http://www.acereader.com>) is an award winning software package developed to increase reading speed and retention. The program accomplishes this by teaching you to control the

focus and positioning of your eyes while removing the opportunity to subvocalize words in your mind as you read. Built-in tutorials help visual learners improve the speed of their eye fixations (picking up words faster) and increasing the breadth of their eye span (reading more words in each fixation). Users can choose to see the text one word or phrase at a time, in a font style, size, color, and background color of their choice. The result is that it pushes users to read faster. It is amazing how much it increases comprehension as it forces the user to focus more intently on the words as they flash on and off the screen.

Auditory Resources

Books. For students who are auditory learners, there are many audio books available. A leader in this area is *Audible* (<http://www.audible.com>) which provides users with the resources to listen to books on mp3 players.

Pronunciations. *Merriam-Webster Dictionary* (<http://www.m-w.com>) is an exemplary online resource that allows users to listen to the pronunciations of most words. In the case of words that have more than one accepted pronunciation (e.g., piranha), more than one pronunciation is given.

Voice Recognition Software. Voice Recognition programs do a fantastic job of converting speech to type. *Dragon Naturally Speaking* is an easy to use speech recognition software can be set up in as little as five minutes with accuracy increasing up to 99%. *Dragon* is compatible with virtually all Windows software and will navigate between the web and your computer with simple voice commands. (PC only). Macintosh users will want to try *ViaVoice*, which is IBM's speech recognition software. Like *Dragon*, *ViaVoice* also allows you to dictate, edit, navigate, and surf the internet with your voice.

Audio Recorder. Students may record class lectures for review later. Attaching a microphone accessory to an iPod can also allow students to record class lectures.

Kinesthetic Resources

Digital Note-taking. *Smart Pen* by Anoto. This digital pen is a powerful digital computer that fits into the palm of a hand. It con-

verts written words and drawn images into a format that is downloaded to a computer when the pen is returned to its cradle. For best results, use the pen with an ink cartridge on the special digital paper to create both a paper copy and a digital copy of your writings and drawings (<http://www.destinyplc.co.uk/flash/#!/home/intro/>).

OneNote. An application which is designed to assist student note taking and research by integrating multiple file formats (audio, video, text, images) into one program. *OneNote* is designed to improve the organization capabilities of a computer by incorporating functions like note flags, timestamps, scope searches, and resizable page tabs. To get the most from this software, it is recommended that it be used on the new tablet style PCs which allow you to take notes with a stylus right on the screen, just as if you were taking notes on a piece of paper. Microsoft's optical character recognition software then translates the handwriting into text. (PC only) (<http://office.microsoft.com/en-us/FX010858031033.aspx>)

Audio Recorder. Kinesthetic learners should record and listen to these lectures later under more active conditions such as walking or moving around in their room.

Visual, Auditory, and Kinesthetic Resources

Some resources are good for more than one type of learner because they provide benefits for more than one modality.

Podcasts. The most common types of Podcasts available are audio and video Podcasts. Audio Podcasts are MP3 audio files that can be played on a MP3 player like an iPod or on a computer using iTunes. Kinesthetic learners can benefit by listening to audio lectures while in motion. Video Podcasts can benefit both auditory and visual learners and can be played on a video iPod or in iTunes. The easiest way to make a Podcast for a class is to create a video file in *Windows Movie Maker* (PC) or *iMovie* (Mac). Upload the finished *Windows Media* (.wmv) or *QuickTime* (.mov) files for free to <http://Podomatic.com>. Those new to podcasts will first want to go to iTunes and select the Podcasts option on the left side of the screen which can be viewed at no cost.

Smartboards (aka Electronic Whiteboards). Smartboards com-

bine the flexibility of a whiteboard with the power of a computer. An LCD projector is first used to project the computer screen onto the smartboard. The smartboard converts the computer screen into a touch screen. It is as if you had a 100" touch screen monitor in front of the classroom. Touch the projected image with your finger, just as if you had clicked it with your mouse. Quickly double tap on anything on the screen, and the computer reacts just as if you double clicked it with the mouse. Visual and auditory demonstrations can be made by both teachers and students. Kinesthetic students can be asked to go to the smartboard and give a hands-on demonstration.

Some schools don't have the funds available for smartboards that can cost \$3000 or more. Johnny Lee at Carnegie Mellon University found a way to use a *WiiMote*, the remote control device for Nintendo's *Wii*, to create a \$100 smartboard.

CONCLUSION

Focusing on strengths is the way most world-class athletes and musicians become highly productive. However, unless you are one of the few autistic savants with a highly refined talent, most labeled students are expected to spend the majority of the day working on those weaknesses. It is difficult to stay excited and productive in this type of environment. What if world-class athletes and musicians were required to wear a label that identified their top weakness, and then spent the majority of the day working on that weakness? How productive and positive would they be?

From a corporate perspective, Marcus Buckingham and Donald Clifton (2001) wrote a book called *Now, Discover Your Strengths* in which they brilliantly showcase to corporations the idea of focusing on each individual's strengths at every level of a company. Their research was culled from over two million open-ended surveys with leaders and highly talented individuals in a wide variety of fields. An analysis of this research revealed thirty-four specific strengths. The *StrengthsFinder* assessment was developed to identify the top five strengths each individual has from this pool of 34 possible strengths. No scores are given as a result of taking this assessment. Instead, each

individual receives an ordered listing of his or her top five strengths. Research has shown that the most successful individuals in any endeavor are those that focus on their top strengths (Buckingham & Clifton, 2001).

If this idea of focusing on strengths works for world-class athletes, musicians, and businesses, it should also work in the world of education. The Internet is literally exploding with new resources that can help students succeed in an even bigger way if they choose to use those technological tools that best match their strengths. By empowering your students to study with their strengths in mind, you will not only be reaching more students in your classes today, but you will be empowering them to succeed for the rest of their lives.

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