

The Effects of Visuals Within Classrooms

Teachers around the world struggle to meet every student's needs on a daily basis, but many times those needs can be met through the use of differentiation. This term describes the ways teachers can meet their students where they are individually on an academic scale. Oftentimes this can be seen through teachers giving several options for students to complete an assignment. Such as asking students to retell a story through a written summary, drawing a picture, or acting out in a video, and so on. The most common option students choose is a visual option, such as drawing a picture. Visual learning gives students the opportunity to recollect and put together the picture in their mind. Furthermore, as society has progressed, teachers and scholars have begun to focus on the effects of visuals within the classroom. Visual aids have been used within the classroom for decades in order to better prepare students through a variety of learning styles; furthermore, posters, videos, and online graphics all have different positive effects on students academically as well as through motivation, confidence, and engagement.

Different Types of Learners

Furthermore, all students learn differently within the classroom, which is why I must acknowledge the four other most common types. The main four types are visual, auditory, reading or writing, and kinesthetic learners. This is also known as the VARK model, which was created by Neil Fleming in 1987. This model was created to help teachers tailor their instruction for every student with different and unique preferred learning styles (Teaching Channel). Ultimately, it was created to help students learn and understand their preferences within the classroom. The first style of learning and main focus type within this essay is visual learning;

“Visual learning is defined as the assimilation of information from visual formats” (Raiyn). Examples of this can include charts, graphs, pictures, and more. Overall, these types of students prefer to intake information visually such as images versus written explanations or words.

Secondly, is auditory learning, which is done through spoken or audible information. This is often seen through lectures, podcasts, recordings, and group discussions. The main benefit of auditory learning is that it can be recorded and replayed whenever the student feels the need to go back to the information taught. Therefore, supplying the student with information at any and all times. Auditory learning consists of talking things through in order to find an answer or explain their understanding. Overall, students who prefer auditory learning prefer to intake information through spoken words or sounds.

Next, the third main type of learning is reading and writing; “Students who have a reading/writing preference prefer information to be presented using words” (Teaching Channel). Such as through textbooks or written instructions which is closely followed by learning through writing and some examples are answering writing prompts or writing notes. This is seen as the most old-school style of learning due to its easy ability to lack technology if needed. In short, the learning style of reading and writing is the simplest due to the fact that it is convenient for educators to implement.

Lastly, kinesthetic learning is very hands-on; “Kinesthetic learners learn best when they can use tactile experiences and carry out a physical activity to practice applying new

information” (Teaching Channel). Some examples are experiments, simulations, and oftentimes field trips. These students require personal experiences in order to fully understand and grasp the topic being taught. Overall, many STEM schools are geared towards kinesthetic learning due to the amount of materials typically supplied within these types of schools.

All four types of learning can be found within students in any classroom, but overall, visual learners are going to be the most common. Therefore, my research has been narrowed down to focus solely on the effects of visuals within the classroom due to its high numbers compared to other learning styles. On the other hand, one thing to acknowledge is that all four types of learning, as well as others not mentioned, are important when it comes to helping students succeed within the classroom.

Why Visual Learning

Moreover, a wide variety of classroom tools can fall under a visual category, which makes it hard to narrow down the effects of specific types of visuals. Therefore, we must begin by understanding how visual learners work best. Scholars at Bay Atlantic University shed light on visual learners specifically how they learn; “Visual learners learn best when interacting with the information presented as visual images such as photos, graphs, diagrams, etc. These learners can quickly remember faces and places, as they manage to recollect details by picturing them in their minds”. Consequently, these visual learners are able to gather information no matter where they are as long as they can see. Anytime a student may spend in an academic setting, gives them the

opportunity to learn additional information through looking around them, since classrooms are often filled with visuals. Oftentimes, this is seen as the reason why a majority of people identify as visual learners. According to The National Library of Medicine, 65 percent of people within the United States are visual learners. Therefore, my research has been narrowed down to visual learners only, since a majority of people fall under that category. Another study, conducted by the *Index of Learning Styles*, sheds light on its findings; “Results indicated that the majority of the learners were Visual (n=15) and the remaining were categorized as Verbal (n=7)” (Pallapu). This secondary study supports the previously mentioned study, conducted by The National Library of Medicine, that over half of the sample pool are visual learners or “65 percent” (Jawed). Although many people identify as visual learners, scholars often wonder what causes this choice. Oftentimes it is blamed on our brain activity and how it functions. Additionally, the visual sense is responsible for roughly 90% of brain stimulation, according to researchers at Pennsylvania State University (Osa). Several studies have proven that visuals are the most influential type of learning for students because of its brain stimulation; furthermore explaining why a majority of people within the United States identify as visual learners. Consequently, this essay will dive into specifically the effects of visuals such as posters, videos, and online graphics within the classroom and standardized testing.

Why Standardized Testing Is Used

Standardized tests are used widely within schools in the United States. According to The National Education Association, educators began inventing a formative assessment for students in 1838, but nothing was implemented until 1840. During this time, oral assessments began

turning into written assessments. The focus on equality and equity in education during this time began to increase greatly. Ultimately, formative assessments became the solution to inequality.

The SAT was founded as the Scholastic Aptitude Test by College Board in 1926 (National Education Association). By 1930 multiple-choice tests were administered in nearly every school across the country due to the creation of this standardized and formative testing system. The primary purpose of standardized testing is to measure every student's academic performance on a standardized and conventional, but sliding scale. In order to compare students scores from various parts of the state or country, they are required to make standardized tests extremely fair; “To ensure that assessments are rigorous, fair, and of high quality, states must submit evidence to the Department of Education that their assessment system meets statutory and regulatory requirements” (SCILLSS). Therefore, by requiring states to submit evidence proving equity and equality within their testing, students are guaranteed an equal opportunity within the classroom. Ultimately, standardized testing is used in order to confirm every student within the United States is given an equal education under several laws such as the Equal Education Act passed in 1974.

Effects of Visuals in Standardized Testing

In addition, visuals are highly controversial when being used by standardized testing. There are many features that can be altered such as color, brightness, size, and more. Visuals are used in a wide variety of tests and often come with accommodations for every student. One common accommodation is giving the student the opportunity to change the screen color or text color. This makes it easier for the student to adjust the assessment to their needs in order to give them the best opportunity to feel confident and succeed. According to The National Library of

Medicine, visuals have increased academic performance within standardized tests significantly since it can improve a student's understanding since it gives them an alternative model of communication as well as opportunity for recollection. Another study was conducted by a second-grade teacher, Maria Phillips, with her class of fourteen students. Phillips noticed her students were not doing well on their vocabulary tests, so she decided to implement visual aids into her lessons in hopes that they would be more interested and engaged as well as have their test scores increase. When comparing the student's pre-test to their post-test, it was easy to see that the visual aids had positively impacted her student's test scores greatly; "Results indicated that the intervention improved all participants' scores by 15%" (Phillips). This secondary study helps support my findings that visuals do affect students' academic performances during standardized testing. Phillip's study gives an in depth example of how visuals impacted her students positively, specifically with their vocabulary test. Since several studies have given detailed studies as examples, we are able to see the connection between visual aids and the increase of student performance on standardized testing. Overall, visual aids have been proven to positively affect students academically on several occasions through standardized testing scores as well as basic in-class quizzes.

One thing to acknowledge is that students who are visually impaired will not be given the same equal opportunities as other students when it comes to visuals used on standardized tests. The goal of standardized testing is to make it equal for all students but this is not always feasible. This is often why standardized testing does not use visuals within all of their questions. Ultimately, today's society does its best to cater towards every individual student's needs, but

sadly it is not always possible which must be acknowledged.

Impacts of Posters

Furthermore, the most common form of visuals used within today's classrooms is posters. These can be seen in classrooms going back several decades, specifically because of the lack of technology previously. Now they have transformed into bright, colorful, and eye-catching for everyone walking by. According to The International Poster Gallery, Lithographic posters were first introduced during the late 1800s, typically in red, blue, or yellow to grab people's attention when passing by. Although there are many studies dating back several decades, most recent and relevant studies are showing that posters are effective. Nicholas Rowe, a researcher at The National Library of Medicine, conducted a study that found 39% of people thought that academic posters were a "good-medium" when used solely academically. This study focused on the effectiveness of knowledge transfer through test scores, which greatly supports my thesis that posters are effective within the classroom. The post test results supported that posters helped several students improve academically. Ultimately, several studies have proven that posters benefit students greatly within the classroom

Additionally, current educators have also stated that posters help enhance the learning environment and process through the positivity stemming from posters (Osa). Specifically, colorful posters with fun designs were mentioned as the most effective. Teacher requests and reports are some of the most important data when discussing the effectiveness of posters since they are able to see the changes within the student's confidence, engagement, as well as their

academic performance on a day-to-day basis. Students spend eight hours at school, five days a week, which gives plenty of time for educators to notice the lack of engagement or high test scores, implement visuals, and perform a post-test with an analysis. Overall, posters have been shown to have various effects on students within the classroom, ranging from academic achievements such as test scores as well as mental health benefits created from the positivity and brightness that posters add to a classroom environment.

Impacts of Videos

Moreover, videos have become a more common form of visuals used within the classroom because of the increase and growth of technology. Some examples that many teachers often use within their daily lessons are TED talks, movies, and music videos. All grade levels are able to use videos within their classroom since it is adaptable to all ages depending on the content being played as well as the amount of content played. According to a study conducted by The National Library of Medicine, short videos were proven to increase students' final test scores by 9% as well as improve engagement by 24.7% (Zhu). This study focused on three separate video lengths and how they compared. The shorter video, six minutes, got more engagement compared to the twelve-minute video. Most students have short attention spans, which makes learning difficult within the classroom. Therefore, teachers are forced to find intense attention-grabbing lesson elements in order to keep their students engaged, which often ends up being short videos due to their effectiveness.

Additionally, videographers have the opportunity to change or distort the lighting within a video which can change the way the audience views and reacts to it; "Light hits the eye

triggering electrical impulses to travel through the most powerful information conduit to the brain wherein the brain must quickly filter information, compare that information to prior knowledge, and respond” (Miller, 2021). Videos have an interesting way of impacting and affecting the brain, therefore making them incredibly effective within the classroom. Oftentimes, videos are just seen as entertainment in the classroom but they truly are a learning tool through its effects that videos cause in our brains. Additionally, many students have begun to speak up about their preferences within the classroom; “This white paper has shown that many students indicate that they like learning from videos, empowering them to learn flexibly and independently, leading them to request online content in their courses' ' (Carmichael). Technology is transforming and growing every day, making it extremely necessary for educators to look for new ideas as well as changes they can implement in order to better prepare their students academically. Overall, videos have been proven to be very effective through test scores as well as comparisons between video length; furthermore, the results of engagement as well as student requests.

One thing to acknowledge throughout this research is that audio may change how impactful the video is on the audience. Therefore, some studies may be skewed due to the mix between auditory and visual learning styles. Since not all videos contain audio, it can be difficult to determine their individual effects on students' academic performance. This is where the difference between videos and online graphics starts. In short, videos can be highly effective within the classroom, but studies can be skewed due to the mix between auditory and visual learning.

Impacts of Online Graphics

On the other hand, some scholars believe online graphics and videos fall under the same category. Although they have many similarities, both types of visuals have different effects due to the movement and sound that videos have, and online graphics do not have; “The online platform of learning requires the brain to rapidly switch between tasks, consuming the metabolic energy, and time at the neural level” (Jha). Although some online graphics can move like a boomerang, a short repeated clip, they often do not contain sound.

Furthermore, since online graphics force the brain to switch between tasks frequently, students are more likely to recall the information presented within the graphics. Connie Malamed, the e-learning Coach, shares information about the picture superiority effect; “The picture superiority effect states that people generally have a better memory for pictures than for corresponding words. That is, pictures are more memorable than their verbal counterparts”. The pictures that she is referring to are images on a school sanctioned site such as Moodle for Trine. Many other campus’s use sites such as Canvas, Blackboard, Adobe, Google Classroom, and several other less common sites. All of these different sites are able to display the same online graphics, making them compatible and easily comparable to one another when researching. Therefore, the type of online graphic is the most crucial determining factor when it comes to the effectiveness of the visual aid; “However, video is seen as having advantages for engagement in some specific ways, notably in widening participation, emotional engagement and overall course engagement” (Carmichael). Engagement is one very crucial way to decide if the lesson was

effective or not. If a lesson is not exciting or interesting to students then they will not want to learn the content and ultimately not participate within classroom activities either; “Furthermore, studies have shown that they can contribute positively to both student confidence, motivation and performance levels” (Carmichael). Teachers are required to engage with their students in order to confirm that their students are understanding the information and therefore where they are performance level wise. Ultimately, since online graphics have been proven to benefit students academically as well as mentally, educators should focus on incorporating them into their online classroom sites.

In addition, Carmichael’s study also highlighted the effectiveness of online graphics at the University level; “In each of these ways, videos are already showing high levels of demonstrable impact in higher education”. Therefore, educators must acknowledge the benefits of online learning starting at grade school all the way up until the University level. By acknowledging these benefits, they are more likely to tailor their lessons and online sites towards their student's individual needs. Ultimately, online graphics propose different effects on students within the classroom compared to traditional videos; furthermore, online graphics enhance student learning, which is seen through students' confidence levels as well as academic performance scores.

Similarities

Correspondingly, all three of these categories connect through their positive impacts on students within the classroom, which can all be shown through increased test scores after visuals were implemented. When discussing test scores, I focused on standardized testing since it gives an even playing field or opportunity to all students in the United States. Therefore, the data being

collected was unbiased and regulated by the government due to strict testing rules that schools must abide by. Additionally, student engagement has also been proven to be increased when visual elements are used within the classroom, which heightens the importance of the use of visual aids. Without student engagement many teachers would struggle to check for students' understanding without repeated testing being implemented. Several other benefits follow visual aids, but increased test scores as well as engagement were the two most mentioned throughout my research. One thing to acknowledge is that data can always be skewed due to schools not always following standardized testing rules. Additionally, there is not a specific scale to test student engagement so every individual teacher may have a different definition, but typically are all roughly the same. Overall, these three categories cross over in many paths in life, but they have all been proven through test scores as well as engagement that they positively affect students' education and furthermore their ability to succeed.

Where to go next

With all of this in mind, I still have several unanswered questions and areas to explore within my research. Some of those questions being; How do these effects differ between grade levels, specifically elementary versus high school? Does color and size change the effects of the visuals? How much do videos with audio impact students compared to videos without audio? Overall, what is the most effective type of visual aid used within a classroom to benefit students academically on a daily basis? What are other and/or better ways to compare the impacts of posters, videos, online graphics, and more visual formats? If given the opportunity to continue my research, I would focus on these questions when deciding my next steps.

Conclusion

In conclusion, visual aids have been used in classrooms for decades because of their high impact, which has been seen on students through standardized testing scores. Posters, videos, and online graphics specifically have been proven to be effective within a classroom setting, furthermore pushing educators to incorporate visual elements into their lessons and classroom environments. Through this research, I hope educators can see how beneficial it would be for them to tailor their lessons specifically for the needs of the students within their classroom. Overall, since studies show a majority of people within the United States are visual learners, as educators we must pay attention to the needs of our students and adapt our lessons accordingly in order to better prepare students. Furthermore, in order to better prepare our students, this begins with focussing on the effectiveness of our various teaching styles within the classroom on a daily basis.

Works Cited

Carmichael, Michael. Assessing the Impact of Educational Video on Student Engagement,

Critical Thinking and Learning: The Current State of Play”. *Sage Publications*.

<https://us.sagepub.com/sites/default/files/hevideolearning.pdf>

Jawed, Soyiba. “Classification of Visual and Non-visual Learners Using

Electroencephalographic Alpha and Gamma Activities”. *National Library of Medicine*. 7 May 2019. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6513874/>

Jha, Amrit Kumar. “The Neuropsychological impact of E-learning on Children”. *National Library of Medicine*. 13 July 2020.
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7357501/>

Malamed, Connie. “How to Use Graphics To Improve Learning: The Picture Superiority Effect”
The ELearning Coach, 2010.

<https://thelearningcoach.com/media/graphics/using-graphics-to-improve-learning/> Miller, Elise.

“The Impact of Visual Literacy in Secondary Science Education” *Spark Repository*,
Bethel University. 2021.

<https://spark.bethel.edu/cgi/viewcontent.cgi?article=1733&context=etd>

National Education Association. “History of Standardized Testing in the United States” 25 June
2020.

<https://www.nea.org/professional-excellence/student-engagement/tools-tips/history-standardized-testing-united-states>

Osa, Justina. “The Role of Posters Within Teacher Education Programs” *Education Libraries*,
Vol 27, Pennsylvania State University. 2004.

<https://files.eric.ed.gov/fulltext/EJ983927.pdf>

Pallapu, Prasanthi. "Effects of Visual and Verbal Learning Styles on Learning" *Institute for*

Learning Styles Journal, Vol 1, Auburn University. 2007.

<https://www.auburn.edu/academic/cla/ilrj/Journal%20Volumes/Fall%202007%20Vol%201%20PDFs/Visual%20Verbal%20Learning%20Styles.pdf>

Phillips, Maria. "The Effects of Visual Vocabulary Strategies on Vocabulary Knowledge"

Marshall Digital Scholar, Marshall University. 2016.

<https://mds.marshall.edu/cgi/viewcontent.cgi?referer=&httpsredir=1&article=1992&context=etd>

Raiyn, Jamal. "The Role of Visual Learning in Improving Students' High-Order Thinking Skills"

Journal of Education and Practice, Vol.7, No.24, 2016.

<https://files.eric.ed.gov/fulltext/EJ1112894.pdf>

Rowe, Nicholas. "What impact do posters have on academic knowledge transfer? A pilot survey

on author attitudes and experiences" *The National Library of Medicine*, 8 Dec. 2009.

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2795740/>

SCILLSS. "Federal Requirements for State Assessments" SCILLSS Partners. 2017.

<https://www.scillsspartners.org/federal-requirements-for-state-assessments/#:~:text=To%20ensure%20that%20assessments%20are,meets%20statutory%20and%20regulatory%20requirements.>

Zhu, Jia. “The impact of short videos on student performance in an online-flipped college

engineering course” *The National Library of Medicine*, 22 Sept. 2022.

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9510322/>

“A Brief History of the Poster” *The International Poster Gallery*. 11 Nov. 2023.

<https://www.internationalposter.com/a-brief-history-of-the-poster/>

“Show, Don’t Tell: What it Means to Be a Visual Learner” Bay Atlantic University. 24 Jan. 2022.

<https://bau.edu/blog/visual-learner/>

“4 Types of Learners in Education” *Teaching Channel*. 3 Jan. 2023

<https://www.teachingchannel.com/k12-hub/blog/4-types-of-learners-in-education/>