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REVIEW ARTICLE

Using YouTube Video Sharing to enhance Classroom Learning or Therapy Session for Special Needs Students (with Special Focus on Autism)

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ABSTRACT

This short article explores the benefits of using YouTube Video Sharing (YTVS) as an educational tool for students with special needs, particularly those with Autism Spectrum Disorder (ASD). Grounded in neuroscience principles, YTVS enhances multisensory learning by integrating visual and auditory stimuli, which facilitates better comprehension and retention. The approach also leverages repetition to promote neuroplasticity, supports individualized instruction, and increases student engagement through dynamic and personalized content. Practical steps for implementing YTVS in educational and therapeutic settings are discussed, highlighting its effectiveness in creating a more inclusive learning environment.

Keywords: *YouTube Video Sharing, Autism Spectrum Disorder, Multisensory learning, Neuroplasticity, Individualized instruction*

1. AN INTRODUCTION TO YOUTUBE AS AN EDUCATIONAL TOOL

Video-sharing platforms are increasingly used to share difficulties with disabilities and accessibility barriers" (Niu et al., 2022, p. 1). Since the launch of YouTube EDU in March 2019, this platform has proved to be of potential educational value (Chia & Lim, 2017). Using YouTube Video Sharing (YTVS)

as an educational tool for students with special needs can be highly beneficial (Tahat et al., 2022), grounded in principles of neuroscience. Understanding how the brain processes visual and auditory information (Stein et al., 2020), how it learns through repetition (Ali, 2022; Tahat et al., 2022), and how it benefits from multimodal inputs (Vedula et al., 2017), provides insight into why this method is particularly effective.

2. BENEFITS OF YOUTUBE VIDEO SHARING

According to Tahat et al. (2022), "there is a positive relationship between YouTube videos *(or video sharing)* and e-Learning among disable individuals. Moreover, the quality, ease of use, and texts in the video also contribute to improving the disabled people's learning experiences. Thus, the results highly supported technology acceptance and usage during the global healthcare crisis *(e.g., during the Covid-19 pandemic which began on November 17, 2019 [Page, Hinshaw, & McKay, 2021], and ended on May 5, 2022, when the World Health Organization terminated the Public Health Emergency of International Concern [Rigby & Satija, 2023])*" (p. 239; words in italic within the parentheses are added by the authors). There are several benefits of using YouTube video sharing in classroom teaching as well as during a clinical session involving educational therapy. The authors have themselves identified the following several benefits promoted by the approach and they are briefly discussed.

Firstly, the approach promotes multisensory learning (Longo, 2021; Syrjälä, 2014). The brain thrives on multisensory input (see Stein, Stanford, & Rowland, 2020, for detail), which combines visual, auditory, and sometimes even kinesthetic stimuli. YouTube videos leverage this by providing a combination of moving images, spoken words, text, and sometimes music and hence, these stimulate an individual's senses, making YTVS a novel platform for multisensory experience (Szuba, 2016). Neuroscience shows that when multiple senses are engaged, neural pathways are more effectively activated, leading to better retention and understanding (Stein, Stanford, & Rowland, 2020). For students with special needs, who may struggle with traditional text-based learning, the combination of audio and visual stimuli can facilitate better comprehension and retention of information (see Szuba, 2016, for detail).

Secondly, it allows repetition (Ali, 2022) and promotes neuroplasticity (Choudhury & McKinney, 2013). Neuroplasticity, the brain's ability to reorganize itself by forming new neural connections (Kolb, Gibb, & Robinson, 2003), is essential for learning. Repetition is a key driver of neuroplasticity (Dinse, 2021). YouTube allows students to repeatedly watch videos, reinforcing concepts and skills until they are internalized. This is particularly valuable for students with special needs who may require more time and repetition to master certain skills (Tahat et al., 2022). The ability to pause, rewind, and rewatch content at their own pace ensures that learning is tailored to their individual needs.

Thirdly, YTVS offers customization and supports individualized learning (Ranga, 2017). YouTube offers a vast array of content that can be tailored to individual learning styles and needs (Snelson, 2011). For students with special needs, who often benefit from highly individualized instruction, this is certainly going to be invaluable. Neuroscience research suggests that individualized learning (Hale et al., 2016), where instruction is adapted to a student's pace, strengths, and challenges, results in more effective learning outcomes. Both teachers and educational therapists can select or create videos that cater specifically to the unique needs of their students, ensuring that the content is both accessible and engaging (Ranga, 2017).

Fourthly, the approach advances engagement and boosts motivation (Hoiles et al., 2017). Engagement has always been a critical factor in successful participation in learning (Cumberbatch, 2016; Yang, Lavonen, & Niemi, 2018), especially for students with special needs who may face challenges with attention and motivation. The dynamic and entertaining nature of YouTube videos can capture and maintain students' attention more effectively than traditional methods (Burgess & Green, 2018; Shoufan,

2019). Neuroscience highlights the role of the brain's reward system, where engaging content can trigger the release of dopamine, a neurotransmitter associated with pleasure and motivation (Reeve & Lee, 2012). This makes learning through YouTube not only effective but also enjoyable for students.

In this short article, the authors have chosen to focus on the application of YTVS in teaching students with autism spectrum disorder (ASD), which is a neurodevelopmental condition characterized by a range of impairments in social interaction, communication, and behavior, and often accompanied by unique strengths and abilities (as in autistic savants or those with superior systemizing abilities). They have provided a set of steps to be taken when applying the YTVS approach so that it can be effectively utilized as a tool in classroom teaching as well as educational therapy, providing an engaging and personalized learning experience for school-age autistic children.

3. WHAT TEACHERS AND EDUCATIONAL THERAPISTS CAN DO FOR AUTISTIC STUDENTS USING YOUTUBE VIDEO SHARING

Using the YTVS approach as a tool in classroom teaching and educational therapy for students with ASD can be highly effective when implemented thoughtfully. Chia and Lim (2017) previously introduced this approach within the framework of Lesson Study, including its variations like Virtual Experiential Learning Study, Modified Lesson Study, and Quasi-Lesson Study, to enhance teachers' pedagogical skills. In their latest collaboration co-writing this short article, the authors have provided helpful practical tips to guide both teachers and educational therapists working with students with ASD how they can apply the YTVS approach in lesson planning and therapy sessions, outlining nine actionable steps for effective integration as follows:

Steps	What is the main focus?	What to do?
1	Identify the educational goals to focus on	Begin by clearly defining the educational objectives you want to achieve. These goals should be specific, measurable, and tailored to the individual needs of the student concerned. E.g., improving social communication, enhancing language skills, or fostering emotional regulation could be the focus.
2	Constantly curate appropriate content for future use when needed	Select videos that align with the educational goals. The content should be engaging, age-appropriate, and relevant to the interests of the student. For students with ASD, videos that are visually clear, use straightforward language, and have minimal background noise are ideal. Channels dedicated to educational content, e.g., "Sesame Street" or "Super Simple Songs," have been found to be beneficial. It is crucial to be mindful of potential sensory sensitivities, e.g., loud sounds or flashing images, which could be overwhelming.
3	Individualize video selection	Consider the student's personal preferences and interests when choosing videos. Students with ASD often have specific areas of intense interest, and incorporating these can increase engagement. E.g., if a student is fascinated by trains, educational videos about trains that incorporate learning elements can be more captivating and effective.
4	Establish a viewing schedule when using YouTube Video Sharing (YTVS)	Create a structured schedule for video viewing as part of the therapy sessions. Consistency and predictability are crucial for many autistic children, so having a set time for watching videos can help create a routine. Decide whether videos will be used as a primary teaching tool, a reinforcement, or a transition activity.
5	Facilitate active engagement	Encourage active participation while watching the videos. This could include pausing to ask questions, prompting the student to predict what happens next, or engaging them in a related activity

		afterward. Interactive video platforms, where students can respond to prompts within the video, can also be used to enhance engagement.
6	Consistently monitor and assess progress	Regularly assess the student's progress in relation to the educational goals. Monitor how the student responds to the videos - are they understanding the content, improving in the targeted areas, and showing increased engagement? Adjust the video content or approach based on these observations.
7	Never forget to incorporate parental involvement	Involve parents by sharing the selected videos and providing guidance on how they can use these videos at home to reinforce learning. This continuity can help solidify the concepts being taught in therapy and foster a more comprehensive learning environment.
8	Always ensure accessibility and safety	Make sure that the videos are easily accessible to the student both during and outside of classroom lessons or therapy sessions. Additionally, ensure that the content is safe and appropriate, using parental controls or restricted modes on YouTube to prevent exposure to unsuitable material.
9	Reflect and adjust the use of YTVS approach	After a period of implementation, reflect on the effectiveness of using YouTube videos in classroom teaching or educational therapy session. Gather feedback from the child, parents, and any other educators involved. Adjust the strategy as needed to better meet the student's needs and enhance the overall effectiveness of the therapy.

4. CONCLUSION

By incorporating YouTube Video Sharing (YTVS) approach into teaching strategies or using it as an intervention tool in educational therapy for students with ASD or others with special needs should always align with neuroscientific principles that emphasize multisensory learning, repetition, individualized instruction, and engagement. By leveraging these principles, both teachers and/or educational therapists can create a more inclusive and effective learning environment that meets the diverse needs of all students with or without ASD.

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Authors have declared that no competing interests exist

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