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Evaluation of 10 popular very YOUNG LEARNER VIDEOS on youtube

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Abstract

This study aimed to evaluate the effectiveness of 10 popular very young learner (VYL) videos on YouTube. The purpose of the study was to investigate the suitability of these videos for children aged 2-6 years in terms of their educational content, visual and auditory quality, and engagement value. Content analysis was used to analyze the videos. A total of 2 raters were conducted content analysis for the study. They were asked to rate each video on a rubric. The study concludes that careful consideration must be given when selecting videos for VYLs, as their effectiveness depends on several factors, such as age appropriateness, educational content, and visual and auditory quality. The results show that most YouTuber videos used multimedia learning principles effectively in their videos, with varying degrees of success.

Keywords:

instructional videos, multimedia, design principles, multimedia learning, very young learners

Introduction

In recent years, YouTube has become a popular platform for content creators to share their knowledge, skills, and experiences with their audience (Anderson & Jiang, 2018). Design features of educational videos have been found to promote children's engagement and support early literacy skills. For instance, in Sesame Street's "Learning about letters" episode, learning objectives are explicitly stated at the beginning of the episode, and the phoneme-grapheme correspondence is reinforced by showing the written representation of the letter or word that corresponds to the sounds presented. Additionally, words in the storyline or songs are accompanied by images and their written form. Another Sesame Street episode about the moon integrates these techniques with songs related to the topic, animations presenting factual information about the moon, and counting backwards as part of a rocket launch sequence (Wright et al., 1990). While screen media has been shown to enhance children's vocabulary, it is unclear whether it can facilitate the acquisition of more advanced language skills such as grammar (Naigles & Mayeux, 2001). Linebarger and Walker (2005) conducted a longitudinal study spanning from 6 to 30 months of age, and found that certain television programs such as Dora the Explorer, Blue's Clues, and Dragon Tales were associated with greater vocabulary and expressive language development, while programs like Teletubbies were related to fewer vocabulary words and lower language expression. The study revealed that Sesame Street was only associated with smaller expressive language scores, while Barney was linked to fewer vocabulary words and more expressive language. These findings may be attributed to the interactive nature of shows like Dora the Explorer and Blue's Clues, which encourage children to talk to the screen, as opposed to Sesame Street, which does not. Barney and Friends, on the other hand, are designed to promote imaginative play, with simple language that may explain the differences in vocabulary acquisition. These results held even after controlling for factors such as parent education, home environment, and child cognitive ability. Television programs that facilitate language development through clear labelling, encouraging repetition, and interactions with on-screen characters have been shown to foster positive learning outcomes (Moussiades et al., 2019). In addition, the effectiveness of video screen media is dependent on specific content and design characteristics, including the inclusion of questioning, opportunities for child play, problem-solving, language and literacy learning through on-screen text, and the stimulation of curiosity (Moussiades et al., 2019). These features ought to be considered when designing YouTube video content that aims to facilitate early learning and development.

Screen Time and Child

Screen time refers to the duration individuals spend engaging with screens, encompassing television, computers, gaming consoles, and portable devices such as smartphones and tablets. Children's development is strongly influenced by the relationships they form within their environment (Williams, Biscaro, Clinton, 2019). In today's world, these relationships increasingly involve screens. The initial encounters that young children have with screens are particularly influential because they establish patterns of exposure and usage (Kostyrka-Allchorne, Cooper, Simpson, 2017; Hamilton, Spinks, White, Kavanagh, Walsh, 2016), which tend to persist into later stages of life (Hamilton et al., 2016; Sigman, 2019). Since parents largely control children's access to screens during this early period, it is easier to modify their exposure compared to later stages (Hamilton et al., 2016; Tang, Darlington, Ma, Haines, 2018). Implementing limits is crucial because infants and toddlers engage with screens in ways that can affect their language acquisition, cognitive development, and socio-emotional well-being (Kostyrka-Allchorne, Cooper, Simpson, 2017; Simonato, Janosz, Archambault, Pagani, 2018). According to Ofcom (2023), the majority of homes with children aged 0-18 (97%) had access to the internet in 2022, significantly higher than the average for all households (93%). Most children aged 3-17 went online (at home or elsewhere) via mobile phones (69%) and tablets (64%), although the types of devices used vary by age of child. Among 3-17-year-olds, YouTube emerged as the preferred online platform, with 88% of them using it. WhatsApp followed closely at 55%, while TikTok and Snapchat garnered usage rates of 53% and 46% respectively. Notably, the utilization of WhatsApp, TikTok, and Snapchat witnessed an upswing compared to 2021, with their percentages rising to 55%, 53%, and 46% respectively. According to the recent study of Gaudreau, Hirsh-Pasek,and Golinkoff (2022), children posed a lower number of questions in the cell phone compared to the control condition. Shah et al. (2021) observed a positive relationship between heightened curiosity levels in kindergarten children and a higher occurrence of parental conversation during shared television viewing. This association exhibited a more pronounced effect within low socioeconomic status (SES) families. Kirkorian et al. (2015) conducted a research in the context of the video condition, search performance in children was specifically predicted by visual attention directed towards the target location. However, in the case of in-person hiding events, children exhibited high success rates even when their visual attention towards the correct location was relatively low. These findings align with the hypothesis that toddlers demonstrate faster processing of information in the case of in-person events compared to video-based events. This accelerated processing enables them to achieve comparable or even superior learning outcomes, despite exhibiting relatively low levels of selective attention. Hence, the video deficit phenomenon may be attributed to both deficient encoding and memory retrieval processes, as suggested by Kirkorian et al. (2015). Although the study did not encompass assessments of television program content, digital media usage, and non-screen time conversation, our findings underscore the significance of parental conversation in fostering early childhood curiosity, particularly among children facing socioeconomic disadvantages. The findings of Moser et al., (2015) study reveal the existence of a persistent bidirectional transfer deficit that extends up to three years of age. Younger children exhibit a more pronounced transfer deficit, even in situations involving high perceptual similarities and social engagement. These results support the memory flexibility account of the transfer deficit, indicating that children tend to learn less in transfer tasks. The implications of these findings are discussed in relation to the use of screen media, such as video and tablets, in early education.

The video deficit effect, as described by Anderson and Pempek (2005), pertains to the limited ability of infants to transfer learning from television and static 2D images to real-life situations, particularly when compared to their ability to transfer learning from face-to-face interactions. This effect becomes noticeable around 15 months of age, reaches its peak, and persists until at least 36 months of age, varying slightly depending on the complexity of the task involved (Barr et al., 2007a; Barr et al., 2007b; Flynn & Whiten, 2008; Hayne, et al., 2003; Nielsen, et al., 2008; Sheffield & Hudson, 2006; Simcock & DeLoache, 2006; Simcock & Dooley, 2007). The non-apparent nature of the video deficit effect at 6 months of age is also worth noting. Several factors can be used to predict the potential for learning and improvement of the video deficit effect. These factors include the repetition of content (Barr et al., 2007a, 2007b), the unique auditory and visual cues found in media (Barr et al., 2009), social contingency cues (or their absence; Nielsen et al., 2008; Troseth et al., 2006), the demands on working memory (Krcmar, Grela, & Lin, 2007; Suddendorf, 2003), and the perceptual demands of the specific task used to examine the transfer of learning (Barr & Hayne, 1999; Schmitt & Anderson, 2002; Suddendorf et al., 2007). When the cognitive load exceeds the processing abilities of young children, there is a rapid decline in the transfer of learning. With over 2 billion monthly active users, YouTube has become an integral part of our daily lives. However, to create engaging and instructional content, content creators must have an understanding of the cognitive theory of multimedia learning. The cognitive theory of multimedia learning (CTML) is a theoretical

framework that explains how individuals learn from multimedia content (Mayer, 2009). This theory suggests that learning occurs through cognitive processing and knowledge construction, where learners actively engage with the presented information (Mayer & Moreno, 2003). CTML emphasizes the importance of designing multimedia content in a way that optimizes cognitive processing, attention, and retention of information.

This study aims to analyse 10 popular YouTube video for very young learners with YouTube Evaluation Rubric. The analysis focus on how the content creators design and present their content to optimize the learning process for their audience. By analysing the content creators' strategies, this study hopes to provide insights into effective methods for designing multimedia content that maximizes learning outcomes.

Cognitive Theory of Multimedia Learning

The cognitive theory of multimedia learning (CTML) is a theoretical framework that explains how individuals learn from multimedia content by emphasizing the importance of optimizing cognitive processing, attention, and retention of information (Mayer, 2009). The CTML framework suggests that the use of multimedia elements, such as audio, video, and text, can enhance the learning process by providing multiple channels of information for the learner to process (Clark & Mayer, 2016). The cognitive load theory (CLT) is another theoretical framework that has been applied to multimedia learning. CLT suggests that learning can be impaired if the cognitive load of multimedia content is too high, leading to cognitive overload (Paas, Renkl, & Sweller, 2003). Studies have explored the effects of multimedia design on learning outcomes in various contexts. For instance, Mayer and Moreno (2003) found that presenting words as spoken text and images together led to better learning outcomes than presenting words as spoken text and images separately. Similarly, Mayer (2009) argued that the use of diagrams in multimedia presentations can lead to better learning outcomes than text-based presentations. These findings suggest that effective multimedia design can improve learning outcomes. The popularity of YouTube has led to an increasing number of content creators on the platform. These content creators use a variety of multimedia elements to engage and educate their audience. However, it is unclear how these content creators use multimedia design principles to optimize learning outcomes for their audience. Therefore, the present study aims to analyse 10 popular YouTube content creator accounts with respect to CTML and identify effective strategies for designing multimedia content that maximizes learning outcomes. In conclusion, the literature suggests that the use of multimedia elements can enhance the learning process. CTML and CLT are theoretical frameworks that emphasize the importance of optimizing the multimedia design to maximize learning outcomes. The present study aims to contribute to this literature by analysing 10 popular YouTube content creator accounts and identifying effective strategies for multimedia design.

Multimedia Design Principles

Richard Mayer, a prominent researcher in the field of multimedia learning, has developed a set of principles for designing effective multimedia learning materials. These principles are based on the cognitive theory of multimedia learning (CTML) and emphasize the importance of optimizing cognitive processing, attention, and retention of information (Mayer, 2009). The purpose of this literature review is to explore the concepts related to Mayer's multimedia principles and their impact on learning outcomes. Mayer's multimedia principles include coherence, redundancy, signalling, spatial contiguity, temporal contiguity, and modality. Coherence refers to the principle of ensuring that the words, images, and audio in a multimedia presentation are presented in a clear and organized manner that allows the learner to easily integrate the information. Redundancy refers to the principle of presenting information in multiple forms to support learning, while avoiding overloading cognitive resources. Signalling refers to the use of visual or auditory cues to draw attention to important information. Spatial contiguity refers to the principle of presenting text and images in close proximity to each other to facilitate integration. Temporal contiguity refers to the principle of synchronizing audio and visual information to enhance learning. Modality refers to the principle of presenting information in multiple modalities, such as audio and visual, to support learning (Mayer, 2009). Research has provided evidence for the effectiveness of Mayer's multimedia principles in improving learning outcomes. For instance, studies have found that coherence, redundancy, and signalling can enhance learning when used appropriately (Mayer & Moreno, 2003; Sweller, van Merriënboer, & Paas, 1998). The spatial contiguity principle has also been found to improve learning outcomes by reducing the cognitive load (Mayer & Sims, 1994). Temporal contiguity has been found to enhance learning by improving the

integration of audio and visual information (Mayer & Anderson, 1991). Finally, the modality principle has been found to improve learning outcomes by providing multiple channels of information (Mayer & Moreno, 2003).

This discussion on the importance of video design features for facilitating learning encompasses Mayer's (2008) principles of multimedia design, which offer valuable guidelines in this domain. The principles can be summarized as follows: Coherence, where extraneous or irrelevant material should be minimized in relation to the learning objective; Signalling, which involves highlighting essential information or significant elements; Redundancy, suggesting the use of narrated animations without accompanying on-screen text; Spatial contiguity, advocating for the placement of printed words adjacent to relevant graphics; Temporal contiguity, emphasizing the simultaneous presentation of narration and animation; Segmenting, recommending the presentation of animations in learner-paced segments; Pretraining, involving the provision of preliminary instruction on key components; Modality, suggesting the presentation of words as spoken text rather than printed text; Multimedia, promoting the integration of words and pictures rather than relying solely on textual information; and Personalization, encouraging a conversational style and avoiding formal language by incorporating pronouns like 'your' instead of 'the.' These ten principles offer valuable insights into the design and delivery of videos to effectively support instructional practices in educational settings.

To sum up, Richard Mayer, a prominent researcher in the field of multimedia learning, has developed a set of principles for designing effective multimedia learning materials. These principles, based on the cognitive theory of multimedia learning, focus on optimizing cognitive processing, attention, and information retention. Mayer's principles include coherence, redundancy, signalling, personalization, spatial contiguity, temporal contiguity, and modality. Additionally, Mayer's work highlights the benefits of personalization in multimedia learning materials, suggesting that a conversational style and the inclusion of personal pronouns can enhance learner engagement and performance.

Methodology

The YouTube Evaluation Rubric was adapted from Neumann and Herodotou (2020). This rubric was designed by them to assess the educational quality of YouTube videos based on four main criteria: Age appropriateness, Content quality, Design features, and Learning objectives. To achieve this, the main criteria were further divided into 17 sub-criteria (questions). A 3-point scoring system was employed to assess each question, with a score of 0 for "No evidence," 1 for "Partial evidence," and 2 for "Ample evidence." The total numeric assessment per video was obtained by summing the scores of all sub-criteria (max score = 18 × 2 = 36). The overall quality rating classification of a video was determined by its total score, where videos scoring below 17 were considered "Not Recommended," and those scoring between 17 and 34 were "Recommended" for viewing by children aged 0–8 years old. To validate the proposed evaluation rubric, one popular YouTube videos for very young children was piloted. These videos were selected based on their level of popularity, which was determined by the number of YouTube channel subscribers and most popular categories. All the chosen videos were in Turkish. The most popular categories included songs and nursery rhymes, unboxing, fun toys, and play, and create and explore. The proposed evaluation rubric provides a comprehensive tool that can be used by parents, caregivers, and educators to assess the educational quality of YouTube videos targeting young children.

Interrater Reliability

To establish the interrater reliability of the rubric and scoring criteria, two people co-scored a test video and refined the rubric and scoring criteria. Next, each of the ten videos listed in Table 3 was independently scored by the two people, resulting in a total of 180 items scored (10 videos × 18 items). The level of interrater reliability was assessed using Cohen's Kappa, which was calculated to be 0.89, indicating substantial agreement between the two scorers. The disagreements were then reviewed and discussed by the two authors, who ultimately agreed on the 14 disputed items. Specifically, author one agreed with six of author two's scores, while author two agreed with nine of author one's scores. As a result, the final agreed-upon scores were used and presented in Table 3.

A. General Features of the YouTube Videos

Length in minute:

View:

Likes:

Dislikes:

Comments:

Channel Subscription:

B. YouTube Evaluation Rubric (Adapted from Neumann & Herodotou, 2020)

Age appropriateness	1. Can the child imitate the content presented (e.g. repeat song, make body movements or gestures)?
	2. Does the content share similarities with the child (e.g., age, gender, interests)?
	3. Is the behaviour on-screen positive (e.g., ethical, fair, caring, moral, non-violent, non-scary, healthy)?
	4. Does the on-screen behaviour receive appropriate reinforcement (e.g., positive behaviour is praised or encouraged, and negative behaviour is discouraged)?
Content quality	5. Are social relationships accurately represented (e.g., gender and cultural stereotypes, power relationships)?
	6. Does the video encourage children to perform creative tasks, solve problems or provide alternative ideas or ways of doing things?
	7. Does the video encourage children to repeat content?
	8. Are the images, audio, sounds and language used appropriately for children (i.e. the child can understand the content)?
	9. Is each scene clear, logical, and easy to follow?
Design features	10. Is some content repeated during the video (e.g., to reinforce learning in positive ways)?
	11. Is there low and gradual pace with infrequent scene and character changes?
	12. Are pictures/graphics/animations presented alongside words/narration?
	13. Is conversational style (personalization) used in wording (oral and written)?
	14. Is there irrelevant elements used in the video?
	15. Are learning elements highlighted in the video?
Learning objectives	16. Does the video support cognitive(e.g.,language, literacy, math,science knowledge)
	17. Does the video support physical development (e.g., gross and fine motor skills)?

18. Does the video support socio-emotional development (e.g., fosters positive relationships, communication skills, moral attitudes, resilience, self-regulation, self-confidence)?

General Features of Videos

Table 1 presents the distribution, mean, standard deviation, minimum, and maximum values for the general characteristics of the chosen videos, including their length, duration online, views, likes, dislikes, VPI, and channel subscription data.

Table 1 General Features of Videos

	Video 1 A Journey into Your Body	Video 2 Rotten Ali and Germ Necati	Video 3 Toy nursery: exclusive sections. Fun and educational videos!	Video 4 Educational cartoon - Smart cars - Vegetables – English	Video 5 Wash Your Hands and More educational cartoons	Video 6 Watch cartoons - Utility Cars - We are picking fruits! Educational series for babies)	Video 7 Blippi Learns 5 Senses | Blippi Turkish - Educational videos for kids | Turkish Dubbed	Video 8 Planets	Video 9 Learning Shapes | Cartoons for the little ones with Tino	Video 10 Eymen and Grass | robot brotherhood
Lenght (in minutes)	8.36	12.32	1:04:49	6.17	1:00:27	21:14	17.32	3.26	4.30	11.45
View	54.546.553	130.341.698	122.529.295	59.009.088	12.600.000	1.603.040	11.363.652	335.061.960	141.289.590	35.763.651
Likes	40.000	55.000	34.000	19.000	1.300	3000	2	882.000	466.000	69.000
Dislikes	-	-	-	-	-	-	-	-	-	-
Comments	1672	Comments are closed.	Comments are closed.	Comments are closed.	Comments are closed.	Comments are closed.	Comments are closed.	Comments are closed.	Comments are closed.	Comments are closed.
Channel Subscription	3.55 million	554.000	1.33 million	3.21 million	259.000	3.21 million	292.000	1,06 million	496.000	6.2 million

Table 2 YouTube Evaluation Rubric (Adapted from Neumann & Herodotou, 2020)

Sub-criteria:	1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
Video 1 A Journey into Your Body	0		2	2	2	2	2	0	1	1	0	0	2	2	0	0	2	0	0	18
Video 2 Rotten Ali and Germ Necati	0		0	0	0	0	0	0	2	2	0	0	0	2	0	0	0	0	0	6
Video 3 Toy nursery: exclusive sections. Fun and educational videos!	0		2	2	2	2	2	0	2	2	0	0	0	2	0	2	0	0	2	20
Video 4 Educational cartoon - Smart cars - Vegetables – English	0		0	2	2	2	0	0	2	2	0	2	0	0	2	2	0	0	0	16
Video 5 Wash Your Hands and More educational cartoons	2		2	2	2	2	0	2	2	2	2	2	0	2	2	2	2	0	2	30
Video 6 Watch cartoons - Smart Cars - We are picking fruits! Educational series for babies)	2		2	2	2	2	0	0	2	2	2	2	2	2	2	2	2	2	2	32
Video 7 Blippi Learns 5 Senses | Blippi Turkish - Educational videos for kids | Turkish Dubbed	2		2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	36
Video 8 Planets	0		2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	34
Video 9 Learning Shapes | Cartoons for the little ones with Tino	0		2	2	2	2	0	2	2	2	2	2	2	2	2	2	0	2	2	30
Video 10 Eymen and Grass | robot brotherhood	0		2	2	2	2	0	0	2	2	2	2	2	2	0	0	0	0	2	22

*(See Table 2 for the 18 sub-criteria questions. Score 0 = No; Score 1 = Partial Evidence; Score 2 = Yes)

**(0 to <18 = Not recommended; 18 to 36 = Recommended)

It is interesting to note that video length varies greatly among the videos, ranging from just over 3 minutes to over an hour. This is likely due to differences in content and audience. For example, videos targeted towards young children tend to be shorter in length to match their attention span, while more in-depth educational videos for adults may require a longer run time.

Figure 1 Smart Cars - We are picking fruits! Educational series for babies

Figure 2 Rotten Ali and Germ Necati

Figure 3 Toy nursery: exclusive sections. Fun and educational videos!

The videos analysed according to learning objectives and some of the videos had wrong information was processed. The analysis of the videos based on their learning objectives revealed a concerning trend: several videos contained inaccuracies or incorrect information. In one particular video, a tomato was erroneously identified as a vegetable, while in fact, it is a fruit. This highlights a lack of accuracy and factual knowledge in the content presented. Another video titled "Rotten Ali and Germ Necati" raised concerns as the main characters emphasized the benefits of consuming sweet treats before going to bed. This message contradicts established health guidelines that discourage the consumption of sugary foods close to bedtime. Such misinformation could mislead young viewers and potentially have negative impacts on their health habits. In yet another video titled "Toy nursery: exclusive sections. Fun and educational videos!" an issue with spelling was observed. Specifically, the letters of the alphabet were misspelled. This undermines the educational aspect of the video, as the incorrect spelling could confuse or misinform young viewers who are in the process of learning their ABCs. Overall, these instances of wrong information and inaccuracies in the analyzed videos highlight the importance of ensuring that educational content for children is thoroughly reviewed and fact-checked. It is crucial to provide accurate information and promote healthy habits to support children's learning and development.

Figure 4 Blippi Learns 5 Senses | Blippi Turkish - Educational videos for kids | Turkish Dubbed

Bilippi is undeniably a renowned YouTube channel with a vast viewership among children worldwide. However, a critical analysis of one of their videos, titled "Blippi Learns 5 Senses | Blippi Turkish - Educational videos for kids | Turkish Dubbed," revealed some shortcomings in the video's content structure. Despite being titled "5 senses," the Blippi character's approach in the video seemed disjointed and lacked proper organization. Instead of focusing on the intended learning objective of the five senses, the video initially diverted attention towards colors and numbers. This departure from the primary topic could confuse young viewers and hinder their comprehension of the designated subject matter. It is crucial for educational content to maintain a coherent and logical flow to maximize its effectiveness. Furthermore, when the Blippi character eventually transitioned to discussing vehicles, there was an oversight in reinforcing the previously covered learning objective. Rather than incorporating the color aspect, such as mentioning a "yellow cement truck," the character merely mentioned "cement truck." This missed opportunity to connect the learning objectives and reinforce knowledge limits the video's educational impact.

Figure 5 Rotten Ali and Germ Necati

In addition to analyzing the videos based on their learning objectives and content accuracy, it is equally important to assess their on-screen behavior in terms of being positive, ethical, fair, caring, moral, non-violent, non-scary, and promoting a healthy environment. Unfortunately, during the analysis, it was observed that the main characters in the video "Rotten Ali and Germ Necati" exhibited behavior that could be considered scary for very young learners. For young children, a safe and non-threatening environment is crucial for their emotional well-being and healthy development. When the main characters in a video intended for educational purposes portray scary or intimidating behavior, it can create fear or discomfort among young viewers. This can have a negative impact on their learning experience and may even deter them from engaging with educational content in the future. To ensure that educational videos cater to the needs of young learners, content creators should be mindful of the on-screen behavior of their characters. It is important to prioritize creating a positive, caring, and non-threatening environment that fosters a sense of emotional security for children. By doing so, educational videos can effectively engage young learners and contribute to their overall positive development.

To ensure optimal learning experiences, educational content creators should strive to maintain a well-structured approach and provide consistent reinforcement of learning objectives. By doing so, they can enhance comprehension and retention among young viewers, making the educational content more effective and valuable. Overall, the table provides a snapshot of the diverse range of content available on video-sharing platforms and the popularity of different topics among viewers. The popularity of educational content and children's videos highlights the potential for online media to serve as a valuable learning tool for people of all ages.

Discussion and Conclusion

This paper presents a comprehensive review of studies that describe how specific design features of screen media may support very young children's learning. The authors have adapted the YouTube evaluation criteria from Neumann & Herodotou (2020), which are grounded in key theoretical frameworks such as sociocultural theory (Vygotsky, 1978), social-cognitive theory (Bandura et al., 1961), multimedia learning (Mayer, 1994) that can be used to guide the selection of YouTube videos for children. The present study is particularly relevant given the rising popularity of YouTube videos targeting very young children and the increasing amount of time children are spending on YouTube (Rideout & Robb, 2019). Although YouTube has been relatively underexplored compared to other screen media such as television (Khan, 2017), a few studies have investigated the design of educational videos and their relationship with behavior and engagement (Neumann & Herodotou, 2020; Shoufan, 2019). Informed by insights from a similar medium (TV), the present study provides a comprehensive set of evaluation criteria that teachers, parents, and caregivers can use to assess the learning quality of YouTube videos and make informed decisions about which videos their children should watch to maximize learning opportunities.

This research highlights the impact of screen time on children's development, particularly in the early stages of exposure. It emphasizes the role of parents in controlling children's screen time during this critical period, as it is easier to modify their exposure at this stage compared to later stages. The study emphasizes the importance of implementing limits on screen time due to its potential effects on language acquisition, cognitive development,

and socio-emotional well-being. The study also provides insights into the prevalence of internet access and device usage among households with children. It reports that most homes with children have internet access, with mobile phones and tablets being the primary devices used by children. It also highlights the popularity of online platforms such as YouTube, WhatsApp, TikTok, and Snapchat among children, with increased usage compared to previous years. Additionally, the research refers to the video deficit effect, which pertains to the limited ability of infants to transfer learning from screens to real-life situations compared to face-to-face interactions. This effect becomes noticeable around 15 months of age and persists until at least 36 months of age. Several factors, such as content repetition, auditory and visual cues, social contingency cues, working memory demands, and perceptual demands, can influence the potential for learning and the extent of the video deficit effect. Finally, the study highlights the importance of understanding the cognitive theory of multimedia learning for content creators on platforms like YouTube.

The cognitive theory of multimedia learning emphasizes the active engagement of learners with multimedia content for effective learning, emphasizing the optimization of cognitive processing, attention, and retention of information in content design. To facilitate the development of crucial life skills such as language acquisition, self-regulation, and creative thinking in children below the age of 5, it is essential for them to engage in active play and spend quality time with their families. Parents play a significant role in shaping healthy screen habits for their young children. This can be achieved through the following practices:

Limiting personal screen usage in the presence of young children, particularly during meal times, play activities, and other significant opportunities for social learning.

Prioritizing interactions with children through meaningful conversations, play engagements, and fostering healthy and active routines.

Making informed decisions regarding media usage, engaging with media together with children, and ensuring screens are turned off when not in use.

Ensuring that any media consumed in the presence of children is devoid of stereotyping, advertising, or other potentially problematic content.

Children younger than 2 years: It is not advisable to expose them to screen time, except for video-chatting with caring adults. There is insufficient evidence to support the introduction of technology at an early age.

Children aged 2 to 5 years: Limit routine or sedentary screen time to approximately 1 hour or less per day.

Children younger than 5 years in child care: Avoid incorporating sedentary screen time as a regular part of their daily routine.

Establish daily periods free from screen usage, particularly during important family activities such as meals and book-sharing.

This study evaluated the quality of ten popular YouTube videos for very young children using a set of four criteria: Age Appropriateness, Content Quality, Design Features, and Learning Objectives. The videos 5, 6, 7 and 8 received the highest scores, indicating an acceptable level of quality with the potential to foster positive behavior and learning. However, it should be noted that further research is required to establish the actual learning benefits of watching these videos. On the other hand, the 2 and 4 received the lowest scores, indicating limited quality and the need for careful consideration when using them for educational purposes.

The use of conversational and guided interactions is an effective approach to supporting early learning when using YouTube videos in educational settings and at home (Davidson et al., 2014). Such interactions can include the use of question-answer strategies and embodied actions, such as nodding during co-viewing, which can enhance children's meaning-making processes. Additionally, research suggests that parental scaffolding, which is consistent with Vygotsky's (1978) Zone of Proximal Development, is critical for promoting positive learning

outcomes in young children (Pempek et al., 2011). For instance, positive parental interactions, such as physical and verbal involvement and maintaining a positive tone, are linked to positive child outcomes.

Adults should engage in co-viewing, discussion, and reflection with children on the content of YouTube videos to identify and discourage negative messages, such as cyberbullying, violence, and stereotypes, while promoting and reinforcing positive behaviors, such as caring and sharing. These interactions can foster children's ethical and critical engagement in their online community by imparting them with the knowledge and skills necessary to participate thoughtfully. It is important to note that the findings of this pilot study should not be overgeneralized, nor should clear recommendations be made, given the limited number of videos assessed. Nevertheless, an inter-rater agreement check conducted between the two raters indicated a substantial level of agreement on the criteria items.

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