

The Methodology of Distance Education via Digital Video «YouTube»: An Analytical Study of the Educational Channel « Madrasati fi Bayti » as a Model

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Abstract:

This study investigates the methodology of education through digital video technology, focusing on the representation and presentation of information to receiving students. Specifically, the study delves into the topic of information representation in digital educational videos focusing on the "Madrasati fi Bayti" channel as a research unit. Nine educational sessions in the subject of mathematics for the fourth grade middle school students (presented during the 2020/2021 season) were selected for analytical research. To achieve scientific rigor, the study tested theoretical concepts related to information representation communication.

The analytical study concluded that the process of representing the information in the researched video samples generally considers factors that facilitate the processes of perception, storage, and retrieval of information. This includes organizing information, processing it deeply, and using illustrative means.

Keywords: Distance Education; Digital Video; YouTube; Information Representation.

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1. INTRODUCTION

Communication technology have facilitated modern educational systems capable of addressing the challenges of traditional education through new applications that bridge the gap between teachers and students. Digital videos on platforms like YouTube have become educational supplements contributing to maximizing information utilization.

The design and production of educational videos undergo a scientific methodology to achieve effective teaching. The process of influencing, particularly in the context of conveying information through digital symbols and remote distances, becomes intricate, especially when it involves the psychological and social components of the individual learner. The impact of educational videos, particularly in terms of receiving the content, is a significant concern for researchers. This prompts an exploration into the representation of information presented in these educational videos from the sender's (source) perspective, directed towards learners and supporting classical education. This study focuses on a case study of the "Madrasati fi Bayti: Math Lessons for the Fourth Year of Middle School" channel.

2. Problem Statement:

Digital educational channels on YouTube top the list in providing lessons of various specialties and levels with an increased reliance on them. According to a the United Nations' study on the available options for learners to pursue their academic achievements, "social media ranked second with a utilization rate of 24.4%, after electronic platforms"⁽¹⁾.

Faced with this vast quantity and considering two factors:

- a- The priority of providing quality education.

(1) UNESCO: "Distance Education in the Arab World: Report on the Response of Arab Countries to Educational Needs during the Coronavirus Pandemic", July 2020. From: <https://inee.org>. Accessed: 17/10/2023 at 16:00.

b- The scientific methodology governing the design of educational videos in terms of representation, presentation, and information transmission.

In this current study, our goal is to examine the method by which information is represented and presented in educational videos. In this context, we raise the question: How is information represented in educational videos, specifically private ones? (Using the "Madrasati fi Bayti" channel as a model for Math lessons in the fourth year of middle school).

To gain a realistic understanding, our research will focus on the theoretical concepts of information representation in three key aspects, addressing the following sub-questions:

- How is information organized when presented in videos?
- What is the depth of information processing in the videos?
- What symbolic representations are used in the videos to cater to the cognitive needs of students?

3. Importance of the Study:

Our research aims to understand the extent to which the content of digital educational videos (studied through the case of the "My School at Home" channel) aligns with the students' needs in dealing with this information within their prior knowledge, attention processes, perception and storage, symbolic transformation, recall, and retrieval. This is by:

- a- Revealing the cognitive representation reality in a sample of digital documents.
- b- Identifying the level of information representation efficiency in the research sample.

Additionally, our research aims to highlight the importance of information representation in the cognitive and behavioral impact on students.

4. Study Objectives:

Our research aims to understand how information is represented in the content of videos by focusing on:

- How information is organized in digital videos (YouTube).
- The level of information processing in them.
- The nature of linguistic and non-linguistic symbols and illustrative means used.

5. Study Methodology:

5.1. Method:

In our current study, we adopted an analytical approach using a case study method:

- **Analytical Methodology:** we conducted a content analysis study of a number of lessons in mathematics for the fourth year of middle school, published by the "My School at Home" channel on YouTube.
- **Case Study:** In choosing a single analytical unit, "My School at Home: Lessons in Mathematics for the Fourth Year of Middle School," detailed information was collected about the content.

5.2. Methodological Tools:

We used a fundamental methodological tool, content analysis. We built a content analysis form focusing on the research objectives, dividing the content unit into three categories: information organization, information processing level, and the use of symbols and indications.

6. Study Scope:

Our research focuses on the methodology of information representation in private digital educational videos, specifically on YouTube. We selected one model for study: the "My School at Home" channel. The study applies to a sample of digital documents in the subject of mathematics for the fourth year of middle school and is

conducted in the digital environment of YouTube from October 22 to November 15, 2023.

7. Theoretical Dimensions of the Study:

7.1. Previous Literature:

7.1.1. Study by Madiha Hassan Mohammed, Abdul Rahman Abdullah Al-Jawad, Taha Ibrahim titled "The Impact of Using Digital Video on Developing the Skills of Student Teachers in Using Tangible Handicraft Materials When Teaching Mathematics".⁽¹⁾

The study aimed to identify the impact of using digital videos on the development of skills for student teachers in using tangible handicraft materials when teaching mathematics. The researchers employed a quasi-experimental approach, using an observation card. The experiment focused on student teachers in the basic education department, specializing in mathematics at BeniSuef University in Egypt, 2012/2013. The key results are:

- A significant positive impact of watching digital videos on the practical education performance of student teachers.
- There is a high level of creativity among teachers in producing enlarged models of tangible handicrafts materials, with some development that increases their effectiveness and takes into account the economic dimension in their production and use in line with the conditions of the Egyptian environment.

7.1.2. Study by Amal Gouda Mohammed titled: "Interaction between the Timing of Displaying Digital Video Clips (YouTube) (Before and After Practical Lesson) Through Facebook Platform and Cognitive Style (Focus-Surface) and its Effect on Developing Educational Infographic Design and Development Skills Among

(1)Madiha Hassan Mohammed et al.: "The Impact of Using Digital Video on Developing Student Teachers' Skills in Using Concrete Handicraft Materials in Teaching Mathematics," Journal of Mathematics Education, Volume 19, Number 5, Part 2, April 2016. From: <https://armin.journals.ekb.eg/article>. Accessed: 22/10/2023.

Educational Technology Students".⁽¹⁾

The study aimed to investigate the impact of the interaction between the timing of displaying digital video clips (YouTube) (before and after the practical lesson) through the Facebook platform and cognitive style (focus-surface) on the development of educational infographic design and development skills among educational technology students. The researcher adopted a quasi-experimental method, implementing a proficiency test on a sample of 40 students. The study was conducted in the second semester of the 2016/2017 academic season and concluded:

- The effectiveness of presenting video clips in timing patterns (before and after the lesson) for focused and surface students in the Facebook environment.
- The preference for displaying digital video clips before the lesson for designing and developing educational infographics compared to the after-lesson timing.
- Focused students outperformed surface students in the post-test scores for design and development skills of educational infographics.

7.1.3. Study by Ohoud Youssef Mazhar titled "The Reality of Employing Digital Video (YouTube) Utilized by Members of Training Bodies and its Reflection on Actual Training Needs in Higher Education Institutions".⁽²⁾

(1)Amal Gouda Mohamed: "The Interaction between the Timing of Displaying Digital Video Clips (YouTube) (Before and After the Practical Lesson) through Facebook Platform and the Cognitive Style (Focused-Surface) and Its Effect on Developing the Skills of Designing and Developing Educational Infographics for Students of Educational Technology," Egyptian Journal of Educational Technology, Series of Studies and Research.From: <https://tesr.journals.ekb.eg/article>. Accessed: 22/10/2023.

(2)Ahod Youssef Mazhar: "The Reality of Employing Digital Video (YouTube) Utilized by Members of Training Bodies and Its Reflection on Actual Training Needs in Higher Education Institutions," Palestinian Journal of Open Learning and E-Learning, Volume 7, Number 13, December 2019.From: <http://search.shamaa.org/PDF/Articles/>. Accessed: 22/10/2023.

The study shed light on the skills possessed by faculty members in Palestinian higher education institutions regarding the employment of digital video (YouTube) technology in the teaching process. It also aimed to identify the impact of digital video skills on determining teaching needs, in addition to assessing the size of the teaching gap in the cognitive and skills aspect at both levels (current and strategic). The researcher adopted a descriptive-analytical approach, using a questionnaire applied to a purposive sample of 183 participants. The study was conducted between January and February 2018. The major results include:

- Faculty members possess a moderate level of skills in dealing with digital videos, except for the skill of adding comments, which showed a low level of proficiency.
- The training needs of faculty members demonstrated a high level of willingness to undergo training courses to enhance proficiency in dealing with digital video as a professional educational tool.

7.1.4. Study by Fatima Awad Hamad Al-Senaid titled "The Effectiveness of Interactive Educational Video on Academic Achievement in Geography for Sixth Grade Female Students in Madaba Governorate Schools".⁽¹⁾

This study explores the effectiveness of interactive educational videos on academic achievement in Geography for sixth-grade female students in Madaba Governorate. The quasi-experimental approach was used, with a pre-and post-test administered to a purposive sample of 61 female students in Ibn Taymiyyah Comprehensive School in Madaba Governorate (distributed into two equal groups: the experimental group was taught Geography using the interactive educational video, and the control group was taught Geography in the usual way). The study was

(1)FatmaAwad Al-Sunaid: "Master's Thesis in Information and Communication Technology in Education," Department of Special Education and Educational Technology, Faculty of Educational Sciences, Middle East University, Jordan, 2020.From: https://mfes.journals.ekb.eg/article_268175.html. Accessed: 22/10/2023.

conducted during the 2019/2020 academic semester. The results of the study revealed:

a- The presence of statistically significant differences (at a significance level of $\alpha \leq 0.05$) between the means of the control group and the experimental group in favor of the experimental group in the post-test studied using interactive videos.

b- The effectiveness of interactive educational videos in enhancing academic achievement in geography.

7.1.5. Study by Amira Mahmoud Taha Abdel Rahim, Magdi Mahmoud Fahim Mohamed, titled "Interactive Digital Videos in Mobile Learning Environment and Their Impact on Developing Students' Skills in Preparing and Implementing Kinetic Stories".⁽¹⁾

This study aimed to explore the impact of interactive digital videos in a mobile learning environment on the cognitive achievement levels of information and knowledge related to kinetic stories. The study also assessed the students' performance in implementing kinetic stories. The researchers employed a quasi-experimental approach and a questionnaire applied to a purposive sample of 90 students at the Faculty of Physical Education, City of Sadat University, for 2021/2022.

The key findings include:

- Statistically significant differences were found between the two-dimensional measures of the experimental and control groups in the cognitive achievement level, with an improvement percentage of 30.56%, in the oral test with an improvement percentage of 23.56%, and in the preparation and implementation of kinetic stories with an improvement percentage of 23.96%, all in favor of the experimental

(1)Amira Mahmoud Taha Abdel Rahim, Magdy Mahmoud Fahim Mohamed: "Interactive Digital Videos in the Mobile Learning Environment and Their Impact on Developing the Skills of Female Students in Preparing and Implementing Kinetic Story," Journal of Theories and Applications of Physical Education and Sports Sciences, Volume 40, Number 1, May 2023.From: https://journals.ekb.eg/article_. Accessed: 22/10/2023.

group.

- The relative importance of the emotional opinions and impressions of the experimental group towards the use of interactive digital videos in a mobile learning environment ranged from 76.33% to 95.67%, indicating a good indicator that the use of interactive digital videos in a mobile learning environment is effective in achieving emotional aspects and modifying the impressions of female students towards preparing and implementing kinetic stories.

7.1.6. Study by WaelSamah Mohamed Ibrahim titled "The Impact of Interaction between Digital Video Style (Segmented/Connected) and Cognitive Style (Independent/Dependent) in an E-Learning Environment on Developing Database Skills for Educational Technology Students".⁽¹⁾

This study aimed to investigate the impact of the interaction between digital video styles (segmented/connected) and cognitive styles (independent/dependent) in an e-learning environment on the development of database skills for educational technology students. The fieldwork was conducted on a sample of 40 students using an achievement test and an observation card to measure cognitive and skill aspects. The study took place in the first semester of the academic year 2022/2023. The results indicated:

- Clear differences were observed concerning the use of segmented digital video style compared to connected digital video style in favor of the segmented digital video style.

- There were noticeable differences in the cognitive style classification variable (independent) compared to the field in both cognitive and skill performance for database skills.

- Statistical differences were found between the average scores in

(1)WaelSamaah Mohamed Ibrahim: "The Impact of Interaction between Digital Video Styles (Fragmented/Connected) and Cognitive Style (Independent/Dependent) in an E-Learning Environment on Developing Database Skills for Students of Educational Technology," EDUSOHAG, Number 106, Part 1, February 2023.From; <https://edusohag.journals.ekb.eg/article>. Accessed: 22/10/2023.

skill performance due to the interaction between the digital video styles (segmented/connected) and the cognitive styles of students (independent/dependent) about the perceptual field.

7.2. Commentary on the Studies:

Our analytical reading of these studies revealed:

- In terms of the research topic: They covered the effects of digital videos on the development of educational and cognitive skills.
- Regarding the methodology: The quasi-experimental approach was predominantly used in the studies.
- Concerning methodological tools: They varied between questionnaires and tests.
- The sample mainly consisted of students and teachers.
- In terms of the results: All studies demonstrated the positive impact of digital videos broadcasted on YouTube channels.

As part of our research distinction, we approached this topic differently:

- Research topic: Investigating the content of digital videos on YouTube through a case study of a specific channel.
- Adopting an analytical approach using content analysis technique.

8. Explanation and Discussion of Study Concepts:

8.1. Methodology: René Descartes defines it in “Rules for the Direction of Reason”: “Rules that are certain and easy, thanks to which the one who carefully observes them does not confuse what is true with what is false, and achieves without effort, but by regularly increasing his knowledge, the precise knowledge of what can be achieved by adopting it with a wise, predetermined, and capable determination to point out the mistakes that should be avoided to achieve the specified goal.”⁽¹⁾.

(1) Gilles Frioul; Dictionary of Sociological Terms, published by Inasam Muhammad Al-Asaad, Al-Hilal House and Bookshops, Beirut, 2011, p. 116.

In practice, it means: the method of representing information, with the aim of creating a cognitive impact on the students receiving it (fourth intermediate level), by providing students with information and increasing their awareness of the topic (of mathematics) that is presented in the class.

8.2. Distance Education: It is also called education via the Internet, and is defined as “the process that includes transferring the educational program from its place in the educational institution to various places”⁽¹⁾. In details, it is: “a form of education in which the learner and the teacher are not physically present in the educational classroom, and where they are separated in time and space”.⁽²⁾ It is done in different ways:

- Synchronous distance education: where the learner attends video content in real time.
- Asynchronous distance education: in which the learner attends digital content at different times.
- Mixed or hybrid distance education: It includes the combination of distance education and face-to-face education, or synchronous and asynchronous.

In practice: it is a non-traditional, indirect digital education, through special educational videos on YouTube.

8.3. Digital Video: It allows the introduction of various possible paths or diverse questions in the video sequence, enabling learners to interact based on their abilities. Learners can repeat, modify, and review the content according to their needs. Interaction is facilitated through various tools like clicking on the platform, displaying content, showing windows, executing other actions, or responding to questions.⁽³⁾

(1) Abu Dhabi Chamber: Distance Learning Architecture, Advanced Technology, Reality and Challenges. 2020, p. 220. From: <https://www.abudhabichamber>. Accessed: 10/17/2023 at 16h22m.

(2) UNESCO: Index to the UNESCO Guide to Information Technology Terminology, UNESCO Regional Office for Education in the Arab Countries, Beirut, 2022, p. 37.
(3) Ibid.: p. 101.

In our study, it refers to asynchronous interactive educational audio-visual content presented on YouTube. Specifically, it includes math lessons for the fourth grade provided by "My School at Home" channel on YouTube.

8.4. Digital Learning Environment: It contrasts with the traditional learning environment, consisting of tools that can be used to support learning and enhance the learning experience outside the traditional learning boundaries. It allows teachers and learners to adopt these tools to improve their use of technology in the teaching and learning process, creating a dynamic and active learning experience.⁽¹⁾

In practice, it is the online interactive environment between the teacher and the learner, devoid of physical connection.

8.5. Information Representation: It refers to the visual presentation of information, utilizing written symbols and visual displays to obtain information.⁽²⁾

In practice, it means presenting educational information through audio and animated visuals.

9. Theoretical Approach of the Study:

We adopted the Information Processing Theory which elucidates how informational elements function within human memory. It posits that exposure, understanding, and attention occur within the memory that stores and represents human information ⁽³⁾. The key principles of this theory are:

- Well-organized information facilitates easy retention and recall.⁽⁴⁾
- Deep processing of information leads to easier recollection and involves a greater mental effort.

(1) UNESCO: Op., Cit.: p. 27.

(2) Magdi Aziz Ibrahim: "Glossary of Terms and Concepts in Education and Learning," Alam Al-Kutub, Cairo, 2009.

(3) Radha Akasha: "Media Effects: From Self-Communication to Multi-Media," 1st ed., Al-Hilal Library for Publishing and Distribution, October City, 2006.

(4) Ibid., p. 232.

- Individuals' ability to retrieve information depends on its relevance to the use of cues.

10. Study Results and Analysis:

10.1. Sample Characteristics:

- Qualitative focus using purposive sampling for data collection through content analysis.

- Research sample: 9 digital educational units, i.e., 9 educational sessions from the "My School at Home" channel on YouTube, presenting Math lessons for the fourth grade. These were electronically archived.

It is characterized by:

Table 1. Sample Characteristics:

Properties variables	Sample data
Type	Digital educational classes
Subject	Mathematics subject for the fourth-grade level.
Source	"My school at home" Youtube Channel.
Content	Math lessons and personal assessment.
Medium	Youtube
Presentation date	Between 2020/2021

The research sample consisted of special digital educational classes (Maths), directed to the fourth grade students, which were published via the YouTube channel. Its contents included lessons in the subject and classes for diagnostic assessment (exercises). The videos' time span extended between 2020/2021.

10.2. Presentation and Analysis of Study Data:

The analytical research of the digital documents (educational videos) in the study sample yielded the following:

a. Information Organization:

- Temporal Distribution: The analysis revealed an intermittent

temporal distribution in the publication and presentation of information. The videos were published at specific time intervals, displaying a non-continuous pattern with noticeable pauses, as illustrated in the following table:

Table 2. Temporal Distribution of Video Publication:

Video	Publication Date on YouTube
Video 1	A year ago
Video 2	8 months ago
Video 3	9 months ago
Video 4	11 months ago
Video 5	A month ago
Video 6	11 months ago
Video 7	A month ago
Video 8	10 months ago
Video 9	A year ago

As shown, the publication process was irregular and non-continuous, featuring distinct periods of activity and hiatus.

b. Information Presentation:

- The information (communicative message) was presented in an interconnected format. The teacher, as the information source, began with a welcome, introduced the lesson, delved into its elements, and detailed them progressively. Examples include:
- "Let's start with the first lesson, which is about natural and rational numbers."
- Moving to elements: "We begin with the first element, which is the divisor of a natural number," followed by definitions and other elements presented sequentially.
- Transitioning to another lesson element: "Moving on to an element of the lesson, which is the greatest common divisor..."
- Comprehensive review: "We'll start step by step. This model includes 3 exercises for only one hour: the first exercise, the second exercise,

and this is the third exercise." (Referring to an exam sheet.)

c. Information Ordering:

- General to Specific: Information was arranged in a descending scale from general to specific. The lesson introduction involved reading the title, followed by a gradual focus on its elements. For example, in the "Fraction Enumeration" lesson, the teacher started with: "Fraction Enumeration as a general concept," then specialized into elements such as "Fraction Enumeration between two natural numbers."
- Complexity Level: Information was hierarchically ordered by complexity: in Video 4, the lesson about fraction enumeration began with "The numerator equals the denominator," then progressed to "The numerator is smaller than the denominator," and finally to "The numerator is greater than the denominator."
- Overall, information was organized according to the predominant feedback model. The sender interacted with the recipient, assuming they have information processing positions involving extensive attention, perception, memory, and retrieval from the cognitive inventory, as evident in responses like: "Give me an example," "What is the value?" "You need to memorize these elements," "What do you notice?" "Have you understood this?" "Enumerate the fraction $9/10$," "So what do we do?", "Is this clear?" and "Check what they wrote for me in the comments."

d. Information Form:

- The information was presented in the form of written symbols (words and mathematical symbols) and oral symbols.
- Temporal Dimension in Communication: The information presentation process was characterized by a regular temporal dimension. The transition from one idea to another took approximately 2 to 3 seconds.
- Information Processing Level: Presentation Duration: Video durations ranged from approximately 7 minutes (6.55 min) to 20.44 minutes.

Table 3. Temporal Range of Video Information Presentation:

Video	Duration of Information Presentation
Video 1	14.51 min
Video 2	20.41 min
Video 3	07.58 min
Video 4	06.55 min
Video 5	13.46 min
Video 6	13.17 min
Video 7	20.44 min
Video 8	15.30 min
Video 9	11.53 min

The data in Table 3 indicates that the presentation duration generally falls within the range of 13 to 21 minutes, aligning with the recommended attention span for continuous learning (10-15 min).⁽¹⁾

- Illustrative examples were used to facilitate understanding, representing 70% of the content. This implies that individuals conceptualize the meaning of the information through examples.
- The information elaboration included explanations aiding in encoding information. The teacher often emphasized:
 - Writing and reading generalizations or referring to them verbally.
 - Focus on exercises as examples for understanding the meaning.
 - Utilizing mathematical symbols in line with the subject's nature.
- Mental Inclinations: includes the teacher's reliance on rules by reminding or referring to them, prompting responses: "What does the rule say?" or "Let's go back to the rule."
- The teacher's reliance on 03 processes:
 - The observation: "What do we notice?"

(1)ISBE: "Remote Learning Recommendations: COVID-19 During Emergencies, March 2020".From: <https://www.isbe.net>. Accessed: 17/10/2023 at 16:00.

- Focus: “Focus well”.
- Memory: through recalling: “What do you say? The rulesays:...” ...
 - Use of Indicators:
- Language Symbols:
 - verbal and colloquial language.
 - Mathematical symbols: numbers, fractions, ...
- The average writing style was used, corresponding to the medium (whiteboard/notebook) utilized for illustration.
- Illustrative Tools: The whiteboard featured clear writing using large font, ensuring visibility. In other videos where a notebook was used, the writing was smaller, resulting in lower visibility.
- Colors: Black (regular content), Blue (content), Green (subheadings), Yellow (titles, the teacher's name, and the channel's name), Red (titles), Pink (highlighting prominent terms).
- Besides colors, lines (1 or 2) were occasionally used under titles to emphasize them as seen in Video 7.
- The communication style was dialogical, facilitated by the social digital medium (YouTube), providing an interactive platform.

11. Discussion of Study Results:

a. Organization of Information in Videos:

- The presentation aligns with a production time of instructional methods and development, around 20 minutes, supporting the findings of Amal Gouda's study on the impact of YouTube video timing on developing educational infographic design skills.
- Digital lessons include both theory presentation with examples in the form of exercises and practical application sessions.
- Message construction (information) follows logical sequencing.

- The inclusion of encoding processes (words, mathematical symbols) in the presentation contributes to better organization.

In this aspect, it is clear that the results of our study support the cognitive statement of information representation theory that: the better the information is organized when presented, the easier it will be for recipients to retain and remember it.

b. Information Processing Level in Videos:

- Information processing in videos aligns with semantic processing, providing a deep understanding with explanatory background. This supports information retention and facilitates greater cognitive effort utilization.

c. Symbolic Indicators Used in Videos to satisfy students' mental needs:

The ability of students to retrieve information depends on the use of indicators:

- Utilization of presentation media (whiteboard, notebook, various colored pens) enhances the clarity of verbal information.
- Illustrative examples facilitate understanding of both oral and written material, encouraging interaction through questions.
- The use of hints through colors and lines directs students' attention, aiding selective attention.

According to information representation theory, these indicators help students retrieve information.

d. Corroborating Previous Studies:

Findings are consistent with previous studies, such as Madiha Hassan Mohammed, Abdul Rahman Abdullah Al-Jawad, and Taha Ibrahim, who emphasized the significant impact of students watching digital videos on their performance in practical education. Similarly, Manal Atta Al-Tawalbeh's study demonstrated the effectiveness of

interactive educational videos in increasing academic achievement in geography.

12. Conclusion:

Distance education using digital methods, specifically digital videos, represents a significant transformation in knowledge transfer and understanding stimulation for students. The current study focused on how information is represented in digital educational videos, particularly those presented on YouTube, utilizing the concept of "Methodology for Signaling" as a mechanism for information representation.

The study examined educational videos from the "My School at Home" channel, specifically math lessons for fourth-grade students (a sample of 09 lessons). The analysis, based on the theory of information representation, aimed to provide insights into the explanation of information media in the viewer's memory.

The results emphasize the importance of information representation theory, stating that exposure, understanding, and attention to information are inseparable from human memory, where information is stored, represented, and processed.⁽¹⁾

While the study's results cannot be generalized, they pave the way for future research on students and their persuasiveness in embracing educational content.

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(1)RadhaAkasha: Op. Cit., p. 229.

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