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Popularizing Science Literacy Among the Internet Users: An Empirical Study on Comprehension and Reception of Science Explainer Videos on Social Media

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Abstract

Social media platforms, like YouTube, have become essential resources for informal science education in today's digital learning environment. Earlier limited to textbooks and classroom instruction, science has now expanded to include short science explainer videos that simplify difficult concepts into interesting, approachable learning opportunities. This aids overall understanding of science and improves science literacy. This study examines how short science explainer videos work as educational tools that simplify complex concepts and engage diverse learners through storytelling, visuals, and influencer-led presentation. 202 college and university students in West Bengal, India, participated in pre- and post-surveys using a mixed-method design, viewed two-minute videos about astronomy, physics, chemistry, and geology. Many were motivated by curiosity and educational needs, according to the findings, and results showed strong comprehension and positive reception across genders and educational backgrounds. Influencers' narrative style, credibility, and visuals were seen as important in improving understanding and trust. The study highlights influencer-led science communication as an emerging form of media education that enhances learners' engagement, increases conceptual understanding, and contributes to the development of digital science communication. To expand the educational reach of science and media communication, the study recommends incorporating multilingual subtitles and research-based evidence for greater clarity and credibility.

Keywords: science literacy, science communication, social media, media education, explainer videos, influencers, audience comprehension, media richness theory, YouTube.

1. Introduction

Science communication has changed significantly with time. Earlier, it was limited to just academic journals and textbooks, and thus its reach was less among the broader audience. In case of media also, science stories and developments were covered less in newspapers and television channels which limited people's exposure to science and its understanding. Today, with digital tools like social media, podcasts and visual content, science has opened up to everyone, with allowing ideas to spread quickly and inviting people everywhere to join the conversation. Platforms such as YouTube, Instagram and Facebook feature short science videos that turn difficult concepts into easy-to-follow lessons, reaching wider audiences and encouraging public interactions.

Communicating science stories through visuals has become a key way to help people understand the complex concepts. In the ancient times, when the written languages were yet to be discovered, people used to communicate through various visuals. Today also, we can know and understand about past cultures through "prehistoric cave paintings" that "serves as a message for future generations" and they are still relevant (Landis, Duscher, 2022). They further state that

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“visual storytelling is a powerful way to establish step-by-step presentations, especially in the communication of scientific topics.” Methods like animations, graphics, data charts turn the information into interesting stories, helping people both grasp ideas and feel connected to them. This approach supports the goal of science literacy, that is, showing that science matters and making it easier and creating its importance in our lives.

Through various studies, it's proven recently that explanation of complex biological topics is done in a better way in the interactive media, instead of traditional media (Fedorov, Levitskaya, 2015; Horn et al., 2016; Tinák, Gálik, 2026). Social media has emerged as a dominant place for science communication, enabling creators to reach millions of viewers worldwide with crisp and informative content. If we take only one platform, that is, YouTube, we can say that it “alone has varied set of educational videos, of which a rapidly growing segment consists of science explainer content” and the contents are prepared in a way to “make complex topics accessible to everyone” (Bello-Bravo et al., 2021).

Although explainer videos are everywhere, there's still little research on how they affect viewer's understanding – especially while comparing people with different educational backgrounds, different genders and different age groups, all these through a pre-post testing method. Past studies show that people with formal science training tend to focus people's attention in a better way (Kulgemeyer et al., 2022). But most of this research looks at just one type of audience or one type of video, so not much is known about how diverse groups respond to different video contents.

Complexity or difficulty is how the science content is perceived by the viewers and a layer of difficulty is also being added by social media itself. Various videos on social media platforms might be popular but it's not necessary that it is accurate as well; and this “creates an issue of how trustworthy people think the science content is” (Welbourne, Grant, 2015). Here comes the role of the influencers, who have become a huge and unstoppable force on social media, “with brands and companies increasingly collaborating with these sources to leverage their relationships with their followers” (Jin et al., 2019; Nouri, 2018). The online media landscape has created access to the viewers to participate in science communication content, by creating the content or commenting, sharing or viewing “the content related to science” (Brossard 2013). Thus, the social media influencers creating the contents related to science and sharing those to their followers have a significant role in communicating scientific concepts and can be called as Science Influencers – ‘Scifluencers’. These scifluencers can range from trained scientists to enthusiastic educators, who can influence the views and preferences of the audiences related to scientific topics. Future research is needed to understand the learning outcomes related to science influencer content among different educational groups, age groups and genders.

Science literacy involves development of ability to comprehend scientific concepts. It is extremely important in present era as it may help understand a particular natural phenomenon in depth and aid people in making conclusions based on empirical evidence. With entry of science explainer videos, science has become easier and interesting for the Internet users which in turn is increasing their science literacy.

2. Materials and methods

The research questions are:

RQ1. How does different science explainer video affect the comprehension and reception among the diversified group of viewers?

RQ2. How effectively do science explainer videos communicate complex scientific concepts to a general audience?

RQ3. What role do visuals, narration and storytelling play in enhancing comprehension?

The objectives of the study are as follows:

- To compare pre-post learning outcomes between the science/non-science groups, age groups and male/ female groups.

- To assess how science explainer videos on social media influence users' understanding, trust and engagement with scientific content.

- Find out if the science influencers increase the efficiency and credibility of the videos.

This study uses the Qualitative and Quantitative approach where attempt is made to understand both descriptive and exploratory aspect of the research problem. This has been achieved through Pre-test and Post-test survey that was administered on the participants.

For conducting the pre-post survey, a Pre-test questionnaire was circulated among the respondents to assess their understanding and interest in science. Then the video links related to scientific concepts from YouTube were circulated and after watching those videos, a Post-test questionnaire was circulated for them to fill it up. The questions comprised of multiple-choice questions, 3-point Likert scale (Agree/Neutral/Disagree) statements and open-ended questions. The post-test questions were divided into sections such as 'Concepts depicted in the Video', 'Content of the video', 'Communicator/Influencer Effectiveness', 'Impact & Engagement' and 'Suggestions'.

Data collection has been done through pre-post survey which means conducting a survey before and after the intervention (i.e. watching the videos).

According to Roscoe's rule of thumb, sample size >30 and <500 is sufficient for most research and comparison groups should have at least 30 participants each (Praharaj, Ameen, 2024). For this study, a pre-post survey was conducted on the students of various colleges and universities of West Bengal who have a smartphone and use social media, through Purposive sampling. Only the participants who filled both pre and post questions have been taken as a valid sample for the study. The total number of valid samples for this study is 202.

Videos were chosen from various branches of science such as-astronomy video of influencer Cleo Abram (channel name: Cleo Abram, 60.6 Lakh subscribers), physics video of influencer Gaurav Thakur (channel name: GetsetflySCIENCE, 93.3 Lakh subscribers), chemistry video of influencer Ashu Ghai (channel name: Science & Fun, 84.5 Lakh subscribers) and geology video of Joe Hanson (channel name: Be Smart, 54.3 Lakh subscribers). These videos were shown to all the participants after pre-test and before post-test.

The following are the inclusion criteria for the videos:

- The science explainer videos chosen to conduct the study were from the different fields of science like astronomy, physics, chemistry and geology.
- The language of the videos chosen for the study were in English, an international language and Hindi, an Indian language (decision based on availability of content).
- The length of the videos was short and not longer than 2 minutes, as it is preferable to use shorter videos (less than or equal to 6 minutes) that can increase engagement and contribute to the retention of learning by the learners (Afify, 2020).

These are excluded while choosing the videos:

- Except for the four mentioned branches of science, no other field of science has been chosen for the study.
- Except two languages, no other languages have been chosen for the study.
- Longer videos of more than two minutes have been excluded from this study.

The data from various respondents was fed into MS Excel sheet and later utilized for further analysis in SPSS. Descriptive statistics was used to analyze the data on the basis of various demographic variables such as age, gender, and educational background. Later frequency tables were created and interpreted on the basis of the objectives of the study.

All participants were provided with detailed information about the study and then the survey was conducted. They were informed that the data will be used for academic purpose only. The participants' data are kept confidential and anonymous.

The study is grounded in communication and media education theories that explain how audiences learn and engage through mediated environments.

- Uses and Gratification theory has been used to frame a few questions of the study. The theory helps in understanding the various gratifications people get when consuming a certain media content. This theory suggests that individuals actively choose media to satisfy social and psychological needs. Blumler and Katz discussed five key categories of needs: cognitive, affective, personal integrative, social integrative and tension release. In the context of science explainer videos on social media, this theory denotes that viewers engage with the content to fulfill their psychological needs by understanding difficult concepts, affective needs through engaging visuals, personal integrative needs by becoming curious about the scientific facts and becoming interested in them and finally social integrative needs through discussing about it and passing their free time through casual learning.

- Models of Persuasion specifically Aristotle's rhetorical appeals (ethos, pathos, logos) provide a framework for understanding persuasion in communication. This can be utilized to understand how science explainer videos are able to convince and influence people. Ethos denotes the credibility of personality of the communicator. In science explainer videos, ethos can be found

out through expertise and authentic presentation of the facts. Pathos appeals to the audience's emotions. In explainer videos, pathos can be seen through narration and effective storytelling. Logos states logical and evidence-based reasoning. In case of science explainer videos, use of clear explanation and understanding of the scientific concepts can be related with this.

– Media Richness Theory is another framework that helps in understanding the multimodality of media content and how it leads to deeper understanding and retention of the embedded information. This theory states that communication in media uses various formats to convey information richly. It is being done through personalization, multiple cues, immediate feedback and variety of languages. Use of videos with animation, graphics, storytelling & narration and other interactive elements reduces ambiguity and increases understanding while plain texts can struggle with complex topics. Here, in science explainer videos, high media richness including storytelling elements, dynamic visuals, clear narration, pacing cues and also, on-screen texts help the viewers resolve uncertainty and makes it easier to grasp abstract concepts more effectively. When viewers face complex scientific concepts then the richer and interactive video formats make the science content more accessible and engaging.

3. Discussion

Today science communication focuses hugely on improving public science literacy and maintaining audience engagement with scientific knowledge. Science literacy is a multi-dimensional concept that includes digital skills, civic understanding and media-oriented competencies (Mede et al., 2025; Tinák, Gálik, 2026). Young adults rely more on social media platforms for scientific information instead of traditional media (Koechlin et al., 2025). With the digital platforms, people now encounter science largely through informal ways rather than formal education systems.

Media literacy and education are essential for understanding today's scientific environment. Media literacy is understanding how media messages are crafted to affect beliefs and behaviours (Austin et al., 2024) and this can be integrated with science communication goals as well. Researchers found that people with higher media literacy about science showed better knowledge gains and more readily adopted preventive behaviours in health situations like Covid-19 (Austin et al., 2021). This means that teaching people to critically evaluate scientific content, i.e. science media literacy, can enable them to apply scientific information properly. Now a days, media literacy training through workshops, are organised by various educators, to “strengthen science media literacy skills to counter misinformation and communicate emerging science” (Austin et al., 2024). All in all, combining media literacy with science literacy helps people to identify reliable sources, promote informed decision-making and prevents the spread of misleading scientific facts (Austin et al., 2021; Austin et al., 2024).

Social media has become a great part of our lives. With the advent of Facebook, Twitter, YouTube and many other social networking sites, the users can share and interact with online content and also connect with like-minded people. The ability of these platforms to rapid distribution and widely spreading the reach of the content makes it a highly powerful tool to use in a professional context (Osterrieder, 2013). Social media spreads scientific content to a wider audience than traditional methods, it reaches people of varied backgrounds (Parwani et al, 2019; Cabrera et al, 2018). As social media and other digital platforms are increasingly becoming important for science communication (Liang et al., 2014), one important question is that – who can communicate about scientific topics, and from this question, the influencers come into existence. Zhang and Lu (Zhang, Lu, 2023) stated that scientists are also influencers, they further explain that in science communication, authenticity means audience's perceptions of various attributes such as interpersonal warmth, integrity, dependability, competence, trustworthiness, credibility, benevolence, and inclusiveness. Expression of real 'self' or self-identity on social media is also linked to authenticity (Maares et al., 2021).

Visual storytelling and explainer videos on digital platforms are now central tools in science outreach. Stories are useful for persuasion as it can influence emotions, help audiences to imagine different situations and create relatable role models. In doing so, it can lead to changes in behaviour by encouraging people to believe in their ability to make a difference, especially when it comes to adopting environmentally friendly behaviours (Smith et al., 2023). The main aim in visual storytelling is to clearly communicate information to a target audience (Botsis et.al, 2020). They further state that visual storytelling combines many forms of media like photos, illustrations, video,

animation, 3D models and other graphics, with text and sound to create strong and compelling stories to the selected audiences. According to Marx and Konig (Marx, Konig, 2025), the explainer videos are using techniques like “2D and 3D animations to live-action talking head” formats, to understand the information in a visual form with the combination of verbal narration, which increases the comprehension and trust of the viewers. Explainer videos of 5 to 10 minutes explaining a topic in simple way, are everywhere on platforms like YouTube (Kulgemeyer, Wittwer, 2023). Research shows that these videos make the content more interesting and accessible, in one of the studies, the students rated science content as less difficult and more engaging after watching one explainer video (Krebs et al., 2024).

4. Results

This research used qualitative and quantitative approach to study how viewers understand and respond to science explainer videos. Information was gathered through pre-post surveys among 202 carefully chosen college and university students of West Bengal, India. These students watched selected science videos. Descriptive statistical tools in SPSS were used to examine group comparisons and frequency. Open-ended responses were thoroughly reviewed to identify common patterns in improvement suggestions and their preferred science influencers.

Among the 202 participants/respondents, the following is the demographic constitution:

Table 1. Demographic data of the participants

Variables	Categories of each variable		
	Female	Male	Other
Gender	57 % (116)	42 % (85)	1 % (1)
Age	18-20 56.93 % (115)	21-23 35.64 % (72)	24-26 7.42 % (15)
Educational Stream	Science 42 % (84)	Non-Science 58 % (118)	

From Table 1, it can be seen that the male participants are 42 %, female participants are 57 % and other gender participant is 1 %. As already stated, that only the students have been chosen as sample for this paper, the age group of 202 respondents comprises between 18 years to 26 years. Here, 56.93 % of the respondents are 18-20 years, 35.64 % are 21-23 years, 7.42 % are 24-26 years. Among 202 participants, two groups were found, i.e., Science group (comprising basic science subjects, engineering, nursing students, etc.) and Non-Science group (comprising Arts, Commerce, etc.). 58 % of the participants were from non-science streams and 42 % of the participants were from science stream.

Stage I: Pre-Test Findings & Analysis

Few questions were asked before viewing the videos to understand the respondents' viewership, reasons of watching the videos and their preferred science influencers. Following is the interpretation of the data collected from pre-test survey:

Table 2. Viewership of Science Explainer videos on social media among the respondents

Response	Frequency	Percent
Yes	181	90
Maybe	21	10
Total	202	100

90 % of the respondents responded 'yes' and 10 % of them responded 'may be' to a question, if the participants have watched Science explainer videos on social media, as shown in Table 2. This is to be noted that the results are analyzed among the 202 respondents and as visible majority responded positive to watching science videos.

Next the participants were asked about their reasons to watch science explainer videos on social media.

Table 3. Reasons for watching science explainer videos on social media

Responses	Frequency
Curiosity about science	51.49 % (104)
Educational needs	35.15 % (71)
Stay informed about scientific developments	34.16 % (69)
Entertainment	19.31 % (39)
Unintentional. It's merely a part of the feed.	10.40 % (21)

Table 3 depicts that the students chose multiple options that suited their reasons. The option 'Curiosity about science' was chosen by 51.49 % of the students, following 'educational needs' – 35.15 %, then students who watch these videos 'to stay informed about scientific developments' were around 34.16 %. Also, 'entertainment' and 'It's unintentional and it's merely part of the feed' were chosen by 19.31 % and 10.40 % respectively. Following the responses, it can be said that majority of the participants are eager to know about the scientific facts and for this reason they intentionally watch these videos primarily to fulfill their curiosity and educational needs which confirms the cognitive needs of the Uses and Gratifications theory.

The last question in the pre-test stage was asked to know about the names or the channels of the science influencers and communicators that the respondents watch and prefer on social media. To which they replied a variety of names – ISRO, NASA, Physics Girl (Diana Cowern), Science Max, Vsauce (Michael Stevens), Sick Science, Antariksh TV, Neil DeGrasse Tyson, Tech Burner, Kurzgesagt – In a Nutshell, Brian Greene, Mark Rober, Bill Nye, Marques Brownlee, Hank Green, V101 space (Rob), Science with fun, Fact Techz, minute physics, Everyday Astronaut (Tim Dodd), Rajib Makhni, Science is Dope, The AstroScriber, Nile Red, Veritasium, Trakin Tech (Arun Prabhu Desai). It might be noted here that the videos of the scifluencers chosen for the test were also among the preferred choices of the respondents, as they also responded that they watch the videos of Gaurav Thakur, Joe Hanson, Cleo Abram and Ashu Ghai.

Stage II: Post-Test Findings & Analysis

The questions asked in this stage was based on the videos that were shown to the respondents. This analysis discusses about the respondents' understanding, comprehension and reception of the science explainer videos. This part has been divided into five sections. In the first section, 'Concepts depicted in the Video' – four questions were asked. The questions were based on the concepts explained in the videos.

a) Concepts Depicted in the Videos:

For this study, the researcher wanted to find out the relation between gender groups, age groups and educational stream groups and its relation to the understanding and reception of the participants. As already mentioned, that 202 respondents were shown four videos and, in this section, the questions were asked based on the scientific concept explained in each of the videos. There was one distinct question per video. The answers given by the respondents were checked and given scores based on their correct/incorrect answers. Correct answer score was 1 and incorrect answer score was 0.

Table 4. Test Scores of the respondents

Variable	Category	Scores Average
Gender	Male (85)	3.37
	Female (116)	3.32
Age Group	18 – 20 (115)	3.32
	21 – 23 (72)	3.33
	24 – 26 (15)	3.2
Educational Stream	Science (84)	3.4
	Non-Science (118)	3.29

By adding up the scores that the respondents got, the total scores were prepared. Among which, total score got by male was 287 and female was 386, the total score got by the age groups

18–20 was 382, 21–23 was 237 and 24–26 was 48, the total score got by science group was 286 and non-science group was 389.

The average of the score was calculated by adding up all the scores got by a specific group like male group or female group and that was divided by their frequency and the same method was followed for all other groups. As seen in Table 4, among the four questions answered by male and female, male scored 3.37, female scored 3.32.

Though males' score was slightly better than the females, but still, it is a minute difference. Thus, by analyzing both the groups, it can be said that majority of the respondents both in male and female groups, gave the correct answer which confirms that they understood the concept explained in the videos.

Table 4 shows that the age group (18–20) secured an average score of 3.32. The group of (21-23) got an average score of 3.33. The final age group among the respondents, that is, (24–26) group secured an average score of 3.2.

It can be concluded that among the age groups also, majority of the students understood the concepts clearly as they got almost equal scores.

Table 4 also signify one of the most important things, because of the educational stream analysis. Since the videos were on scientific concepts, it was important to understand how science and non-science backgrounds can affect the understanding and reception of such videos. The important finding was that there were no such differences noticed in case of these groups as well. Hence, we can conclude that varied demographic groups doesn't affect the comprehension of the scientific concepts in the video, and the science explainer videos were uniformly understandable.

b) Content of the Video:

This section comprises of seven 3-point Likert scale statements where the statements analyzed the length, lucidity, visuals and other necessary aspects of the video.

Table 5. Responses for 'content of the video'

Statement	Agree	Neutral	Disagree
The videos were concise (short in duration).	84.65 % (171)	15.35 % (31)	0 % (0)
The videos were interesting.	90.01 % (182)	9.90 % (20)	0 % (0)
The videos were lucid (clear and easy to understand).	86.63 % (175)	12.38 % (25)	0.99 % (2)
Visuals (animation, infographics and diagrams) of the videos were appealing and self-explanatory.	87.13 % (176)	12.38 % (25)	0.495 % (1)
Complex concepts were simplified in the videos.	86.14 % (174)	12.87 % (26)	0.99 % (2)
The information in the videos seems credible and trustworthy.	86.14 % (174)	13.86 % (28)	0 % (0)
The usage of storytelling element increased my understanding of the videos.	88.61 % (179)	11.39 % (23)	0 % (0)

Table 5 provides the actual count of the 3-point (Agree/Neutral/Disagree) for all the seven statements with their percentage. It's important to note that 90 % of the respondents found the videos to be interesting. More than 86 % agreed that the videos were understandable, visuals were appealing, and complex concepts were simplified. Also, 86 % of the respondents found the information as trustworthy and 88 % of them agreed that the use of storytelling element increased their understanding. More than 84 % of the respondents agreed that the videos were in short duration.

c) Influencer/Communicator Effectiveness:

In this section, four 3-point Likert scale statements were provided to understand the effectiveness of the science influencers/communicators. The intention of the researcher was to find out about their narration and communicating style and its connection with the understanding of the videos. Also, it was found out if the presence of the communicator/influencer made the video credible and if the influencers were knowledgeable.

Table 6. Responses for ‘communicator/influencer effectiveness’

Statement	Agree	Neutral	Disagree
The narration style of the communicator or influencer enhanced my understanding of the videos.	85.64 % (173)	14.36 % (29)	0 % (0)
The communicator or influencer’s style of communicating was effective.	80.69 % (163)	19.31 % (39)	0 % (0)
The presence of communicator or influencer in the videos (rather than just background voice) made the video more interesting and credible.	73.27 % (148)	24.26 % (49)	2.48 % (5)
The communicator/influencer in the videos were knowledgeable.	84.16 % (170)	14.36 % (29)	1.49 % (3)

Table 6 indicates that in case of the communicator/influencer effectiveness, more than 85 % agreed on the effectiveness of the narration style of the influencers and 80 % of them agreed that influencer’s style of communication was effective. Apart from this, more than 84 % agreed that the influencers were knowledgeable and 73.27 % of them responded that the presence of the influencer made the videos more credible. The research objective of this paper was to understand if the science influencers made any impact on the efficiency and credibility of the videos, through this section, this can be interpreted that the respondents agreed that the influencers’ narration style, their presence and their knowledge were overall helpful in the comprehension and reception of the videos.

d) Impact & Engagement:

This is the fourth section of the post-test questionnaire. This section comprises of four 3-point Likert scale statements and one question was there to know what rating does the respondents give on a scale of 1 to 5 on their overall understanding of the videos. The four statements were asked to check the attitudes of the respondents after watching the videos.

Table 7. Responses for ‘impact & engagement’

Statement	Agree	Neutral	Disagree
My knowledge about the scientific concepts got enhanced after watching the videos.	84.16 % (170)	13.86 % (28)	1.98 % (4)
I want to search and watch more such videos on scientific concepts.	80.12 % (162)	18.81 % (38)	0.99 % (2)
Watching the videos motivates me to discuss those scientific concepts with friends and family members.	80.12 % (162)	17.33 % (35)	2.48 % (5)
I would recommend these science related videos to my friends and family members.	81.12 % (164)	16.83 % (34)	1.98 % (4)

Through Table 7, it can be said that more than 80 % of the respondents agreed to all the statements. The respondents agreed that the videos on scientific concepts enhanced their knowledge and thus they will search more about such concepts. They will also discuss and recommend these concepts and videos with their families and friends.

The following table shows the rating for the respondents’ overall understanding of the videos:

Table 8. Rating for overall understanding of the videos

Rating	Frequency	Percent
5	110	54.46
4	70	34.65
3	22	10.89
2	0	0

Rating	Frequency	Percent
1	0	0
Total	202	100

A rating from a scale of 1 to 5 was provided for the respondents to choose for their overall understanding of the videos. From [Table 8](#), it can be seen that 89 % of them gave 5 or 4 to their overall understanding of the videos. This indicated that the respondents understood the concepts pretty well since they themselves gave higher ratings to their own understanding.

5. Conclusion

This study examined how science explainer videos on social media help different audiences understand complex topics, with showing relevant connections of presenter credibility, content design and audience characteristics. Beyond science communication, these results also contributed to the field of media education by illustrating how digital platforms serve as sites of informal and participatory learning. A pre-test showed almost all the participants already watch science explainer videos indicating wider reception, mainly due to their cognitive needs (curiosity) and educational needs. This also led to high post-test comprehension scores. The post-test scores were consistently high across all demographic groups indicating that these videos effectively transcend viewer differences. The overall findings and almost equal scores showed that well-designed videos level the viewer comprehension and indicating that rich media eases understanding and that validates the concept of Media Richness Theory.

Many found the video concepts interesting, which relates to the emotional appeal of storytelling. Most of them would recommend videos to others, turning private viewing to social sharing – confirming integrative needs of the Uses and Gratifications theory.

Respondents agreed that their knowledge enhanced after watching the videos while agreeing that the use of storytelling and visuals boosts understanding, confirming Aristotle's 'pathos'. Nearly all of them praised visuals with animations signifying dual coding (narration and visuals) as effective. Science influencers played a key role as majority respondents appreciated their narration style for clarity and the influencers were also called as 'knowledgeable'. They also found that the on-screen presence of the scifluencers highlighted credibility which also validated Zhang and Lu's ([Zhang, Lu, 2023](#)) 'authenticity' point and Aristotle's 'ethos'.

Most viewers reported heightened interest in scientific topics after watching the videos, with strong intent to seek similar content and discuss about these concepts socially. Nearly all the participants rated highest about their understanding of the videos pointing to higher comprehension rates. Many of them appreciated the video quality, saying they were 'perfect'. However, numerous others identified specific areas needing adjustment to enhance the effectiveness and broaden audience reach. A common request was incorporating real-life experiments to relate with the specific scientific concepts to strengthen understanding through practical examples. Several participants suggested that adding research papers or scientific evidence within the videos can boost credibility and trust. Others recommended adding brief summary of the concept or key point recaps at the end of the videos could help in the better understanding. To expand the reach and overcome language barriers, multiple respondents proposed including in-video subtitles in various languages. Few respondents noted that the background music occasionally interfered in the videos and thus advised reducing its volume or presence. Participants also recommended to use simpler words reducing complex terms, to aid viewers lacking prior knowledge of the concepts. Specific feedback about the narration included requests for the influencers to speak at a slightly slower pace throughout explanations. Additionally, the respondents mentioned that they wanted the increased screen time and visibility for all the influencers to improve influencer-viewer connection. Through these additional media education oriented inclusions, 'Scifluencers' can broaden their educational reach and contribute to the development of science literacy and prevent misinformation across digital platforms.

In this study, respondents were limited to the urban students of West Bengal colleges and universities, and also within the age limit of 18–26 years. Long format videos and other languages except English and Hindi were excluded. No other fields of science were included in the study except astronomy, geology, physics and chemistry. Immediate post-testing prevented long term studies of knowledge retention or behavioral changes. Only pre-post test was used to conduct this study. The study was limited to choosing science influencers only, the science educators and communicators

weren't included. Also, though some scifluencers upload the same videos to varied platforms but the videos for this study, were taken from just one social media platform, that is, YouTube.

In case of social media platforms, it's being recommended to create 'Science-Credibility Badges' for trusted influencers. And, through AI (artificial intelligence) algorithms, boost the videos with strong credibility and emotional appeal.

The suggestions for future research consist of the expansion of studies to rural population, older age and also studying other states of India or other countries. The researchers can also focus on multilingual contexts and longer video formats. For this study, pre-post survey has been used, other methodologies like eye-tracking behavior, content analysis and also longitudinal studies might be adopted for better understanding. Future studies can also focus on various social media platforms and compare their reception among people.

Science explainer videos can be integrated into classroom teaching for improved learning. Media education can also adopt explainer videos as examples of participatory and visual learning that bridges formal and informal education.

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