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An Exploration of Diversity in Indian Educational Videos in Library and Information Science

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ABSTRACT

This study analyses the design features of instructional videos in Library and Information Science (LIS) from four Indian institutions using content analysis. Fifty YouTube videos were evaluated across physical, cognitive, and affective design dimensions to assess their quality and effectiveness. EPGP and IGNOU performed well in high-resolution visuals, clear introductions, and narration quality, while CEC and NIOS lagged in several aspects, including graphics integration and content alignment. Interactive YouTube features enhanced engagement but were offset by technical glitches in videos



from CEC, EPGP, and IGNOU. The study highlights the importance of adhering to multimedia learning principles, focusing on clarity, engagement, and structured content to optimize learning outcomes. Future research should explore the impact of these design elements on learner engagement and outcomes to inform best practices in instructional video production.

Keywords:

Educational Video, Content Analysis, Video Design Features, Library and Information Science; YouTube; Multimedia Learning, Learner Engagement.

1. INTRODUCTION

Content analysis involves coding material into categories based on specific criteria, then analyzing the frequency and patterns of these codes. It is widely used in marketing, social science, and media studies to examine attitudes, opinions, and behaviours. This method efficiently extracts and interprets large volumes of data from text, images, videos, audio, and multimedia. Content analysis systematically categorizes and interprets data from various media, including text, videos, and multimedia, to understand patterns and meanings. In Library and Information Science (LIS), content analysis systematically examines a document's content to understand its meaning and structure, often applied to literature, news articles, websites, and videos.

Educational videos aim to inform, teach, or support learning and research, taking formats like documentaries, tutorials, or readings. Analysing such videos involves identifying themes, resources, audiences, and opportunities for improvement. For LIS educational videos, this analysis considers language, length, and production quality



to enhance accessibility and engagement. Viewer metrics like likes and views also help evaluate effectiveness.This analysis will focus on how video design elements-audio, visuals, and narration-are used in LIS educational videos to assess their effectiveness. The findings will offer insights for creating more engaging and impactful educational content.

2. REVIEW OF LITERATURE

Educational videos have gained significant attention for their impact on learning outcomes and engagement. Research highlights their benefits, including effective communication of complex information, cost-efficiency, positive emotional influence, and cognitive enrichment. Studies show they enhance engagement, connect theory to practice, and improve learning attitudes and achievements (August et al., 2018; Meng, 2023).

Their role in promoting diversity, equity, and inclusion, particularly in management education, has also been emphasized (Liu et al., 2022).

The use of asynchronous videos in interactive online learning has proven effective, with case studies demonstrating their success (Saluky, 2023). Video analytics research underscores the importance of understanding clickstream interactions and learner attitudes in video-assisted courses (Giannakos et al., 2015).

Videos also support teacher reflection and professional development, improving teaching practices (Hüttner, 2022).In health education, videos have effectively promoted eye health, postoperative care, and organ donation intent, addressing diverse populations' needs (Molmenti et al., 2021; Razera et al., 2019; Rodrigues et al., 2017). Tailored educational animations further ensure cultural relevance and effectiveness (Keller et al., 2022).



The literature demonstrates the wide-ranging applications of educational videos, highlighting their role in enhancing learning outcomes, fostering inclusivity, and improving engagement and knowledge dissemination across disciplines.

3. METHODOLOGY

This study uses content analysis to systematically and objectively identify design characteristics of instructional videos.

Neuendorf (2017) content analysis methodology guides the process, including video selection, category table creation, unit coding, and reliability assessment.

Videos were collected from YouTube, focusing on Library and Information Science, to analyse their design characteristics and effectiveness.

3.1 VIDEOS SELECTION

Videos from Consortium for Educational Communication, e-PGPathshala, Indira Gandhi National Open University, and National Institute of Open Schooling were randomly selected for analysis.

For brevity, these institutions are referred to as CEC, EPGP, IGNOU, and NIOS throughout the analysis.

Fifty instructional videos, each at least 20 minutes long, were analysed using the framework by Morain and Swarts (2012), focusing on three major variables: physical design, cognitive design, and affective design.Video-based instruction differs from in-person learning by delivering information primarily one-way, with limited interaction opportunities for learners.



3.2 CODING UNIT

Three researchers, including the primary researcher and two coders, independently analysed each video. The primary researcher identified strategies in the videos, while coders used a predefined category table to mark and record strategies. This collaborative approach minimized bias and ensured reliability, leveraging diverse perspectives and expertise for a robust evaluation.

3.3 INSTRUMENTS

A comprehensive framework with 54 items across three dimensions was developed for the analysis. A detailed codebook ensures clarity and consistency, specifying instruments and measurement approaches for each item. This systematic framework captures and interprets instructional video characteristics effectively.

3.4 RELIABILITY

Three researchers conducted a meticulous coding process, with inter-coder reliability assessed using Krippendorff's Alpha and Fleiss' Kappa. These tests confirmed high agreement among coders, with mean values of 0.806 and 0.804, respectively, indicating significant reliability.

Coders included a primary researcher, a librarian, and an academician, all adhering to the codebook guidelines. The rigorous statistical reliability measures validate the credibility of the coding process.

4. RESULTS

This section summarizes the analysis of 50 YouTube videos based on their physical, cognitive, and affective design features.



Table No. 1: Comparison of Physical Design Features in Instructional Videos across Four Institutions

Variable	Category	Institutions			
		CEC	EPGP	IGNOU	NIOS
Suitable title has been given to the video	No	5 (10%)	3 (6%)	0 (0%)	0 (0%)
	Yes	1 (2%)	24 (48%)	15 (30%)	2 (4%)
The video has a resolution	360p	0 (0%)	4 (8%)	3 (6%)	0 (0%)
	480p	0 (0%)	6 (12%)	0 (0%)	0 (0%)
	720p	1 (2%)	2 (4%)	0 (0%)	0 (0%)
	1080p	5 (10%)	15 (30%)	12 (24%)	2 (4%)
The background of the narrator is	Virtual background	6 (12%)	25 (50%)	14 (28%)	2 (4%)
	Realistic background	0 (0%)	2 (4%)	1 (2%)	0 (0%)
The content communicated with text/graphics	No	0 (0%)	1 (2%)	0 (0%)	0 (0%)
	Yes	6 (12%)	26 (52%)	15 (30%)	2 (4%)
What kind of graphics are used?	Not Available	0 (0%)	13 (26%)	2 (4%)	0 (0%)
	Image format	1 (2%)	6 (12%)	12 (24%)	1 (2%)
	Both "Gif & image	5 (10%)	8 (16%)	1 (2%)	1 (2%)
The graphics in the video are	Not Available	0 (0%)	13 (26%)	2 (4%)	0 (0%)
	In-appropriate	0 (0%)	1 (2%)	0 (0%)	0 (0%)
	Slightly inappropriate	1 (2%)	3 (6%)	1 (2%)	0 (0%)
	Neutral	0 (0%)	2 (4%)	0 (0%)	0 (0%)
	Slightly appropriate	1 (2%)	1 (2%)	3 (6%)	1 (2%)
	Appropriate	4 (8%)	7 (14%)	9 (18%)	1 (2%)
Graphics quality	Not Available	0 (0%)	13 (26%)	2 (4%)	0 (0%)
	Average	4 (8%)	4 (8%)	1 (2%)	0 (0%)
	Above average	1 (2%)	9 (18%)	12 (24%)	2 (4%)
	Excellent	1 (2%)	1 (2%)	0 (0%)	0 (0%)
Voiceovers are done with the narrator's voice	No	2 (4%)	2 (4%)	0 (0%)	0 (0%)
	Yes	4 (8%)	25 (50%)	15 (30%)	2 (4%)
The narration speed	Slight slow	0 (0%)	3 (6%)	2 (4%)	0 (0%)
	Natural	4 (8%)	14 (28%)	11 (22%)	1 (2%)
	Slightly fast	2 (4%)	10 (20%)	2 (4%)	1 (2%)
The audio in the video	Fair	0 (0%)	2 (4%)	1 (2%)	0 (0%)
	Good	6 (12%)	14 (28%)	5 (10%)	1 (2%)
	Very Good	0 (0%)	11 (22%)	9 (18%)	1 (2%)
Does the video have any glitches?	No	4 (8%)	25 (50%)	13 (26%)	2 (4%)
	Yes	2 (4%)	2 (4%)	2 (4%)	0 (0%)

Table 1 and Figure 1 highlights variations in resolution and graphics quality. EPGP and IGNOU excelled with high-resolution videos (1080p) and suitable titles, while CEC and NIOS produced fewer high-quality visuals. Virtual backgrounds were predominant across institutions, particularly in EPGP and IGNOU, with minimal use of realistic backgrounds.



Figure No. 1 : Comparison of Physical Design Features across Institutions

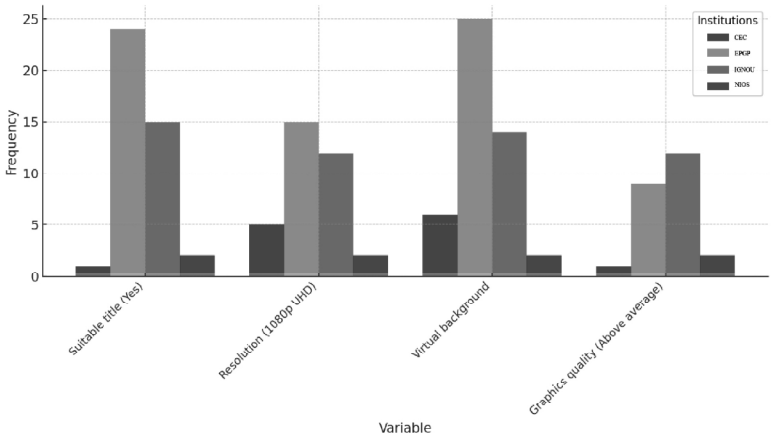


Table No. 2 : Comparison of Cognitive Design Features in Instructional Videos across Four Institutions

Variable	Category	Institutions			
		CEC	EPGP	IGNOU	NIOS
An introduction is given	No	0 (0%)	1 (2%)	0 (0%)	0 (0%)
	Yes	6 (12%)	26 (52%)	15 (30%)	2 (4%)
A goal/objective is presented	No	0 (0%)	4 (8%)	0 (0%)	0 (0%)
	Yes	6 (12%)	23 (46%)	15 (30%)	2 (4%)
The title explains in the content of the video	No	4 (8%)	0 (0%)	0 (0%)	0 (0%)
	Yes	2 (4%)	27 (54%)	15 (30%)	2 (4%)
The audio and visuals in the video are synchronic	No	0 (0%)	2 (4%)	0 (0%)	0 (0%)
	Yes	6 (12%)	25 (50%)	15 (30%)	2 (4%)
Is there any sound or mic issue in the audio?	No	3 (6%)	18 (36%)	13 (26%)	2 (4%)
	Yes	3 (6%)	9 (18%)	2 (4%)	0 (0%)
A theoretical explanation is given	No	1 (2%)	0 (0%)	0 (0%)	0 (0%)
	Yes	5 (10%)	27 (54%)	15 (30%)	2 (4%)
An illustrated example is used	No	4 (8%)	21 (42%)	8 (16%)	1 (2%)
	Yes	2 (4%)	6 (12%)	7 (14%)	1 (2%)
Content is relevant to the goal/objective	No	0 (0%)	2 (4%)	0 (0%)	0 (0%)
	Yes	6 (12%)	25 (50%)	15 (30%)	2 (4%)
The timing of the video is easy to follow	No	1 (2%)	5 (10%)	0 (0%)	0 (0%)
	Yes	5 (10%)	22 (44%)	15 (30%)	2 (4%)
Conclusion is given	No	3 (6%)	13 (26%)	5 (10%)	1 (2%)
	Yes	3 (6%)	14 (28%)	10 (20%)	1 (2%)

As shown in Table 2, EPGP and IGNOU led in providing clear introductions, aligning content with objectives, and ensuring audio-visual synchronization. However, all institutions showed limited use of illustrated examples, which are critical for practical understanding.

Table No. 3 : Comparison of Affective Design Features in Instructional Videos across Four Institutions

Variable	Category	Institutions			
		CEC	EPGP	IGNOU	NIOS
The narration style of the video is	Inappropriate	0 (0%)	3 (6%)	0 (0%)	0 (0%)
	Slighlly inappropriate	2 (4%)	6 (12%)	0 (0%)	0 (0%)
	Formal	2 (4%)	5 (10%)	3 (6%)	0 (0%)
	Slightly appropriate	1 (2%)	4 (8%)	2 (4%)	1 (2%)
	Appropriate	1 (2%)	9 (18%)	10 (20%)	1 (2%)
There is a difficulty in conveying the content by the narrator	No	0 (0%)	21 (42%)	15 (30%)	2 (4%)
	Yes	6 (12%)	6 (12%)	0 (0%)	0 (0%)
The overall quality of the video	Poor	0 (0%)	1 (2%)	0 (0%)	0 (0%)
	Average	1 (2%)	2 (4%)	1 (2%)	0 (0%)
	Good	5 (10%)	23 (46%)	13 (26%)	1 (2%)
	Excellent	0 (0%)	1 (2%)	1 (2%)	1 (2%)

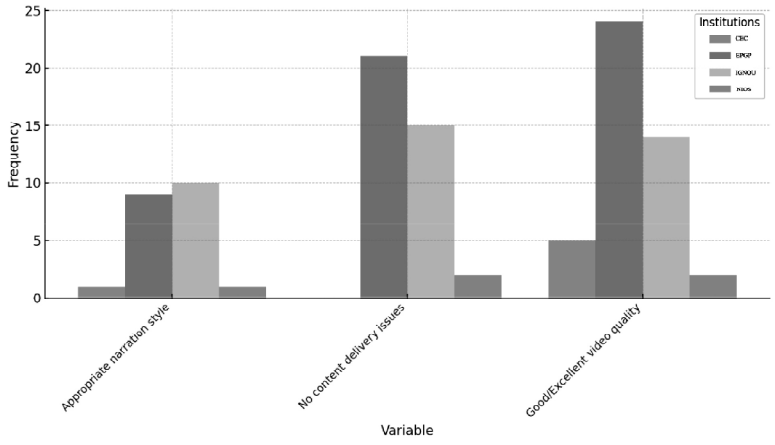


Figure No. 2 : Comparison of Affective Design Features across Institutions

Table 3 reveals that IGNOU and EPGP performed well in narration quality and presentation. In contrast, CEC struggled with narration, content delivery, and graphics integration, while NIOS demonstrated moderate performance but lacked diversity due to a smaller sample size as shown in figure 2.

Technical glitches were observed in videos from CEC, EPGP, and IGNOU, highlighting the need for improved production processes.

5. DISCUSSION

The findings reveal significant disparities in the design quality of instructional videos across the four institutions. EPGP and IGNOU consistently outperformed others, particularly in physical and cognitive design dimensions, with high-resolution visuals, effective content alignment, and clear narration. However, the underutilization of illustrated examples across all institutions highlights a common area for improvement.

CEC exhibited challenges in narration, graphics quality, and technical consistency, significantly limiting its effectiveness. NIOS, while moderate in overall performance, lacked diversity and innovation, likely due to its smaller sample size.

These findings emphasize the need for targeted investments in technical quality, content structuring, and engaging narration to optimize video effectiveness.

YouTube's interactive features, such as playback controls, resolution adjustments, and captions, were effective in enhancing engagement. However, technical glitches observed in videos from CEC, EPGP, and IGNOU suggest a need for improved production standards to ensure seamless viewing experiences.



Aligning video production with multimedia learning principles-clarity, coherence, and engagement-remains critical. Institutions should prioritize high-quality visuals, structured content, and effective narration to maximize educational impact. Future research should explore the relationship between these design elements and learner engagement to refine best practices in instructional video production.

6. FINDINGS

- EPGP and IGNOU excelled in physical design features, such as high-resolution videos, appropriate titles, and effective graphics integration, while CEC and NIOS lagged in these areas.
- In cognitive design, EPGP and IGNOU performed well with clear introductions, alignment of content with goals, and synchronized audio-visual elements. However, all institutions demonstrated limited use of illustrated examples, a key feature for practical understanding.
- Affective design analysis highlighted strong narration and presentation quality in IGNOU and EPGP, while CEC faced challenges in narration style, content delivery, and graphics integration. NIOS showed moderate performance but lacked diversity due to its smaller sample size.
- YouTube's interactive features, including playback controls and resolution adjustments, enhanced user engagement. However, technical glitches in videos from CEC, EPGP, and IGNOU revealed a need for improved production standards.
- Across all institutions, adherence to multimedia learning principles-emphasizing clarity, coherence, and engagement-is essential for optimizing instructional video effectiveness.



These findings underline the need for targeted improvements in technical quality, content structuring, and illustrated examples to enhance the educational impact of instructional videos.

7. CONCLUSION

This study evaluated the instructional design features of educational videos from four Indian institutions, identifying significant variations in quality and effectiveness. EPGP and IGNOU excelled in high-resolution visuals, clear content alignment, and narration quality, setting benchmarks for effective video production.

In contrast, CEC struggled with narration, graphics integration, and content delivery, while NIOS showed moderate performance but lacked diversity due to its smaller sample size.The findings emphasize the need for all institutions to address common gaps, particularly the underutilization of illustrated examples, which are essential for practical understanding.

While interactive YouTube features enhanced user engagement, technical glitches in videos from CEC, EPGP, and IGNOU highlight the need for improved production processes.

Adhering to multimedia learning principles, such as clarity, coherence, and engagement, is essential for optimizing instructional video outcomes. Institutions should focus on high-quality visuals, structured content, and effective narration to meet educational objectives.

Future research should investigate how these design features influence learner engagement and outcomes, providing evidence-based recommendations for best practices in instructional video production.



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