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# Visual storytelling for improving the comprehension and utility in disseminating information systems research: Evidence from a quasi-experiment

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## Abstract

Since the start of human civilisation, storytelling has served as an effective medium for disseminating important knowledge within families, communities, and organisations. We make a case for the use of visual storytelling, namely, video stories, to supplement traditional scholarly articles in the Information Systems (IS) discipline, thereby exploring its potential to improve actual and perceived comprehension, perceived utility, satisfaction as well as intentions to cite, share, and accept research. Drawing on cognitive learning theory, the cognitive theory of multimedia learning and the literature on deep processing, we develop our research model, which is based on the model by Jiang and Benbasat (2007). We test our model in experimental settings with 269 research-oriented students and academics who were randomised into four conditions: (1) reading a text-based article, (2) reading the script for a video about the article, (3) viewing the video story of the article, and (4) viewing the video story followed by reading the article. Results showed that the article's script was significantly perceived to be the least useful in disseminating research content. The video story and text-based article were perceived to be equally useful, and supplementing the text-based article

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with a video story was perceived to be the most useful. Moreover, the video story and text-based article supplemented by a video story were of roughly equal effectiveness; yet, the video script was the most effective, and the text-based article was least effective relative to other formats in disseminating scholarly knowledge. Last, we discuss how to further improve the design of video stories by referring to the critical narrative theory, which has the potential to significantly promote the dissemination of IS scholarly knowledge.

**KEYWORDS**

cognitive learning theory, cognitive theory of multimedia learning, deep processing, scholarly knowledge dissemination, video stories, visual storytelling

## 1 | INTRODUCTION

Humans have developed social and neurophysiological capacities with which to process and disseminate information to communicate with each another using stories. Storytelling forms the foundation of how we learn about the world around us (Schutz, 1960). Throughout history and in many cultures and civilisations, storytelling has served as an effective medium for disseminating important knowledge (Lindesmith & McWeeny, 1994). For example, the Iliad and the Odyssey are literary monuments depicting the central role of storytelling as a medium for retaining and disseminating knowledge in Ancient Greece. Storytelling also remains an inherent backbone of conversation and inquiry within families (Zwack, Kraiczy, von Schlippe, & Hack, 2016), communities (Ramasubramanian, 2016), and organisations (Dailey & Browning, 2014) in modern society.

*Story* is an account (written or oral, fiction or nonfiction) focusing on a self-contained event or series of connected events with the purpose of eliciting a "single effect" (Stein, 1982). *Storytelling* is an approach to telling a story that involves the communication of ideas, beliefs, personal histories, and life lessons (LeBlanc & Hogg, 2006) through accounts of actions formulated from real or imagined events, characters, a structure of a beginning, middle, and end and a plot tying all these elements together (Hayne, 2009). *Visual storytelling* is the telling of a story enhanced via the use of visual media (eg, photography, graphics, illustrations, and video) and aural media (eg, music, voice, and sound effects) (Caputo, 2003). Visual storytelling can invoke an innate, physiological, and reflexive response in the form of receiver engagement and empathy (Ryokai, Vaucelle, & Cassell, 2002).

Visual storytelling can (1) facilitate organisational learning (Militello & Guajardo, 2013), (2) increase information generation and collaborative engagement and track the development trajectory in cognitively demanding research disciplines (Rambe & Mlambo, 2014), and (3) improve the visual memory capacity and writing skills of students (Sarıca & Usluel, 2016). Koehler, Yadav, Phillips, and Cavazos-Kottke (2005) investigate how text and video versions of four different stories influence individuals' interest and affect, emotional engagement, recall of information, ability to summarise main points, judgments of story quality, and opinions about content matter. Their results show that interactions between the aural and visual components of stories told through video lead to higher interest, affect, and emotional engagement and improved ability to summarise main points, judgments of story quality, and opinions about content matter.

A large portion of the human brain is devoted to image processing, visual interpretation, and synthesis (Paivio, 2010). The cognitive science literature confirms that, regardless of various context-based factors (eg idiosyncratic learning experiences), humans still learn, retain, and comprehend best when information is disseminated in a multimedia format (ie, aural and visual) as opposed to a strictly prose format (ie, text) (Mayer, 2005a, 1997, 2002). Furthermore, deep processing (Carroll, Mack, Lewis, Grischkowsky, & Robertson, 1985) is promoted when information is presented in modules or chunks (Schluep, Ravasio, & Schär, 2003) and in a multimedia format (Mayer, 2003, 2005b). Thus, drawing on cognitive load theory (CLT), the cognitive theory of multimedia learning (CTML), and the literature on deep processing, we make a case for the use of visual storytelling to supplement the traditional text-based academic article in the information systems (IS) discipline. We argue that video stories that are designed to activate multiple sensory cues and channels would promote deeper cognitive processing than would traditional text-based manuscripts and would, in turn, improve research understanding, distribution, acceptance, citation, and influence.

Beyond this rationale for enhanced cognition, we offer a pragmatic rationale for the use of video stories. We note a major shift in academia whereby it is no longer sufficient to advance one's career solely on the basis of having published in top academic journals. Nowadays, researchers are expected to advocate for and translate their work to wider audiences. Researchers also operate in a world of high specialisation, yet great value is increasingly placed on interdisciplinary work. In these settings, how can IS researchers keep up with their own area of specialisation, let alone follow research outside their immediate discipline, which is necessary to foster interdisciplinary work? How can they better advocate for their work and get it noticed outside the small circle of similarly minded individuals? We claim that the use of video stories provides an answer to these questions.

Thus, there is a pressing need for an alternative way of disseminating research in the IS discipline, which is optimally aligned with the characteristics of natural human processing and learning capacities. We provide preliminary evidence that visual storytelling has the potential to increase impact by improving the consumption, distribution, acceptance, and citation of IS research. In our model, we hypothesised that the content format (ie, the four treatments listed) through which scholarly knowledge is disseminated affects the learner's comprehension and the perceived usefulness of the research, which, in turn, leads to satisfaction as well as the intention to cite, share, and accept the research.

The idea of disseminating scholarly knowledge using alternative presentation formats is not new. Other disciplines, such as management, psychology, and computer science, have embraced alternative approaches for disseminating and consuming scholarly knowledge. For example, the *ACM CHI Conference on Human Factors in Computing Systems* is an international conference on human-computer interaction, which provides video briefs for the extended abstracts of its publications. We also raise this call with caution because, for more than 350 years, scholarly knowledge has been communicated more or less effectively through text-based articles following a fairly rigid, vetted template (eg, Oldenburg, 1665). By no means is our goal to propose that video stories supplant articles as the sole means for disseminating scholarly knowledge.

Our paper is organised as follows: We first review relevant literature on storytelling, human cognitive processing, and multimedia instructional design to provide theoretical support for our research model. We then provide an example of a video story to link our arguments in support of using visual storytelling for improving the dissemination and consumption of IS research. Further, we develop a research model, which we test in experimental settings. Finally, we conclude with a discussion of our findings and the limitations of the current research.

## 2 | THEORETICAL FOUNDATIONS

### 2.1 | Stories and storytelling

A well-told story features primary characters (ie, a protagonist and antagonist) and secondary characters and aims to achieve unity of effect and create a mood via the mechanism of a coherent plot (Ackerman, 2003). Traditional oral

stories have the following sequence: (1) a beginning that introduces the primary characters, which can take the form of a human or another animate actor, an object, a practice, or an idea; (2) a middle that renders an event such as a conflict between the protagonist and antagonist; and (3) an end that reaches a culmination as a consequence of the latter event (Stein, 1982). Storytelling is an approach to telling a story, focusing on the elicitation and construction of stories rather than a story as an object (Moezzi, Janda, & Rotmann, 2017).

Storytelling is emotionally richer and more effective in terms of fidelity, memorability, and information transfer relative to simple gestures and words (Lindesmith & McWeeny, 1994). Well-told stories are memorable, easy to understand, and represent a base for establishing credibility (Lämsä & Sintonen, 2006). They also create a sense of empathy from a cognitive and emotional position, which helps individuals understand the experiences of others (Lämsä & Sintonen, 2006). That is, a story allows both the sender and receiver to make sense of otherwise discrete events by reconstructing a shared version of experience, embedded in an information-rich context (Rappaport, 2008), which explains "the brute facto of the pleasure and universality of storytelling" (Dutton, 2009, p. 105).

Thomas (2006) identifies five adaptive functions of storytelling: (1) cognitive devices for organising memory and knowledge (eg, sharing of tacit knowledge via stories), (2) tools for sense-making (eg, individuals make unpleasant and unrepeatable events in their lives more meaningful by putting them in an interpretive sequence in the form of an autobiographical story), (3) tools for communication (eg, human cooperative communication crucially relies on shared intentionality, which comprises important prosocial motivations and social cognitive skills for joint attention), (4) bonding mechanisms of community practice (eg, describing how to fix a broken car among mechanics not only meets their need for technical knowledge but also their need for group identity and social status), and (5) vehicles for cultural transmission (eg, sacrificial harvest). Hence, the human mind processes storytelling in an empathetic way.

Visual storytelling can evoke emotions, drive deeper engagement, and cause more profound changes in behaviour. It can also help promote self-understanding, expression, and communication of difficult-to-conceptualise issues (Drew, Duncan, & Sawyer, 2010). Within experimental settings, Baggett (1979) revises a text version of a dialogueless movie (The Red Balloon[1]) to the point where participants are unable to match episodes in the film with passages from the story and vice versa. These structurally equivalent forms of the story (ie, video and text formats) are then deployed in another study of memory, in which Baggett (1979) uses a cued recall approach and finds that both formats of the story have similar patterns of recall when respondents are asked to remember particulars of the story immediately following the experiment. Nevertheless, an analysis of delayed recall 1 week following the experiment reveals much better recall performance from respondents who viewed the video format of the story.

## 2.2 | Human cognitive processing and CLT

The architecture of human memory features working memory and long-term memory. *Working memory* is a memory system for storing small amounts of information for a very short duration (Cowan, 2010). It can process only a limited number of novel interacting elements simultaneously (Miller, 1956). Thus, processing and learning are impeded when working memory capacity is overloaded in a task, as explained by CLT (Sweller, 1994). By contrast, *long-term memory* vastly expands human processing capability using cognitive constructs, also known as schemas, which incorporate multiple elements of information into a single element that can be processed with economy within working memory. Long-term memory involves large amounts of information that are stored semi-permanently (Ericsson & Kintsch, 1995).

CLT distinguishes three forms of cognitive load—*intrinsic*, *extraneous*, and *germane*—that constitute the total cognitive load (see Table 1). These three are cumulative, such that the total cognitive load cannot exceed the working memory resources available for information processing and understanding learning material (Van Merriënboer, Kirschner, & Kester, 2003). Hence, to the extent that extraneous and intrinsic cognitive loads are, respectively, reduced and managed, working memory resources are available for constructing, elaborating, and automating schemas (Sweller, 1994).

[1]http://www.imdb.com/title/tt0048980/

**TABLE 1** Three constructs of total cognitive load[a]

| Construct | Description | Examples of Cognitive Load (Condition and Cause) |
|---|---|---|
| Intrinsic cognitive load | Deals with the inherent complexity of the information being processed; depends on the degree of interaction between elements (low-element interactivity vs high-element interactivity) in the disseminated information; it can be reduced by simplifying the information complexity. | Learning to drive a car involves understanding (1) the necessary pressure to apply to the brakes to stop; (2) the amount of force needed to turn the steering wheel in a particular direction; and (3) the required speed adjustments when driving a car on a rainy day or in a traffic jam (high-element interactivity $\geq$ high intrinsic load) |
| Extraneous cognitive load | Concerned with the instructional design of the disseminated information; it can be imposed by the complexity of the information being processed, which can be avoided using effective instructional design; it can be reduced by use of scaffolding strategies by which complexity is gradually introduced into the instruction | Verbally describing the shape of a square (rather than simply drawing it) is more difficult to understand, as the verbal medium is inefficient for disseminating such information (high intrinsic load $\geq$ high extraneous load) |
| Germane cognitive load | Concerned with the construction and automation of schemas; simply referred to as the working memory resources dedicated to dealing with intrinsic cognitive load for processing information and understanding the learning material. | Understanding that driving a van is similar to the known skill of driving a car but varies with respect to manoeuvrability (low intrinsic load $\geq$ high-germane load) |

[a]Adapted from Sweller (1994).

## 2.3 | Deep processing and CTML

*Learning* is a generative process requiring effort, rather than passively acquiring external knowledge, in which learners actively construct their own meanings (Osborne & Wittrock, 1983). Säljö and Marton (1976) propose that leaners construct meaning according to one of two main approaches to learning: deep processing and surface processing. Learners adopt *deep processing* when the main objective is to seek understanding from the author's meaning and relate it to one's prior knowledge and personal experiences. Conversely, learners adopt *surface processing* when the main objective is to reproduce information without detailed or further analysis.

Carroll et al. (1985) argue that deep processing occurs in one of three forms: learning by doing, learning by thinking, and learning by knowing. Learners have the tendency to experiment with different modes of information processing and knowledge representation rather than working on the basis of overly structured systematic (step-by-step) instructions. They prefer to make sense of their learning experience by developing and testing hypotheses (Sweller, 1994), in which they relate their learning experiences to prior knowledge so as to decide how to conduct certain processes or decide what processes to undergo (Carroll & Mack, 1999). Learners carefully select relevant information from the material and engage in learning by doing and thinking, in which they relate new information with existing knowledge. This process helps learners construct schemas (Carroll & Mack, 1984).

"Constructivist learning" describes the learner's process of (1) selecting appropriate information from both words and pictures, (2) conceptually organising the words and pictures in coherent schemas (ie, internal connections). and (3) integrating constructed schemas with appropriate prior knowledge (ie, external connections) (Mayer, Moreno, Boire, & Vagge, 1999). Sweller (1988) further proposes that deep processing takes place when learners actively process information and create schemas stored in long-term memory. Building on CLT, Mayer (2005a) proposes CTML. First, CTML assumes that the human cognitive system has two separate channels—a visual-pictorial channel and an auditory-verbal channel—for representing and handling received information. Second, it is proposed that each channel in the cognitive system is limited in its capability to receive and handle information. Third, deep processing is more likely to occur when related verbal and pictorial schemas are handled in the working memory at the same time (rather than asynchronously). To further advance the application of CTML, Mayer (2008) proposes 10 principles for

**TABLE 2** Ten principles of multimedia instructional design[a]

| Purpose | Principle | Definition |
|---|---|---|
| Reducing extraneous processing/extraneous cognitive load | Coherence | Reduces use of irrelevant material. |
| | Signalling | Highlights essential material. |
| | Redundancy | Does not add on-screen text to narrated animation. |
| | Spatial contiguity | Places corresponding text and graphics in proximity. |
| | Temporal contiguity | Presents corresponding narration and animation concurrently. |
| Managing essential processing/intrinsic cognitive load | Segmenting | Presents animation in learner-paced segments. |
| | Pretraining | Provides pretraining in the essential material for a learner. |
| | Modality | Presents words as narration instead of text. |
| Fostering generative processing/germane cognitive load | Multimedia | Presents words and graphics together rather than words separately. |
| | Personalisation | Presents words in conversational style rather than formal style. |

[a]Adapted from Mayer (2008).

multimedia instructional design, which aim to reduce extraneous processing, manage essential processing, and foster generative processing (see Table 2).

## 2.4 | Linking storytelling, human cognitive processing, deep processing, and multimedia instructional design: An illustrative example of video stories

Drawing on CLT, CTML, and the literature on deep processing, we propose that the process of disseminating IS knowledge would benefit considerably from using visual storytelling in a form of video stories that supplement traditional text-based articles. Video stories include multiple sensory cues and channels, which provide extensive active interactions for learners (Eisner, 2008). To illustrate the utility of the video story as an effective tool for communicating research, we developed an example of a video story for the well-cited academic work by Davis, Bagozzi, and Warshaw (1989), "User Acceptance of Computer Technology: A Comparison of Two Theoretical Models." This video story can be accessed at the following link: http://youtu.be/igXPrDC-RIY (7.56 minutes). We encourage the reader to watch this short video before continuing with the remainder of this manuscript. We chose this particular article because of its widely known content[2] in the IS discipline; however, such a video story could be made for any article.[3] The script for this video story example is included verbatim in Appendix S1A.

In producing this video story, we made a conscious effort to adhere to the 10 principles of multimedia instructional design (see Table 3) (Mayer, 2008; Mayer & Moreno, 2002; Ohlsson, 1993). To illustrate the cognitive impact of the video story, we now invite the reader to recall specific parts of the story and to consider the following questions: (1) What problem was this study seeking to address? (2) What was the main motivation for this study? (3) Upon which model was TAM founded? (4) Which two constructs were balancing on the scales, and which one was weightier? (5) Consider now a relatively noncritical detail: How long were the participants trained in the technology? (6)

[2]We use this well-known study, rather than an original study, to practice what we preach by reducing extraneous processing by highlighting the essential material and message of the current study and by minimising the novelty of the content in the illustrative example. However, if we were to present an unfamiliar study (for example, one of our own works in progress or recent publications), this would present a competing message to the viewer, therefore undermining the primary message we are trying to disseminate, which is all about video stories.

[3]For example, the video http://youtu.be/LZQIDkA-ke0 summarises the main points of the *MIS Quarterly* article by Lowry et al. (2013), which discusses journal rankings.

**TABLE 3** Application of the 10 principles of multimedia instructional design[a]

| Purpose | Principle | Application of the Principles in the Multimedia Presentation |
|---|---|---|
| Reducing extraneous processing/ extraneous cognitive load | Coherence | Fundamental postulates of TAM were narrated, and essential words were highlighted. |
| | Signalling | Relevant facts about TAM were emphasised visually and vocally. |
| | Redundancy | Essential material about TAM was presented only through narration and graphical animation; on-screen text following the narration (captioning) was avoided. |
| | Spatial contiguity | Where appropriate, printed words were placed in proximity to the graphical animations. |
| | Temporal contiguity | Narration and relevant graphical animation were synchronised. |
| Managing essential processing/ intrinsic cognitive load | Segmenting | The narrated animation about TAM was divided into 31 learner-paced segments, consisting of one to three sentences with durations of 8 to 12 s. |
| | Pretraining | The TAM video story began with a brief overview of the main goals and motivations. Additionally, most IS scholars were already familiar with TAM. |
| | Delivery control[b] | The video story consisted of seven sections (Introduction and Staging, Theoretical Foundations, Research Questions, Methodology, Findings, Implications, and Conclusion) marked with hyperlinks, allowing learners to skip sections that the user regards as irrelevant or navigate directly to those of interest. |
| | Modality | Graphics with spoken text, rather than printed text, were used. |
| Fostering generative processing/ germane cognitive load | Multimedia | Graphics with printed words were used together rather than separately. |
| | Personalisation | Direct quotes from the TAM article were reworded to be more conversational and to better suit the spoken (rather than the printed) form of the narration. |

[a]Adapted from Mayer (2008);

[b]Principle added to the ten principles of multimedia instructional design by the authors of the present manuscript.

Even more specifically: What was in the hand of the woman recoiling at the computer desk? (7) Did the "like" and "dislike" thumbs-up and thumbs-down images invoke affective responses or reflexive thoughts? (8) While recalling information to address each of these questions, were specific images recalled from the video story? As theorised by Tulving (1972) and Schank (1999), such images are unconsciously indexed as touch points for future recall. Finally, (9) while watching the story, were parts of the video (images, narration, or latent messages) consciously (or subconsciously) connected to personal life experiences, as theorised by Schank (1990)?

## 3 | THEORETICAL DEVELOPMENT

### 3.1 | Research model

The purpose of our study is to make a case for the use of visual storytelling to supplement the traditional text-based article. We provide a basic model and empirical study to provide preliminary evidence to show that video stories can yield significant benefits and even competitive advantages (eg, more citations and general influence) for authors who adopt this approach. We draw on CLT, CTML, and the literature on deep processing to develop our research model, illustrated in Figure 1,[4] which is based on the model developed by Jiang and Benbasat (2007). We expect that these

[4]Note that the lines for H1a-c represent the effect that the varying treatments (eg, video story vs text-based article) have on utility and comprehension. These will be tested via ANOVA for differences of means rather than through regression or correlation techniques.

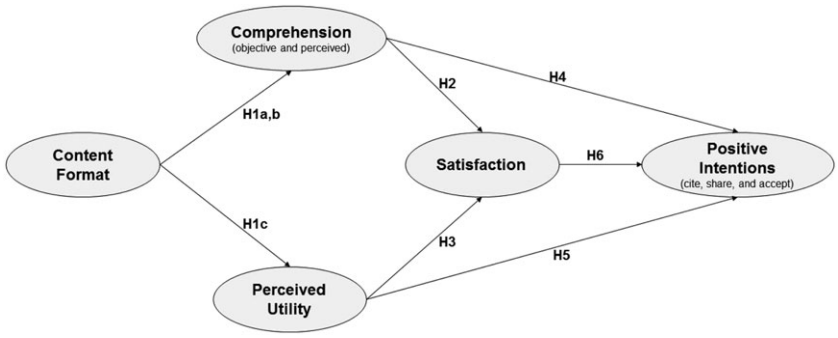


**FIGURE 1** Research model

factors will jointly promote scholars' intentions to cite and share an article or if the article is being reviewed for a journal, to agree to accept the article for publication. If these factors and relationships hold, then at a minimum, we will have made an empirical case for researchers to devote resources (energy, attention) to further explore the merits of this approach to communicating scholarly knowledge.

## 3.2 | Hypotheses development

### 3.2.1 | Content format

CTML proposes that the use of cognitive processing capacity can be economised when both visual and aural (ie, processing phonological information) channels of working memory are utilised (Mayer, 2005b). The modality principle of CTML states that essential processing is properly managed when the words accompanying visuals are presented as narration rather than as caption text (Mayer, 2009). The effect is to mitigate the intrinsic load and thereby enable more working memory processing to be dedicated to generative processing. Similarly, the multimedia principle of CTML states that generative processing occurs when words and graphics are presented together rather than separately (Mayer, 2005a), which reduces the germane cognitive load by deploying both the visual and aural channels simultaneously. Thus, designing content as a video story can mitigate intrinsic load and, we argue, foster generative processing.

Cairncross and Mannion (2001) claim that the nonlinear navigational features of many multimedia packages provide greater freedom and control over learning. That is, learners can choose the sequence in which sections are presented and control the pace of the presentation, concentrating on the material they find unfamiliar or interesting and skipping the material that is understood or irrelevant. Therefore, the control for the delivery of information in video stories can mitigate the extraneous cognitive load, which enhances intrinsic processing so as to foster generative processing.

Video stories provide many "touch points" (Schank, 1999), allowing learners to connect the disseminated information with their own life experiences. These touch points provide a quick indexing method for storing and retrieving episodic (ie, story-based) information from memory—a process that is far more powerful than storing and retrieving semantic (ie, written) information (Tulving, 1972). Thus, the use of video stories provides a more memorable and relatable learning experience than static text and thereby aligns with the objective of fostering generative processing as a means to enhance learning outcomes.

We propose that text-based articles would benefit from visual storytelling, especially when the learner is allowed to control the delivery of information. In this way, learners can subconsciously make predictions (hypotheses) about the meaning of certain concepts when watching the video story. Then, when reading the text-based article, they can make further interpretations based on their own testing of those implicit hypotheses. Consequently, a learner can construct a subjectively more-accurate schema of the key concepts from the learning material and gain a better

actual and perceived understanding of the material when consuming scholarly knowledge using text-based articles and video stories together. Thus, we predict:

> **H1a.** *The use of a video story to supplement the text-based article will result in learners' greater objective comprehension when compared with using only the text-based article, the video story, or the script.*

> **H1b.** *The use of a video story to supplement the text-based article will result in learners' greater perceived comprehension when compared with using only the text-based article, the video story or the script.*

Video stories can facilitate deep processing, which involves learning by doing, learning by thinking, and learning by actively (and subconsciously) making and testing hypotheses about the meaning of key concepts. Thus, video stories will—to a greater extent than for static text—help a learner gain confidence regarding the understanding of the learning material, thereby resulting in the higher perceived usefulness of the disseminated information (Jiang & Benbasat, 2007). Moreover, because of the delivery control feature of video stories, learners are able to select the sequence, pace, and tone at which information is being presented, which enables them to learn actively and construct more accurate schemas of the key concepts, perceiving greater usefulness of video stories for the understanding of the material (Mayer, 2005b). For example, video stories can provide a visual walk- and talk-through of new methodological approaches, which increases the learner's perceived usefulness of the newly learned methodological approach. Whereas, written abstracts or text alone cannot offer the engaging and clear communication of methodological approaches provided by video stories.

Fiske (1993) argues that story processing relies on predefined existing story knowledge structures; that is, learners store recurring story content and episodes with causal associations as event prototypes or causal knowledge structures in the long-term memory. As a result, individuals attempt to understand incoming story information by relating it to the previously constructed prototypes or structures from their personal experiences (Schank & Abelson, 1995). In this process, learners not only attempt to understand how and why a story evolves but are also likely to imagine themselves in the same situation (ie, mental simulation), creating a cognitive construction of hypothetical scenarios (Taylor & Schneider, 1989). In this mental simulation, learners engage in a "convergent process in which all mental systems and capacities become focused on the events occurring in the narrative" (Green & Brock, 2000, p. 701). Escalas, Moore, and Britton (2004) introduced the similar concept of "being hooked" to describe the degree of involvement of a consumer watching ads on television. They argue that stories can lure individuals, making them experience what the story's characters feel, even immersing them in the story's world.

We argue that the use of a video story will create place holders (Ohlsson, 1993), touch points (Schank, 1999), and "hooks" (Escalas et al., 2004), which can then be reaffirmed by the article. When learners relate their "existing knowledge," they feel that the learning material has been useful (ie, has utility). Thus, video stories establish the information as existing knowledge, after which the article requires the learner to draw on that existing knowledge to make sense of complex information. Hence, we hypothesise:

> **H1c.** *The use of a video story to supplement the text-based article will result in greater perceived utility when compared with using only the text-based article, the video story, or the script.*

## 3.3 | Comprehension, utility, and satisfaction

One of the goals of learning is knowledge acquisition (Hui, Hu, Clark, Tam, & Milton, 2008). Keller (1983) suggests that learning satisfaction is directly related to the learner's perceptions and feelings about learning effectiveness or outcomes. Norman and Spohrer (1996) argue that learning effectiveness is one of the most salient factors for predicting learner satisfaction. A relatively learnable course results in student satisfaction because students overcome challenges during the process of acquiring knowledge. This is consistent with the logic of the theory of planned

behaviour that perceived behaviour control is positively correlated with attitudes towards an activity (Ajzen, 1991). Thus, we expect a positive relationship between comprehension and satisfaction.

When learners feel that they have successfully understood a concept, they are far more satisfied than when they feel that they have not understood it (Choi & Johnson, 2007). This relationship between perceived comprehension (or self-efficacy) and satisfaction is particularly salient in a learning context (Klassen & Chiu, 2010). Thus, when learners think that they understand, they are more satisfied than if they believe that they have failed to understand. The reason for this relationship is that comprehension grants learners perceived control over the concept they are learning, and this control is an innate human desire, which, when fulfilled, is satisfying (Choi & Johnson, 2007). We therefore hypothesise:

> **H2.** *Learners' perceived comprehension of the information has a positive influence on their satisfaction regarding the learning material.*

Yield shift theory (YST) defines the satisfaction response as a valence affective arousal with respect to an object that has reference to a state or an outcome desired by an individual (Briggs, Reinig, & de Vreede, 2008). It draws on five assumptions and two propositions, positing that satisfaction responses are a function of the perceived shifts in yield for the active goal set. According to YST, the satisfaction response is a "multiplicative function of the utility ascribed to the goal and the assessed likelihood of attaining it" (Briggs et al., 2008, p. 277). That is, individuals feel neutral when outcomes match expectations or desires. They experience satisfaction when outcomes exceed expectations or desires and dissatisfaction when outcomes are lower than expectations or desires.

In the IS literature, Bhattacherjee (2001a, 2001b) has found that usefulness drives satisfaction because when people use IT, they have certain expectations that they hope will be fulfilled by their use. When those expectations are met (ie, the IT was useful), people's needs are fulfilled. And, the fulfilment of needs is intrinsically satisfying (Choi & Johnson, 2007). Following a similar line of reasoning, Wolfinbarger and Gilly (2001) point out that the availability of current and relevant information on a webpage increases users' perceived usefulness, which, in turn, has a positive influence on satisfaction and loyalty. Greater usability leads to minimal searching costs, reducing potential errors, and increasing user satisfaction with the use of a website (Alba & Cooke, 2004).

Roszkowski and Soven (2010) investigate the relationships between the amount learned, information usability, and satisfaction with learning among first-year college students participating in an evaluation of an orientation training programme. The results show a strong correlation between self-assessed learning and perceived usefulness information, whereby usefulness was almost as good as the amount learned in predicting satisfaction with learning. Thus, we posit that when learners feel that the learning material has high utility, they are more satisfied than when they deem it to be of low utility.

> **H3.** *Learners' perceived utility of information has a positive influence on their satisfaction with the learning material.*

## 3.4 | Intentions to cite, share, and accept

Expectancy disconfirmation theory posits that an individual's intention to continue using IT is largely dependent on three variables: (1) the user's level of satisfaction with the IT, (2) the extent of the user's confirmation of expectations, and (3) the extent of the user's confirmation of post-adoption expectation (ie, perceived usefulness) (Bhattacherjee, 2001a, 2001b; Bhattacherjee & Premkumar, 2004). The IT adoption literature has provided abundant evidence to show that perceived usefulness is the most important determinant of users' adoption intention (Davis et al., 1989; Taylor & Todd, 1995; Venkatesh & Davis, 2000). Furthermore, Bhattacherjee (2001b) has shown that satisfaction with prior use of online banking was the strongest predictor of users' continuance intention.

Lustria (2007) asserts that higher website interactivity leads to greater comprehension of the content, which, in turn, increases positive attitudes towards the webpage. In a similar manner, learners develop a positive intention to cite, share, and accept a particular research study because they have positively evaluated it and have found it

useful. Thus, by nature, they seek to share that value, as it positively reflects them. Therefore, when academics genuinely understand an article, find it useful in advancing their individual or group work and feel satisfied with the achievements of the article, they are more likely to cite this article in their current or future work, share it with colleagues (where appropriate), or accept the article in the case of peer review.

When individuals perceive that they understand something, they feel they have mastery or control over it. Social display of control is a way of increasing people's social standing among their peers (Carver & Scheier, 1982). Thus, academics are more likely to share, cite, or accept an article that they think they understand because they both identify with it and want it to reflect on their identity (Kirk, Swain, & Gaskin, 2015). Conversely, if they cannot understand an article, they are less likely to share it with others because they might be required to engage in conversations about it, for which they are unprepared. They are also less likely to cite it because they cannot leverage information in the article that they have not understood (eg, trying to use a tool that an individual does not understand how to use). Last, reviewers are unlikely to accept an article they cannot understand because if they cannot understand it, others are unlikely to understand it, which means that it is therefore not ready for publication. Thus,

> **H4.** *Learners' perceived comprehension of a research study has a positive influence on their intentions to cite, share, and accept that research.*

Liaw (2008) posits that perceived usefulness and perceived satisfaction contribute to learners' behavioural intentions to use an e-learning system. Following the same line of logic, when individuals perceive something as useful, they want to share it with others because they see value in it (Moldovan, Goldenberg, & Chattopadhyay, 2011). When sharing that value with others, individuals attribute that value to their own social identity (Kelley, 1967), thereby boosting their social standing among their peers. They are also more likely to cite an article that proves useful than an article that proves otherwise. Finally, one of the criteria for acceptance in any quality scholarly outlet is a meaningful contribution. Thus, a useful article (ie, it makes a contribution) is more likely to be accepted than one that is perceived as lacking usefulness (ie, no meaningful contribution). We thus predict:

> **H5.** *Learners' perceived utility of a research study has a positive influence on their intentions to cite, share and accept that research.*

If individuals are satisfied with a product or service, they are more likely to share it with others because they anticipate that others will also share in their positive experience (Anderson, 1998). Sharing positive experiences is an innate human social desire that allows individuals to feel as though they have contributed to society (Froh, Bono, & Emmons, 2010). Johnson and Oppenheim (2007) argue that academics are more likely to cite others with whom they have social closeness, implying that citers cite others because they feel comfortable with their work. Hence, they are also more likely to cite an article that is satisfying, rather than one that is unsatisfying, because in order for it to be satisfying, it must have fulfilled some need (Choi & Johnson, 2007). If it is not satisfying, then it cannot have fulfilled the need required to merit citation. Similarly, they will also not accept an unsatisfying article because it does not meet the basic requirement of satisfying some need (Davis, 1971). Thus,

> **H6.** *Learners' satisfaction towards a research study has a positive influence on their intentions to cite, share, and accept that research.*

# 4 | METHODOLOGY

## 4.1 | Statistical methods

The conceptual model consists of two parts, as illustrated in Figure 2. The first part, the analysis of variance (ANOVA), will determine whether and to what extent the delivery format of the content affects objective comprehension and

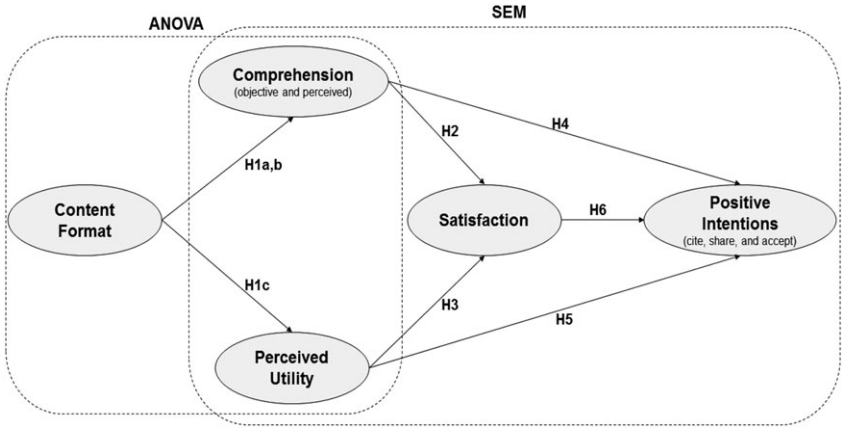


**FIGURE 2** Statistical approaches to test the conceptual model

perceived utility. In particular, we test our model by conducting a quasi-experiment with research-oriented students and academics, who were randomised into four conditions: (1) reading a traditional article, (2) reading a script of an article (see Appendix S1B), (3) viewing a video story of the script, and (4) viewing a video story and then reading the associated article. In Figure 2, the line emanating from the content format does not imply a causal and correlative relationship that could be tested with regression. Instead, it simply implies that the differing treatments (content formats) will result in differing levels of utility and comprehension. This is a difference of means in the outcome variables, which can be appropriately tested using ANOVA, in which the factoring variable is the content format (four treatments), and the dependent variables are utility, perceived comprehension, and objective comprehension.

The second part, involving structural equation modelling (SEM), will determine whether and to what extent perceived comprehension and perceived utility affect positive intentions (to cite, share, and accept), partly through satisfaction. We expect satisfaction and intentions to be strongly influenced by the participant's perceived level of comprehension, regardless of the actual comprehension. That is, if readers *think* that they have understood an article, they will be more satisfied and will be more likely to cite and share as well as to accept it under peer-review conditions. Whether readers have *actually* understood the article is irrelevant to their research evaluations and intentions.

## 4.2 | Sample and design

We used Amazon Mechanical Turk (aka mTurk) to collect anonymous responses from a highly filtered demographic. We followed the latest procedures on effectively conducting research on mTurk, including careful demographic screening and the use of attention traps in the survey, which improved the data quality (Lowry, D'Arcy, Hammer, & Moody, 2016). Our filters required participants to adhere to the following requirements:

- be at least 24 years old;
- speak English at a highly proficient level (85% minimum proficiency);
- be research-oriented students or academics;
- use a large-screen device (not a smartphone) while participating in the study.

By using these filters, as well as attention traps in our survey, we obtained 269 usable responses and filtered out 557 ineligible attempts. We designed a four-treatment quasi-experimental study in which participants were randomly assigned to one of four treatment groups based on presented research materials: 1) video only ($n$ = 69), (2) script only ($n$ = 81), (3) article only ($n$ = 52), and (4) video and article ($n$ = 67). Notably, the script-only condition involved the written

script used to produce the video. The participants were verified for eligibility and were then presented with one of these four treatments at random. They comprised 58% male and 42% female. About 54% reported moderate engagement with research in their day-to-day work, and 22% and 23% reported low and heavy engagement, respectively.

The presented research material was from a recent (at the time of data collection), intellectually challenging *JAIS* article by Lowry, Gaskin, and Moody (2015), which was scrubbed of any identifying information, including the journal in which it had been published (see http://youtu.be/-1FsG0o0pOc for the scrubbed version). We chose this article especially because it is non-visual in nature, it was forthcoming at the time of the experiment and, thus, was familiar to very few academics. Moreover, because it is much lengthier, much more complex, and much more challenging to summarise than simpler articles, it was just the kind of article many academics might hesitate to translate into video form. We followed all the previously discussed principles in producing the script and video. Ninety-four point four percent and 95.9% of the participants reported being unfamiliar with the article and with the authors, respectively. The script for the video story used in the experiment is included verbatim in Appendix S1B.

### 4.3 | Measurement

Our model includes two original measures (ie, objective and perceived comprehension) and six adapted measures (ie, perceived utility, intention to cite, intention to share, intention to accept, and satisfaction). Further information about the constructs measured is included in Appendix S1C. Objective comprehension refers to a learner's objective understanding of the content of the material, which is based on the key points of the target material. Perceived comprehension is defined as the learner's perceptions of the extent to which he or she understood the content of the material, which was specifically developed for this study. Objective comprehension versus perceived comprehension was used because differences regarding format should be able to deliver the information more or less effectively. The only way to objectively test this is with objective comprehension questions (eg, a quiz). Questions about perceived comprehension would not be adequate for determining actual comprehension. Perceived utility, which is adapted from Jiang and Benbasat (2007), is defined as a learner's perceptions of the extent to which the materials (eg, text-based article and video story) are useful for helping him or her understand the underlying content.

Satisfaction, which we adapted from Bhattacherjee and Premkumar (2004), refers to a learner's emotional state following the use of one of the four different content formats for disseminating scholarly knowledge. Intention to cite is defined as the extent to which users feel that they would cite the material (Galletta, Henry, McCoy, & Polak, 2004; Galletta, Henry, McCoy, & Polak, 2006). Intention to share refers to the extent to which users feel that they would share the material (Galletta et al., 2004; Galletta et al., 2006). Intention to accept is defined as the extent to which users feel that they would accept the research material as reviewers for a peer-reviewed journal (Galletta et al., 2004; Galletta et al., 2006).

Prior to performing the actual experimental manipulations, we gathered a number of demographic/control variables so that we could test for counter explanations for our model results. Specifically, we examined whether gender, age, review experience, academic position, or research engagement level had any meaningful differences in terms of positive intentions. In all cases, there were no significant differences in positive intentions across groups.

After the participants underwent their experimental treatment, they were asked to complete several post-test measures: objective comprehension (ie, whether they actually understood some of the basic points of the article), perceived comprehension, perceived utility, satisfaction, intentions to cite, intentions to share, and intentions to accept for publication under peer-review conditions.

## 5 | RESULTS

We generally followed the model and testing approach developed by Jiang and Benbasat (2007) to test the effects of content format on the critical antecedents (ie, comprehension and utility) of our dependent variables (ie, intent to

cite, share, and accept). To do so, we used ANOVA to test the manipulations for objective comprehension and perceived utility regarding the impact of content format. Furthermore, we used SEM to test the causal model regarding the relationships between perceived comprehension, perceived utility, satisfaction, and intentions (to cite, share, and accept). Table 4 and Figures 3 and 4 summarise the results for our ANOVA testing. Tables 5, 6, and 7 and Figure 6 summarise the results from our SEM analysis.

## 5.1 | ANOVA tests on experimental manipulations

Table 4 summarises the results of our ANOVA testing, in which we examined how the four format manipulations influenced perceived utility and objective comprehension.

Based on the format manipulations, there were significant differences in perceived utility and objective comprehension. A post-hoc Bonferroni's test, which is included in Appendix S1D, showed that the script format was significantly less helpful than the other formats, indicating that an extended abstract was perceived as least useful on its own in disseminating the research content. The video and article formats were perceived to be equally useful, and the presence of both was perceived to be the most useful. In terms of objective comprehension, the article format was significantly less effective than the other three formats, with video alone and video and article together roughly equal in effectiveness; the script was the most effective, although these latter differences were not statistically significant. No significant differences were observed between the format types regarding perceived

**TABLE 4** ANOVA results

| Construct | | Sum of Squares | df | Mean Square | *F* | Sig. |
|---|---|---|---|---|---|---|
| Utility | Between groups | 10.612 | 3 | 3.537 | 6.742 | .000 |
| | Within groups | 139.036 | 265 | 0.525 | | |
| | Total | 149.648 | 268 | | | |
| Objective comprehension | Between groups | 21.709 | 3 | 7.236 | 5.978 | .001 |
| | Within groups | 320.797 | 265 | 1.211 | | |
| | Total | 342.506 | 268 | | | |

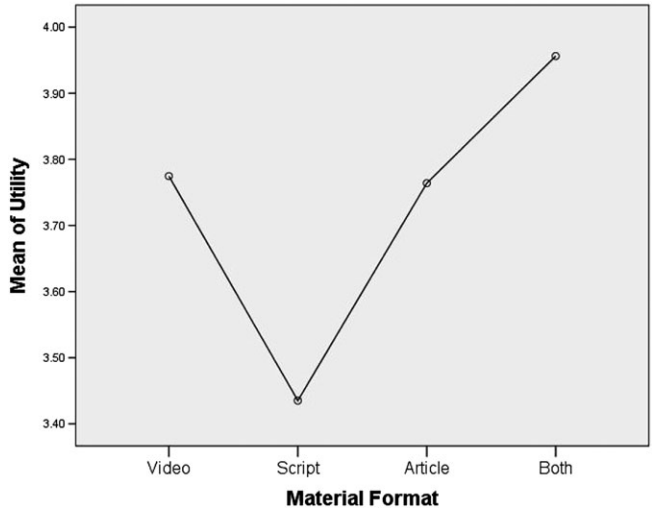


**FIGURE 3** Relationship between the chosen material format and perceived utility

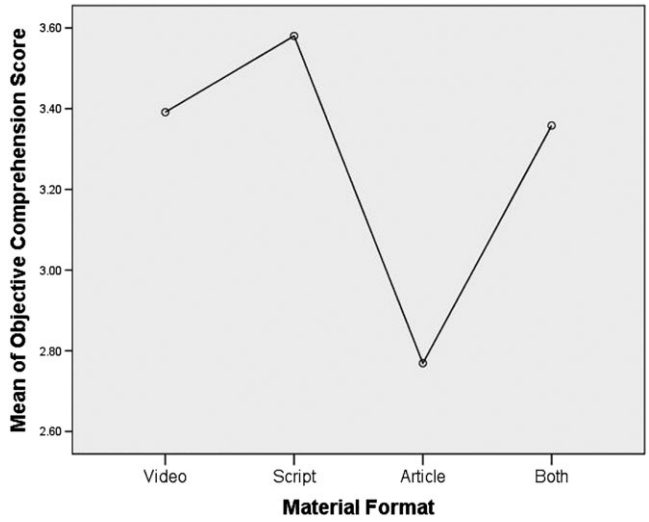


**FIGURE 4** Relationship between the chosen material format and objective comprehension

**TABLE 5** Exploratory factor analysis (loadings < 0.200 suppressed)

| | | Factor with Resulting Cronbach's Alphas | | | |
|---|---|---|---|---|---|
| **Latent Construct** | **Items** | **α = 0.885** | **α = 0.824** | **α = 0.909** | **α = 0.919** |
| Perceived utility | PUtil_1 | 0.823 | | | |
| | PUtil_2 | 0.797 | | | |
| | PUtil_3 | 0.881 | | | |
| Perceived comprehension | CompP_1 | | 0.785 | | |
| | CompP_2 | | 0.646 | | |
| | CompP_3 | | 0.890 | | |
| Intentions to cite, share, accept | ITC_1 | | | 0.679 | |
| | ITC_2 | | | 0.775 | |
| | ITC_3 | | | 0.830 | |
| | ITS_1 | | | 0.779 | |
| | ITS_2 | | | 0.753 | |
| | ITS_4 | | | 0.716 | |
| | ITA_1 | | | 0.625 | |
| | ITA_2 | | | 0.464 | |
| | ITA_3 | | | 0.686 | |
| Satisfaction | Sat_1 | | | | 0.753 |
| | Sat_2 | | | | 0.882 |
| | Sat_3 | | | | 0.866 |
| | Sat_4 | | | | 0.848 |

comprehension (ANOVA $p$ value = 0.647). Figures 3 and 4 depict the relationships between the chosen format, average perceived utility, and objective comprehension outcomes.

## 5.2 | Preanalysis and factorial validity

We validated our measurement model before assessing the causal relationships. For the exploratory factor analysis (EFA), we chose maximum likelihood as the extraction method and Promax with Kaiser normalisation as the rotation

**TABLE 6** CFA correlation matrix and validity measures[a]

| Construct | CR | AVE | MSV | ASV | (1) | (2) | (3) | (4) |
|---|---|---|---|---|---|---|---|---|
| Utility (1) | 0.886 | 0.723 | 0.412 | 0.379 | **0.850** | | | |
| Satisfaction (2) | 0.920 | 0.743 | 0.543 | 0.434 | 0.604 | **0.862** | | |
| Intentions (3) | 0.942 | 0.844 | 0.543 | 0.449 | 0.601 | 0.737 | **0.919** | |
| Comprehension (4) | 0.830 | 0.620 | 0.444 | 0.417 | 0.642 | 0.628 | 0.666 | **0.788** |

Abbreviation: CFA, confirmatory factor analysis.

[a]The underlined and bolded numbers on the diagonal are the square root of the AVE.

**TABLE 7** Summary of model fit

| Measure | Value |
|---|---|
| Chi-square, df, *p* value | 206.4, 143, < 0.001 |
| GFI | 0.926 |
| CFI | 0.981 |
| PCFI | 0.820 |
| NFI | 0.941 |
| TLI | 0.977 |
| PCLOSE | 0.899 |
| RMSEA (low-high) | 0.041 (0.028-0.053) |
| SRMR | 0.034 |

method. The rotation converged in five iterations. As shown in Table 5, the EFA showed excellent discriminant validity with no substantive cross-loadings, convergent validity with strong primary loadings (Hair, Black, Babin, & Anderson, 2010) as well as strong reliability (α > 0.700) (Nunnally, Bernstein, & Berge, 1994).

The confirmatory factor analysis (CFA) also exhibited excellent discriminant validity (see Table 6), with all interfactor correlations less than the square root of AVE (Fornell & Larcker, 1981), with the MSV less than the AVE, as well as convergent validity (all AVEs > 0.500) (Kline et al., 2011) and strong reliability (all CRs > 0.700) (Malhotra, 2008). Positive intentions were modelled as a multidimensional second-order reflective factor. As shown in Table 7, the model fit statistics for the CFA were also excellent, with all measures meeting appropriate thresholds set by Hu and Bentler (1999).

## 5.3 | SEM analysis

The causal model was tested using an AMOS SEM model with latent factors instead of factor scores in path analysis. Because the full measurement model was used in the causal model and the degrees of freedom did not change from the measurement to the structural model, the model fit statistics remained unchanged. The findings fully support our conceptual model; however, only a 90% confidence level was applicable to the relationship between perceived utility and positive intentions. The predictive power of the model proved strong, with 46% and 62% of the variance in the endogenous variables being explained by their predictors. The results are depicted in Figure 5.

The results shown in Table 8 indicate that perceived comprehension and perceived utility have significant effects on satisfaction, with path coefficients of 0.408 (0.001 significance level) and 0.342 (0.001 significance level), respectively. Thus, H2 and H3 are supported. Similarly, perceived comprehension, utility, and satisfaction positively influence positive intentions to cite, share, and accept, with path coefficients of 0.279 (0.001 significance level), 0.129

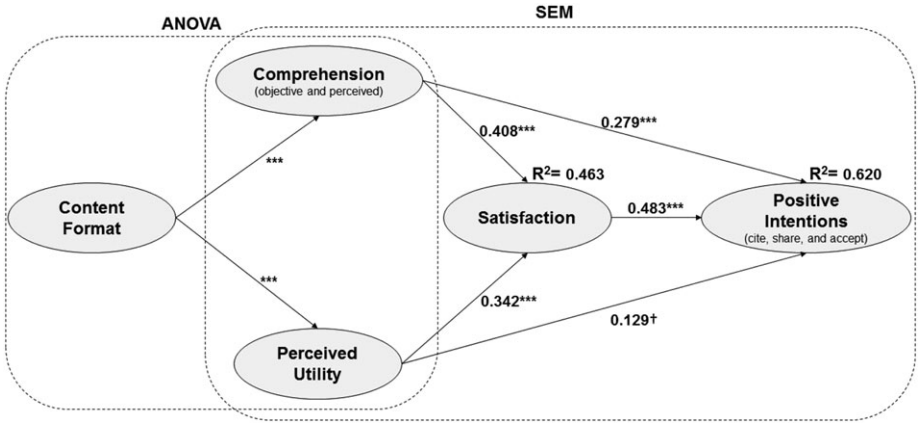


**FIGURE 5** SEM results. ***$p < 0.001$; †$p < 0.100$; $R^2$ is on the top right of the endogenous variables

**TABLE 8** Summary of results

| Hypothesis | Evidence | Support? |
|---|---|---|
| H1a. Objective comprehension | Script only: significantly worse than others** | No |
| H1b. Perceived comprehension | No significant differences | No |
| H1c. Perceived utility | Article only: significantly worse than others*** | No |
| H2. Perceived comprehension ➔ satisfaction | β = 0.408*** | Yes |
| H3. Perceived utility ➔ satisfaction | β = 0.342*** | Yes |
| H4. Perceived comprehension ➔ intentions | β = 0.279*** | Yes |
| H5. Perceived utility ➔ intentions | β = 0.129† | Yes |
| H6. Satisfaction ➔ intentions | β = 0.483*** | Yes |

See Appendix S1D for additional details regarding pairwise comparisons.

†$p < 0.100$; **$p < 0.01$; ***$p < 0.001$.

(0.001 significance level), and 0.483 (0.001 significance level), respectively, supporting H4, H5, and H6. Furthermore, although the differences in objective comprehension and perceived utility were significant with regards to content format, they were not significantly different in the manner theorised. Thus, we did not find support for H1a, H1b, and H1c. The results show that the script-only treatment was significantly worse in terms of its influence on objective comprehension than the other treatment formats. In addition, the article-only treatment resulted in significantly lower perceived utility relative to the other formats.

## 6 | DISCUSSION

In this study, we sought to present a theoretical and empirical case around the notion that IS researchers and the IS discipline could benefit from supplementing their traditional text-oriented research articles with video stories. Video stories provide a rich and concise mode for disseminating information in an engaging, relatable, and impactful way. They enable a summary of the critical points retained by learners, encouraging them to either consciously or unconsciously seek the relatedness of the disseminated message with their relevant prior experiences (Mayer, 2008). Therefore, video stories have a great potential to expand the reach of IS research, including increasing research citations, influence, and acceptance.

The video story in our study adopts a third-person narrator perspective in telling the story of the logic that Davis followed in proposing the TAM. It does so by use of the personalization principle of CTLM for fostering generative processing whereby we paraphrase Davis's quotes and arguments. We note that this falls short of the use of first-person accounts, which are classic devices in fiction. However, the storytelling embedded in our video story is more along the lines of a biography of a deceased subject, where the author does not have access to the subject's inner monologue (ie, a first-person perspective) and must tell the story by relying upon what others said about the subject. This illustrates the effect of our use of paraphrasing and thereby represents an initial effort to invoke storytelling techniques.

The non-significant results for H1 might imply that paraphrasing alone is not sufficient to invoke storytelling. This finding prompted us to identify alternative, evidence-based ideas regarding how to improve the effectiveness with which video stories disseminate their meaning. *Critical narrative theory* (CNT) (Voithofer, 2004) might offer an alternative theoretical lens to explain the non-significant results and to improve multimedia learning experiences by optimising the story structure. CNT assumes that story structures are not static, implying that stories evolve over time as social, cultural, historical, and technical factors (eg, *media* convergence) emerge, change, dissipate, or merge (Voithofer, 2004). Thus, one should account for the story structure to make multimedia materials more effective at disseminating information. Drawing on learning theories, multimedia instructional design approaches, and cultural theories of pedagogy, CNT provides a conceptual framework for designing and evaluating educational multimedia materials, focusing on multiple elements of the story structure, including (1) genre, (2) story, plot, and subplot, (3) space, place, and setting, (5) time, (6) character and characterisation, (7) point of view/focalisation, (8) complication/crisis, and (9) resolution and coda.

The proposed implications of CNT can improve the story structure in video stories, thus enriching the learning experience and more effectively disseminating the meaning of the story. For example, the complication/crisis implication suggests the use of problem-centred instructions with complications or crises that are culturally relevant (ie, authentic) to the lives of learners. The rationale is that a content design that encourages users to develop a thoughtful solution from different perspectives and with varied approaches would enhance the degree to which the video stories are perceived as being more engaging, relatable, and impactful. Questions about the complication/crisis implication that can guide the story structure include: (1) What information is provided to complicate the story? (2) How are learners guided to make meaning from the complications? (3) What is the relationship between the story crisis and conflicts and the complications encountered in the lives of learners? (4) What story paths are eliminated with the introduction of a complication or crisis? (5) How is crisis used to support the story? Finally, (6) how does the crisis setup and transition to the end and resolution of the story? See Appendix S1E for further details regarding the implications for structure in video stories.

Despite the non-significant results, certain aspects of our findings indicate that leveraging video stories might have the potential to yield positive results in relation to the dissemination and consumption of IS scholarly knowledge. In our experiment, we note that the content format makes a difference in objective comprehension and perceived utility that perceived utility and perceived comprehension both strongly affect satisfaction and that satisfaction strongly affects intentions to cite, share, and accept. In terms of perceived utility, the video story's script was perceived as the least useful content format for consuming scholarly knowledge. Text-based articles and video-story formats were perceived as equally useful; however, the presence of both (ie, video story followed by the manuscript) was perceived as most useful. The script may have been perceived as least useful because it contained the least amount of information and did not incorporate any of the visual or aural cues. The article also did not have these cues, but it did comprise more information than the script. Having both the video and the article provided the most information and included the most cues for remembering the information. This finding is in line with the multimedia principle of CTML suggesting that words should be presented together with graphics (rather than separately) to foster generative processing (Mayer, 2008).

Regarding objective comprehension, the text-based article was the least effective format. The video story and the text-based article supplemented with the video story were almost equal in effectiveness, and the video story's script

was the most effective format for objectively understanding scholarly knowledge among respondents. While the script was *perceived* as least useful, it was *objectively* most useful for comprehension. This is perhaps because it was shortest and required the least time commitment, therefore resulting in the least information overload. This is congruent with the CLT assumption about total cognitive load; that is, to the extent that extraneous load is minimised and essential load is managed, more processing capacity within working memory is available for constructing, elaborating, and automating schemas (Sweller, 1994). Where the design of the artefact economises on the use of working memory, participant can readily remember the sparse information available. It is critical to emphasise that even though the script was objectively most useful, it was not perceived as useful at all. This is an important difference because it is this *perceived* usefulness that leads to satisfaction (and, ultimately, intent to share, etc).

### 6.1 | Limitations and future research

Here, we discuss the limitations of our study and the directions for future research. The first limitation relates to the design of the video stories. *Case-based reasoning theory* complements CLT and CTML by proposing that individuals solve novel problems by (1) retrieving former experiences from long-term memory, (2) interpreting a new situation by trying to find associations with former experiences, and (3) adapting a former solution to make it relevant to the needs of a new situation (Kolodner, 2014, 1993; Schank, 1990). *Cognitive learning assimilation theory* (Ausubel, Novak, & Hanesian, 1968) proposes that the use of concept maps aids comprehension. Therefore, future studies should focus on exploring how to integrate evidence-based concept maps in the design of video stories, which can enhance the comprehensibility of the disseminated message and positively contribute to an individual's generative processing.

A second limitation of our study is also related to the design of the video story. Besides being comprehensive and relevant, video stories should also attract users' interest to be considered effective. Prior research has repeatedly confirmed that an individual's degree of interest has a powerful influence on (1) attention (Hidi, Renninger, & Krapp, 2004), (2) goals (Harackiewicz & Durik, 2003), and (3) learning capacity (Harackiewicz, Barron, Tauer, & Elliot, 2002). Individual interest, which is defined as the psychological state of engaging with ideas over time (Hidi & Renninger, 2006), includes affective and cognitive development (Hidi & Berndorff, 1998). Learners progress from *situational interest* (which is always motivational) to *individual interest* (Hidi & Renninger, 2006) as a result of both cognitive evaluation and emotional (ie, affective) arousal. Hence, future studies should attempt to use emotional (eg, affective arousal cues) devices, which can prompt a cognitive evaluation as well as affective arousal in producing individual interest.

A third limitation relates to the design and setting of the experiment. We expect future research to conduct more robust experimental designs that will consider additional scenarios, such as video, article, and script, to investigate whether they will provide further insights. Moreover, future studies should consider running an experiment in real-life settings to better control the quality of their sample population.

## 7 | CONCLUSION

In this paper, we considered and empirically tested the merits of the video story as a companion to traditional scholarly articles. To support our arguments, we reviewed theories and research on deep processing and the use of multimedia instructional material. We drew upon the principles of CLT and CTML and the literature on deep processing to develop a research model, which we tested using data from 269 research-oriented students and academics who participated in our experiment. The model was moderately supported, suggesting the potential upside of expending the extra effort to produce such videos.

We acknowledge that the strength and robustness of the paper medium for disseminating scholarly knowledge has been demonstrated over the last 350 years of scientific research publishing. The benefits and contributions of

this vetted genre are virtually undisputable and cannot be supplanted. However, the barriers to successfully establishing video stories as a viable format are diminishing because of the rapid advances in audio-visual technologies, storage and bandwidth capacities, public virtual infrastructure, and the global acceptance of user-generated open content. The latter, coupled with the difficulty experienced by researchers in keeping up with the ever-growing body of academic articles and their need for greater academic impact and interdisciplinary work, suggests a propitious setting in which to innovate and begin taking advantage of opportunities to enhance IS scholarly articles with video stories.

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