ABSTRACT

The use of video for instructional purposes has exploded online, but little is known about how people interact with video differently than other instructional materials and how much they learn from those lessons.

The current study seeks to conceptually replicate an earlier finding from the text comprehension literature (Mannes & Kintsch, 1987) that providing students with an informational outline before reading text can improve recall of the text and/or transfer in the texts to new contexts, depending on the structural relationship of the outline to the text itself (consistent or inconsistent structure). The original study found that consistent outlines improved retention but not transfer, and inconsistent outlines improved transfer but not retention. In this study, we used a more complete crossover design and asked students to learn from short video lessons rather than texts.

RESEARCH QUESTIONS

1. Does providing an outline before the video lesson improve participants’ retention and/or transfer of the material in the lesson?
2. Does the consistency between the outline and the lesson affect participants’ retention and/or transfer?
3. Are the effects of the outline on retention and transfer different for participants with different degrees of prior knowledge about the lesson topic?

DESIGN

3 conditions of interest:
1. No outline
2. Outline consistent with video
3. Outline inconsistent with video

Procedure:
• Studied outline for 10 minutes
• Completed prior knowledge measure
• Watched a short video on human memory
• Took an immediate posttest

Test of Prior Knowledge
• Familiarity with 12 vocabulary terms
• Self-rating of familiarity with topic

Posttest Design:
RETENTION
• Open response: types of memory and how information gets into long-term memory
• Multiple-choice: definitions of different types of memory
TRANSFER
• Open response: varied, requiring explanation
• Multiple-choice: identifying types of memory in specific scenarios

MATERIALS

The learning materials for this study were two video lessons on human memory, focusing specifically on the information processing (Atkinson-Shiffrin) model and distinctions between different kinds of memory.

Outlines were created by first outlining the major structure of each video lesson, identifying the common information in the lessons, then ensuring that information unique to each lesson was incorporated in BOTH outlines.

Consistent conditions were created by pairing each video with the outline matching its overall structure. Inconsistent conditions were created by crossing each video with the outline matching the OTHER video’s overall structure.

Khan Academy
7min 33sec

Major headings of Khan Academy outline:
• Information Processing Model
• Step 1: Sensory memory/sensory register
• Step 2: Working memory/short-term memory
• Step 3: Long-term memory
• Clive Wearing example

Crash Course
9min 20sec

Major heading of Crash Course outline:
• Clive Wearing example
• Memory is learning that has persisted over time
• Atkinson-Shiffrin model
• Working memory
• Different types of long-term memory
• Tricks for improving your memory

RESULTS

Does providing an outline before the video lesson improve participants’ retention and/or transfer of the material in the lesson?

Does the consistency between the outline and the lesson affect participants’ retention and/or transfer?

Are the effects of the outline on retention and transfer different for participants with different degrees of prior knowledge about the lesson topic?

CONCLUSIONS

The primary conclusion from this study is that the findings from Mannes & Kintsch (1987) are not straightforwardly replicable with just any materials. Important differences between that study and this one may explain the very different patterns of results.

One such difference is the degree of difference between the two outlines. In the original study, one outline was chronological while the other was hierarchical. Although both outlines contained the same information, the organizational structure of that information was more disparate than in the outlines used in this study.

It is also important to note that Mannes & Kintsch’s participants had much less familiarity with the topic than participants in this study. They excluded participants with more than one semester of college biology, but participants in this study had an average of 2.76 psychology courses at the time of participation. Although we used prior knowledge about memory as a covariate in our analyses, experience with psychology in general may have influenced the effects of both outline and video on posttest scores.

Lastly, it is quite possible that Mannes & Kintsch’s results depended on the particular measures they used to assess students’ learning. Although their findings might be explained in terms of retention and transfer, it is not the case that ANY measure of retention or transfer will show the same effects; some kinds of questions might be greatly influenced by advance organizers, while others may not. Likewise, the results may depend on the particular analysis used to score students’ answers.

Future research should focus on identifying the conditions under which advance organizers can improve learning from video, taking into account the difficulty of the materials, the discrepancy between the two sources of information, the prior knowledge of the participants, and the questions used to assess learning.

REFERENCES


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