How Much is Remembered as a Function of Presentation Modality?

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ABSTRACT
According to a widespread claim often used for teaching recommendations, students remember 10% of what they read, 20% of what they hear, 30% of what they see, and 50% of what they see and hear. Clearly, the percentages cannot be correct, and there is no empirical evidence even for the ordering. To investigate the ordering, we used a laboratory paradigm that has already revealed some findings regarding the ordering of modalities for remembering information. In this paradigm, subjects are given messages instructing them to move in a grid of 4 stacked matrices by clicking a computer mouse. The current experiment compared 3 modalities presented either once, see (visual arrows), hear (auditory words), read (visual words); twice in succession, see, see hear, read read; or in two different successive modalities, see, hear see, see read, hear see, hear read, hear hear. We found better performance for messages presented twice than for those presented once, regardless of modality. For the twice-presented messages performance varied as a function of the second modality, with best performance overall for see and worst overall for read.

BACKGROUND
It has been stated that students remember 10% of what they read, 20% of what they hear, 30% of what they see, and 50% of what they see and hear (Dale, 1969). Obviously the percentages cannot be so perfectly ordered, but is the order even correct? This study looks at three modality types (hear, read, and see) and the number of times (once or twice) that navigation instructions are presented to explore which type or combinations of types are most effective for executing the movements given. Following Schneider et al. (2004, 2011) and Healy et al. (2013), subjects received navigation instructions referring to a 2-dimensional display of a 3-dimensional space containing four stacked 4x4 grids and followed them by mouse clicking on the cells of the grids (see Figures 1 and 2).

METHOD
• Subjects were given 72 messages, 12 of each of six lengths (one to six commands).
• Accuracy was scored in an all-or-none fashion on each trial.
• 144 college undergraduates participated.

DESIGN
Between Subjects Variables
Modality Type: Hear, Read, See
Presentation Number: Once (Single), Twice (Double)
Presentation Mode: Hear (H), Read (R), See (S),
Hear Hear (HH), Read Read (RR), See See (SS),
Hear Read (HR), Hear See (HS), Read See (RS),
Read Hear (RH), See Hear (SH), See Read (SR)

Within Subjects Variables
Message Length: 1 to 6 commands

RESULTS

Figure 1: A sample display showing movements for a message with 3 commands. Commands are seen in the Read presentation mode and heard in the Hear presentation mode; digits on the display here show required moves and are not seen by the subjects.

Figure 2: Symbols used for See presentation mode

Figure 3. Proportion of correct responses as a function of presentation mode, with the modes ordered in terms of increasing accuracy.

Figure 4. Proportion of correct responses for the presentation modes involving a single modality (Hear, Read, See) as a function of number of presentations (single, double) and message length.

Figure 5. Proportion of correct responses for the presentation modes involving two presentations of the messages as a function of message length and either the modality of the first presentation (top panel) or the modality of the second presentation (bottom panel).

Note. All error bars in the figures are between-subjects standard errors of the mean.

REFERENCES


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