# Interactive web features can help and hurt user's memory

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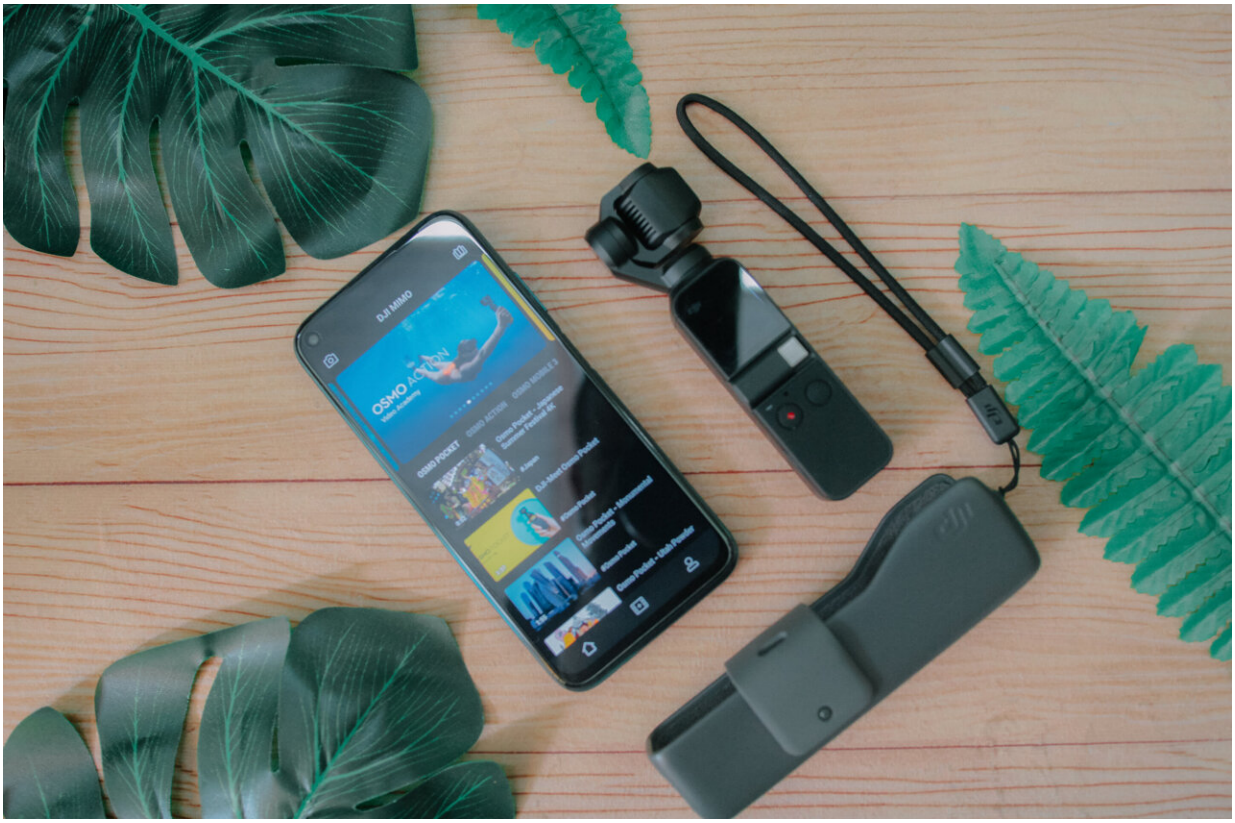


Credit: Pok Rie from Pexels

Cool interactive web tools and neat features can boost a user's memory but they may also cause other content on the site to be less memorable, according to researchers.

"Interactivity can enhance your cognitive capacity for information that is presented in an interactive fashion, but that enhancement of cognitive capacity doesn't translate into encoding of everything else on the page," said S. Shyam Sundar, Distinguished Professor of Communications and co-director of the Media Effects Research Laboratory. "In fact, it seems to be depriving the cognitive resources that you would have otherwise allocated to non-interactive content."

In a study of how interaction influenced a user's memory on a website, people who browsed an e-commerce site had better recall of information presented by interactive tools, but remembered less about the content presented in sections where there were no such tools, said Sundar. Interactive web tools include scrolling, clicking, dragging, spinning and zooming functions.

The researchers suggest that developers of e-commerce sites should carefully consider how they design their pages to make sure that important content is not ignored because it is separated from interactive tools, said Sundar, who worked with Qian Xu, associate professor of communications, Elon University. Developers of news and media sites should also be aware of how they place content near interactive tools, he added.

"You could consider this a headlining effect," said Sundar. "Journalists influence user attention by sizing their headlines accordingly. And, likewise, by showcasing information with a lot of interactive tools, you're telling the user to 'pay attention, pay attention,' but that means you may be asking them not to pay attention to other content."

The findings also suggest that designers could strategically arrange interactive tools to help users navigate the page.

"If used strategically, interactive tools could effectively create a visual

hierarchy to influence the order in which users decide the importance of website content," said Xu.

The researchers noted that interactive tools can increase both recognition and recall of interactive content, but tend to diminish recognition and recall memory of non-interactive content. People use recognition when spotting the correct answer among answers that are incorrect, whereas they use recall memory to call up specific details without a prompt.

At a certain point, however, simply adding more interactive tools may not increase a user's recall, according to the researchers, who released their findings in the current issue of *Computers in Human Behavior*.

"This finding indicates that a moderate level of interactivity would be sufficient to expand individuals' perceptual bandwidth to process content with interactive features," said Sundar. "Simply increasing the number of interactive features would hurt memory for non-interactive content without leading to better processing of interactive content."

The researchers also found that people tended to spend more time on the interactive parts of the page, but this comes at a cost.

"When we looked at the total time spent on the page, we discovered that people spent more time on the site when there were fewer interactive tools," said Xu. "This further implies that overly interactive tools may consume too many mental resources and even deprive users' interest in exploring the rest of the page. Site and app designers need to be really careful about how much emphasis to put on interactive features."

The researchers recruited 186 participants to browse a product website as if they were using the site to purchase a camera as a birthday gift. The participants were assigned to one of three different websites that contained a varying number of interactive tools to correspond to high,

medium and low levels of interactivity.

Subjects on the low interactivity site could only view a front and rear picture of the camera. Medium interactivity website users could click the photo for more pictures of the camera. Participants who were assigned the high interactivity site could click the image, spin it 360 degrees and zoom in to better see the camera.

To measure recognition memory, the researchers asked the subjects to take a test with 14 multiple-choice questions. They assessed recall by asking users to list any product specifications they remembered seeing on the page.

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