Choosing interactive tools for virtual museums mixes art and science

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Museum curators planning to develop virtual exhibits online should choose communication and navigation technologies that match the experience they want to offer their visitors, according to a team of researchers.

"When curators think about creating a real-world exhibit, they are thinking about what the theme is and what they want their visitors to get out of the exhibit," said S. Shyam Sundar, Distinguished Professor of Communications and co-director of the Media Effects Research Laboratory. "What this study suggests is that, just like curators need to be coherent in the content of the exhibit, they need to be conscious of the tools that they employ in their virtual museums."

Many museum curators hope to create an authentic experience in their online museums by using technology to mimic aspects of the social, personal and physical aspects of a real-world museum experience. However, a more-is-better approach to technology may actually hinder that authentic experience, the researchers suggest.

In a study, visitors to an online virtual art museum found that technology tools used to communicate about and navigate through the exhibits were considered helpful when they were available separately, but less so when they were offered together. The researchers tested customization tools that helped the participants create their own art gallery, live-chat technology to facilitate communication with other visitors and 3-D tool navigation tools that some participants used to explore the museum.

The participants' experiences often depended on what tools and what combinations of tools they used, according to the researchers, who released their findings in a recent issue of the *International Journal of Human-Computer Interaction*.

"When live chat and customization are offered together, for example, the combination of tools may be perceived to have increased usability, but it turns out using either customization or live chat separately was greater than either both functions together, or neither of the functions," said Sundar. "We saw similar results not just with perceived usability, but also with sense of control and agency."

The live chatting tool gave participants a feeling of social presence in the museum, but when live chatting was used in conjunction with the 3D navigation tool, the visitor had less of a sense of control, said Sundar, who worked with Eun Go, assistant professor of broadcasting and journalism, Western Illinois University; Hyang-Sook Kim, assistant professor of mass communication and media communication studies, Towson University and Bo Zhang, doctoral candidate in mass communications, Penn State.

Similarly, participants indicated the live chatting function lessened the realistic experience of the 3D tool, according to the researchers, who suggested that chatting may increase the user's cognitive burden as they try to navigate through the site.

Each of these tools carries unique meaning for users, Sundar said. While customization provides an individualized experience, live-chatting signals a social experience of the site.

"Our data also suggest that expert users prefer tools that offer more agency or control to users whereas novices appreciate a variety of tools on the interface," he added.

Users may react to these tools on other online platforms, not just during visits to online museums, Sundar said.

"We might be able to apply this research on tools you might add to news sites, for example, or it could be used to improve educational sites and long-distance learning," he added. "You just have to be careful about how you deploy the tools because more is not always better."

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