LEUPHANA
UNIVERSITY LÜNEBURG

INTERACTIVE VIDEO AS A KNOWLEDGE INTERFACE

An application to expert–practitioner knowledge transfer in Organizational Health

PUBLICATION DETAILS

Leuphana University of Lüneburg
Institute of Performance Management
Innovation Incubator

Project: Interactive Video as a Knowledge Interface
Project Leader: Prof. Dr. Sabine Remdisch
Project Team: Rebecca Gerstenberg, Henrike Sander
Editor: Dr. Eoin Ryan

Design and Layout: Ron Müller
Photo: A. Gabriel-Jürgens/Leuphana

Published: July 2015

WHY CHOOSE INTERACTIVE VIDEO?

KNOWLEDGE SHARING: A CRUCIAL INTERFACE BETWEEN EXPERTS AND PRACTITIONERS

Today, everyone lives in the digitalized knowledge society. Knowledge is a prerequisite for success. Accessing, producing, and sharing knowledge is key. But doing all this can seem very challenging—simply to keep up, let alone to innovate. Thus, knowledge management is crucial: How do the people who need it get the knowledge they need? And how, with new ideas and information being rapidly produced, do practitioners keep up with the knowledge being generated by specialists and experts?

The answer is a constellation of factors, including learning and information skills, networking and collaboration. But new technologies are available to support and augment these skills. One technology that seems particularly promising as a knowledge interface between experts and practitioners is Interactive Video. It is multi-modal and multi-level, allowing knowledge transfer at different levels as the user requires. So the Institute of Performance Management decided to investigate the technology.

INTERACTIVE VIDEO: A NEW TYPE OF KNOWLEDGE INTERFACE

The benefits of video as an information interface are familiar. Video offers vivid storytelling which can be an ideal way for viewers to assimilate information. But video is also a passive medium, presenting a single story over which the viewer has no active control. *Interactive* Video gives the

ABOUT:

This booklet is about an application of Interactive Video technology. It is targeted at those who are interested in knowledge transfer techniques in general, in expert–practitioner interfaces, and in Interactive Video specifically.

Interactive Video: interactive element overlaid on main picture

viewer this control. In an Interactive Video the viewer or user interacts with objects within the video to access various extra information, such as supplementary documentation, direct links to websites, or other multimedia content. This creates a new and advanced type of storytelling: the viewer can follow the main line of the video's narrative, but this narrative can also be interrupted by the viewer to discover deeper detail and wider context, information that is all encoded in the interactive features of the video.

Interactive Video is a promising knowledge interface in many different fields. Interactive videos might be used as a marketing instrument for instance. But the focus here is on the central idea of Interactive Video as a learning or knowledge interface tool, as a constituent part of e-learning or e-workshops, mobile help systems or technical instructions. In particular, Interactive Video is ideal when the targeted learning group begins with different levels of knowledge. It is also especially suitable when multi-modal learning is desirable, allowing audiovisual presentation to be augmented with graphic or textual information.

BitTubes

AN APPLICATION OF INTERACTIVE VIDEO TO ORGANIZATIONAL HEALTH

Interactive Video is a new way of storytelling which the Institute of Performance Management (IPM), inspired by scientific exchange with mediaX at Stanford University, and BitTubes GmbH, a spin-off of the Fraunhofer institute FOKUS, decided to apply and test—to document and disseminate the outcomes of the research project, "Organizational Health".

The "Organizational Health" project was a research project conducted over several years by the IPM, in cooperation with a large network of nursing homes, to investigate how to improve Organizational Health in the geriatric care sector and how to implement such characteristics of a healthy organization as good employee retention and strong capacities for innovation. A central challenge for the research project was how to keep our practitioners in the loop, so that they could take our results and use them to optimize their daily work.

The "Organizational Health" project culminated in the Leuphana Health Conference 2014, in Lüneburg, attended by about 100 representatives from the geriatric care sector. At the conference, researchers and expert practitioners gave talks, usually in tandem, participated in forums, presented their latest results, gave practical advice, and discussed best practices. Topics included "Healthy leadership", "Healthy work organization", "Corporate culture" and "Compatibility of work and family life".

The conference was captured in the Interactive Video, *Click here for healthy organizations in the care sector: learning, linking, acting*. The video makes this conference report its basis for presenting outputs of the longer-term project. It offers users an account of the conference supported by detailed information about the research presented there, and information on the speakers and participants at the conference. The multi-level, multi-modal nature of Interactive Video suggested that it would be very well-suited to present results and data from the research project.

THE INTERACTIVE VIDEO (IN GERMAN):

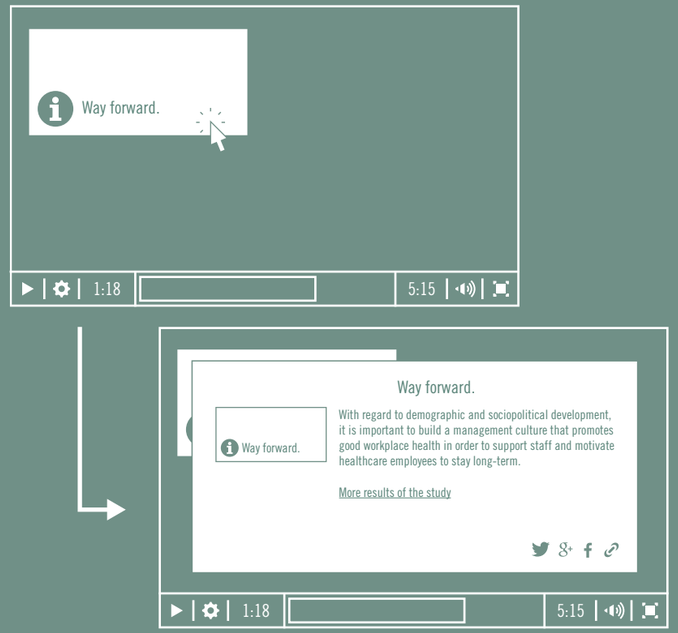
» www.leuphana.de/iv

HOW WAS THE INTERACTIVE VIDEO BUILT?

THE VIDEO: *CLICK HERE FOR HEALTHY ORGANIZATIONS IN THE CARE SECTOR*

The core technologies of Interactive Video allow the user to learn, to link, and to act. Different objects within the video can be clicked so that the user can:

LEARN	— A central narrative: immediate understanding. — Multi-level learning: supplemental information at different depths enhances learning efficiency and retention. — Multi-modal learning: audio-visual presentation supported by text, graphics, etc., for optimal information transfer.
LINK	— Linked, multi-level presentation of structured information. — Internal and external links, for both structured and open access to information. — Information about people: personalization increases empathy and supports learning mechanisms.
ACT	— Adaptable and active learning for the user. — External linking to follow-up information, detailed results or scientific papers. Biographies and contact information to link to people and networks. — Active learning and linked environment encourage immediate action and implementation.



OVERLAYS: PUTTING INFORMATION AND PEOPLE INTO THE INTERACTIVE VIDEO

Overlays are pop-up windows which allow information about people (people overlays) or data, results, and other facts and figures (information overlays) to be included in the Interactive Video.

People overlays give further information about participants in the video, from basic facts like name, employer, and function, to biographies, and links to relevant websites, blogs, etc. Such personalization supports learning mechanisms, helps the user gain an overview of the people in a field, and offers pathways to access that network.

Information overlays give further information about topics in the video. This can be presented at different levels: One overlay might be a brief definition of a technical term, another a graphical overview of research results, and others may link to detailed statistics, booklets and research reports.

LINKS: INTERNAL AND EXTERNAL

Interactive Video is a hyperlinked medium that supports user learning goals by connecting to information at different levels, in different forms, with different focuses, and in the voices of different people.

Some links remain *internal* to the video—such as links to definitions, highlight interviews, or informational documents. But links may also be *external*, providing beginning points for independent research by the user or connections to wider networks. For example, the *Click here for healthy organizations in the care sector* video has links to the "Topic Forums" of the Health Conference, to the Leuphana University website, and to connections with the project's partners in the care sector. A well-designed Interactive Video strikes a balance between offering the user a structured information environment, and providing external links beyond that environment.

The user is also enabled to create his or her own links. Social media buttons allow sharing via Twitter, Google+ or Facebook, and the user can feed the video into his or her personal networks, and pass the information onto colleagues and collaborators.

These different types of link support different ways in which information can "flow" in the knowledge society, where it is key that all individuals be enabled to be information brokers, supporting others, and enabled to access knowledge support.

HOW WELL DOES THE INTERACTIVE VIDEO WORK?

Having designed the Interactive Video, *Click here for healthy organizations in the care sector*, it was important to evaluate its effectiveness. The following pages describe this evaluation along various axes, including overall user impressions, usability, and user experience of the knowledge interface and knowledge transfer.

EVALUATION DATA:

Exploratory interviews—with conference participants
Focus group interviews—with MBA students
Expert interview—building the Interactive Video

EVALUATION DESIGN VARIABLES

The Interactive Video was evaluated in different contexts. One target group was conference attendees and participants. Subjects from this audience watched the video and their reactions to it were evaluated through exploratory interviews, both face-to-face and over the phone.

Interviews

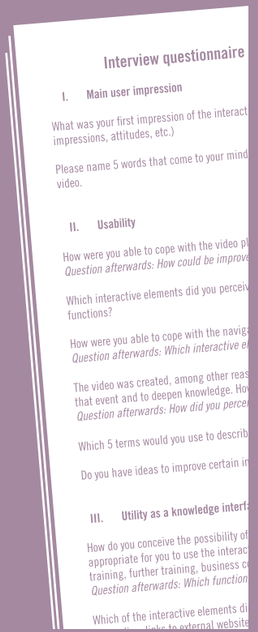
Interviews with 14 conference visitors who watched the interactive video

Focus groups

3 round-table discussions with 17 MBA students about the interactive video

Expert interview

Experiences creating the interactive video


Interview questionnaire

I. Main user impression

What was your first impression of the interact
impressions, attitudes, etc.)

Please name 5 words that come to your mind
video.

II. Usability

How were you able to cope with the video pl
Question afterwards: How could be improv

Which interactive elements did you perceiv
functions?

How were you able to cope with the navig
Question afterwards: Which interactive e

The video was created, among other reas
that event and to deepen knowledge. Ho
Question afterwards: How did you perce

Which 5 terms would you use to describ

Do you have ideas to improve certain in

III. Utility as a knowledge interf

How do you conceive the possibility of
appropriate for you to use the interac
training, further training, business c
Question afterwards: Which function

Which of the interactive elements di
links to external website

A second test group consisted of students of the MBA in Performance Management at Leuphana University. These subjects had prior knowledge in the field of Organizational Health before watching the video. This group's experiences with the video were evaluated through focus group interviews.

An expert interview with the web designer about his experience creating this Interactive Video completes the evaluation, offering a different perspective: its usability from the video maker's point of view.

EVALUATION VARIABLES

"Overall user impression"
— First impression
— Relevance
— Action

"Usability"
— Handling of the video player
— Navigation through the video
— Information quantity and quality
— Layout of the video
— Users' ideas for improvement

"Learning effects"
— Learning effects
— Missing content

"Knowledge transfer"
— Potential of Interactive Video
— Ideas for application
— Motivation for action

USER IMPRESSIONS

Asked about their overall impression of the Interactive Video, most subjects highlighted positive aspects. They described the video as informative, innovative, and professionally designed, and perceived it as an interesting new medium with an entertaining and complex structure. Most people enjoyed the freedom of extra information being available if they wanted it, and also liked that looking at supplemental information was easy when they chose to do so.

— Informative and innovative
— Engaging and entertaining
— Interactivity effective
— Risk of being overwhelmed
— Risk of distraction

Most users also felt motivated to click on interactive elements rather than just watch the video passively.

Some subjects, however, did say that they did not like the interactive approach. They thought that there was at times too much information and too many overlays. Some people found the layered structure hard to grasp, or found the relationship between the supplementary information and the main narrative of the video difficult to follow. Some users also expressed subjective wishes for the video to contain more information about a specific person or a particular study, for example.

My first impression was very positive. It's really something new and innovative!

All in all, it created a good, professional impression.

I think it's a super idea that the viewer can decide for themselves to look at the extra information if they want to, but that they also don't have to.

Your concentration level as you watch remains high. That is definitely an advantage.

Rather too much input, too many pop-ups.

It in fact distracted from the real story that the film was telling.

I personally found that the icons sometimes appeared far too quickly, and too briefly. I would want to click, but the thing would be gone already.

The video player is very user friendly. Easy to use.

I had the problem that when I opened a PDF, the video wouldn't automatically start again.

Unfortunately, it felt a bit like a reaction-time test, because you were afraid to miss an interactive element as they went away so quickly

It gives a good impression of the conference, I think, about what happened, who was there, and what the atmosphere was like.

I think I can say that the video fits the University brand. It looks like Leuphana.

USABILITY

In response to questions about usability, many viewers reported a mixed experience. Many of the issues mentioned were technical, including problems switching between the main screen and the interactive elements, and problems opening or loading supplementary files or links. Other issues were more intrinsic to the way Interactive Video works. These include concerns about overlays appearing too fast or too briefly, and the sense that interactive elements could interfere with the video's flow.

Most users noticed that the design and layout of the Interactive Video was very important, especially because of the risk of distraction. In this regard, most people found the overlays to be well designed: clearly laid out with legible text and design consistency across overlays. People also recognized that graphically, the Interactive Video had the University corporate design.

People found the use of music in the video to be a relaxing element that produced a positive emotional response, although the integration of music across pop-ups was not perfect.

— Design of video important
— Design was clear and appealing
— Some technical issues
— Overlays sometimes overwhelming

SUBJECTIVE LEARNING EFFECTS AND THE INTERACTIVE VIDEO AS A KNOWLEDGE INTERFACE

Overall, users had the impression that the Interactive Video was a successful knowledge interface. People reported subjective learning success with specific examples, such as learning about healthy leadership and about the importance of the leader for the workplace health of employees.

— Informative video
— Successful knowledge interface
— Good mixture of information
— Interactive elements sometimes distracting
— Additional information could be included

Most people thought the amount of information included in the video was appropriate and well judged. Most people said the video contained a good mixture of academic and practical knowledge, and found this information to be of good quality, conveying a variety of things, from technical definitions, to the atmosphere at the conference.

Some people found there to be too little information in the video, although sometimes this was because they had previous knowledge in the field. Specific suggestions about what could be added to the video included more study results and methodologies, more explanations of technical terms or concepts, and better bibliographic or reference material.

What I really came away with was this thing of leading by example, and that healthy leadership is a very important topic.

Not much information stuck, because you couldn't concentrate on anything.

What I would have liked was an overview of the topics at the end of the video.

A good tool in the school or university context, for e-learning, and as a complement to lectures.

Maybe also applicable in knowledge management—as a solution to the question, "how can know-how be passed on in a company?"

I think, for example, that [such a video] might also be very interesting for presenting products at trade fairs.

A good addition would be an extra panel beside the main video so the overlay content wouldn't have to appear on top of the picture.

It would have been much cooler if all information appeared in pop-ups so that you never had to leave the main page.

Despite the overall positive impression of the Interactive Video as a knowledge interface, some people did find the video distracting (sometimes because of technical problems), and could not concentrate on the film and the overlays at the same time. But the overall impression was that Interactive Video is an effective knowledge interface, and most people would imagine it being used in a variety of contexts, including e-learning, as a way of giving technical instructions (or cooking videos), for post-processing other learning events, as part of product advertising strategies, and as a tool in organizational knowledge management.

BUILDING THIS INTERACTIVE VIDEO

The web designer, who built the Interactive Video, said that most aspects of the Interactive Video were easy and intuitive using BitTubes's Tagging Tool, and that the process was relatively efficient.

The design possibilities provided by the tools are not always optimal. Sometimes, the tool could be more helpful to the designer (e.g., provision of a grid or tool to aid overlay alignment, support of video format conversion), and sometimes the inbuilt design could be more helpful to the viewer (e.g., better visibility for website links). In fact, his main suggestion would be to work on granting more design flexibility: the overlay structure was quite constrained, and not always perfectly suitable for communicating with the viewer and highlighting different types of information.

Echoing comments by viewers, he noted that it could be useful to be able to show PDF files in pop-ups, and he pointed out that the video player control is rather distracting and seems designed mainly for tablet-style interactions, although many people would view the video on a desktop. He also worried clicking on overlays demands very fast reaction times from users as they vanish nearly instantaneously.

Overall, working with the system was fun!

Something else I think is good is this extra Timeline display, where you can always see where in the video which extra information will pop up.

I would have preferred to be able to make the social network links less prominent.

One of my biggest wishes would be for more layout options with the overlay.

A great option would be for a type of sticky pop-up, that doesn't disappear on mouse-over.

WHAT IS THE FUTURE OF INTERACTIVE VIDEO FOR KNOWLEDGE TRANSFER?

The Interactive Video *Click here for healthy organizations in the care sector: learning, linking, acting* was a successful application of Interactive Video. The responses of subjects in test audiences were positive, and people find that Interactive Video is an attractive and useful knowledge interface.

Test viewers appreciated the combination of structured narrative with active access to other information. Interactive Video is a suitable medium for presenting complex information, linking it into narratives, and contextualizing it to people and networks. This application of Interactive Video in the “Organizational Health” project shows its benefit in information dissemination between experts and practitioners.

Although most viewers enjoyed the interactivity of the video, some did find it distracting. It does seem a risk of the medium that there can be too much supplementary information, and too many overlays and pop-ups. Some viewers even experienced this as stressful. From the responses of test users, it seems the solution to this type of problem is partly technical, and partly a matter of carefully designing the information presentation. Two key targets for BitTubes to enhance an already excellent technology should be better handling of pop-up speed, and offering more flexibility to the designer/builder of a video. Stringent bug and glitch handling is unusually important, because any such distraction can easily break user concentration while watching the video.

Test users were enthusiastic about Interactive Video, seeing many potential uses for it, but also suggested ways to develop the technology further. Some requests basically demanded more of a good thing: more information content, and more different types of interactive content in the overlays, including extra audio and video insets, graphics, or diagrams. Another theme was possible enhancements to user navigation, including instructions at the start of the video, an overview of overlays and documents at the end, and the use of a distinct content bar beside the main video window. Other suggestions are basically technical enhancements of things Interactive Video already does, such as extending social network sharing options to the contents of overlays, allowing the option not to stop the video while reading an overlay, and making PDF reading native to the overlays. A recurring problem was that some users found the current overlay timing too quick.

It seems accurate to say that such user suggestions endorse the value of Interactive Video technology and would like to see it developed still further as a knowledge interface.

To sum up, Interactive Video is a very powerful knowledge interface tool, which can greatly aid information dissemination and learning. There is some tension between the impressions of test viewers who enjoyed the interactive information content, felt they benefited from it, and even wanted more, and some others who found the technology distracting or stressful to use. Further developments in the technology, and enhanced design possibilities, should greatly minimize such difficulties. Interactive Video is a developing technology that is already an effective knowledge interface with many potential uses.

This project is funded by:

EUROPEAN UNION
European Regional Development Fund

Europa fördert Niedersachsen

Leuphana University of Lüneburg
Institute of Performance Management
Wilschenbrucher Weg 84
D-21335 Lüneburg
Fon +49.4131.677-7945
christina.korf@leuphana.de

2015/07 - printed on recycled paper

» www.leuphana.de/en/ipm