

Tablet, 3D, video: the impact of these new information technologies on teaching and customer education



Meriem Ben Zaied

Cécile Luft

Miriam Richki

Abstract

Lately, we witnessed the rise of new information technologies such as the tablet, the 3D and the video. These technologies quickly popularised, and today they can be found in the teaching and customer education sectors. They are used at different levels: some use them massively, whereas others are only starting to implement them.

This article deals with the changes caused by the implementation of the tablet, the 3D and the video in the teaching and learning processes as well as the training materials design. In this prospect, we will focus on this phenomenon and its extent in the last decade by establishing a State of Art.

We will then study the impact of the tablet, the 3D and the video through 3 case studies: new teaching practices using videos in controversy and debate at Sciences Po, the implementation of the tablet in the Customer Education Service of a company, and the integration of 3D models in digital textbooks at Dassault Systèmes.

Keywords: tablet, 3D, 3D models, video, impact, learning process, teaching, customer education, technical writing, controversies, FORCCAST.

Introduction

Today, a new generation takes place in the classrooms: the Generation Z. It gathers the people born after 1990 who have always lived surrounded by the ICT (Information and Communications Technology).

This article will be dealing with three of these ICTs: the digital tablet, the 3D and the video and their impact on these technologies upon the writing and teaching/learning processes. How does this new use change the way we design, write and transmit the information?

State of the art

In France

2010 has seen the introduction of the tablet in classes, taking the place of books and pens. This transition is still being tested in some departments such as Bordeaux, Créteil or Grenoble. Teachers and students are trying to determine the educational strategy of this new format. This new use would benefit both teachers and students in matter of weight, paper saving and teacher-to-student interactions, as students would be able to put note on PDF format courses and send them to the teacher, for example.

Regarding the 3D, experimental projects are being carried in some schools in France. For example, in Cannes, pupils and teachers have now access to 3D projectors and 3D glasses. The

teachers can conceive their lessons thanks to 3D software. There are several experimentations (3D models, 3D printing, and 3D projection) in France but 3D is not a commonplace in education yet.

Video has been around for quite a while and therefore cannot exactly be considered as a new technology. However, the democratization and variation in the use of this format bring new opportunities. With the democratization of new technologies and high-tech, videos, in their creation and their view, are more easily accessed.

France and other countries

In 2012, 10 milliard tablets were sold in the world. Economists predict a growth of the use of tablets in the company (multiplied by 15 in 5 years). The current situation and the growth to come is due to the transformation of data (tablet friendly) and new organizational and productive tools, some of which are only available on such formats. The United States is currently experiencing the same transition. It is believed by some American economists that the use of a digital tablet in schools would improve their conditions and results.

3D is everywhere nowadays: TVs, movies, cameras, video games, etc. But 3D has not really widespread in education. The willing of integrating 3D in the learning process is nevertheless a reality. This phenomenon being rather new, there are no statistics available. As a result, we cannot compare France to other countries regarding 3D in education.

The position of video regarding technical writing as well as training and education varies depending on the country. In France, videos do not have a prominent position as they do in some English-speaking countries. Videos are usually used to present an example. They are documentaries or interviews viewed in class and used to reinforce a point. Today however, videos are also used as a support for homework as it is the case in the Controversy class of SciencesPo.

Impact on technical writing

Impact on information design

“We shape our tools and thereafter our tools shape us” said Marshall McLuhan. We could then think that in the future the core of the information will be designed and shaped around our tools, such as the tablet. Because of the reduced length of the output format, information must be redefined: a shorter written content, an increased number of pictures, schemas and videos. Audio files can be added to presentations to suit a larger range of learners.

With 3D, the course materials can be designed by the teachers thanks to adapted software but they are usually available online. This way, the teachers have a choice: they can either design their own 3D model according to what they want to teach, or choose to base their lessons on existing models. These models can be directly linked to the textbook. For example, Dassault Systèmes and the French publisher Hachette Education decided to collaborate in the integration on 3D models in a digital

textbook. The pupils can then have a 3D view of the concepts studied in class.

The use of videos in technical writing is not new. A quick search on YouTube lists no less than 85 700 000 results for “tutorial”. Even though creating a video is fairly easy thanks to the numerous editing software, making it efficient is another story. Videos require a set of skills in order to make it appealing and to give the necessary amount of information. At SciencesPo, students from the Controversy class are teamed up with students from ENSAD (Ecole Nationale Supérieure des Arts Décoratifs). Their role is to participate in the conception of the final document (a video on a controversy) and ensure that the information is correctly designed.

Impact on information writing

The use of a new format such as the tablet calls for new writing/designing applications. Computer aimed software like Word and Photoshop are not suitable for tablets, so tablet users will be using tablet aimed applications like Apple’s Page or Photoshop touch application. These applications are made to be used on a smaller and slightly less complex format, and they can produce documentation with the same level of quality as computer-made documents.

When 3D is used in a classroom, the teacher has to change his or her way of teaching. 3D contains the most of the information but it does not suffice. The 3D model supports the teacher’s speech and does not replace it. The lesson is then more visual and oral than a regular lesson.

When it comes to writing information, adjustments need to be made as we go from “oral” to “visual” information. Video offers a lot of visual possibilities, and therefore a lot of options when it comes to representing the information. The teacher needs to choose how to write the information in a way that suits best the type of information. This is one of the main critics toward the Khan Academy. The content of the videos is very surprising as it looks like a blackboard. Using a software like Paint, the teacher explains to the students the notions by writing them on the software using a mouse. Videos offer more creative and functional possibilities that teachers need to take into account.¹

Impact on teaching and learning

Impact on teachers

The use of the tablet within a training course can have several advantages for the teachers. First of all, they can gather their entire course material –such as written lessons, exercises, and presentation videos– within one unique support and send it to the learners. Using special tablet-aimed applications, teachers can decide to block certain functionality of the tablet, like Wi-Fi, messaging or any application they would judge inadequate with their course objective. This way, they can manage their students and keep control on the course.

¹ Delphine Bancaud, "Khan Academy: "Ces vidéos ne peuvent se substituer au cours" Interview de Bernard Eggerd, professeur de math" 20minutes.fr, September 3rd 2013, Accessed on September 3rd 2013 (<http://www.20minutes.fr/societe/1217713-20130903-khan-academy-ces-vidéos-peuvent-substituer-cours>)

Teachers need to have a totally new approach of the lesson if they bring 3D into the classroom. The lesson cannot be a lecture; it has to be a place of interactions, where the pupils move from passive listeners to active doers. According to the “Learning in Future Education” (or “LiFE”) study led by Dr Anne Bamford on the impact of 3D on pupils’ learning, 3D “saves time in the lessons” and teachers can “cover more in the same time”. They can focus on the learning of the pupils. As the pupils learn faster with 3D, the teachers can use this saved time to practice more or to move further in the curriculum. However, 3D will never replace a teacher, and it has to be a bonus in order to keep the “wow effect”.

The use of videos in a classroom is tricky. The teacher has to find the equilibrium between the information given in the video and his/hers. The trap would be to repeat the information. The videos need to be used as a complement to the course and be followed by a discussion. The difference in formation is rather obvious: the use of videos can represent a certain economical advantage. Instead of paying a trainer, the client just has to film the training once, which can then be sent or made available to a larger number. This is what the Khan Academy relies on. A single video can be watched by anyone with an access to an Internet connection. The content can be easily duplicated and made available to a greater number.

Impact on learners

Within a company, learners can also benefit from choosing to use a digital tablet instead of traditional formats. First, its dimensions make it easy to transport, as it can be packed in a

bag (unlike the computer, which needs its own case). A recent study pointed that each learner would save around 1000 pages by training by switching to the tablet. Then, they can participate to the writing of the course by putting notes and comments on the PDF format courses/exercises sent to the teacher. Finally, they get to interact more with the rewritten content, via tablet friendly exercises, for example.

3D performs a dual function: draw the attention of the Generation Z and improve their understanding. Indeed, this generation has grown up with the ICT, the Internet, the videos games, the social networks and have new expectations in terms of learning. According to “LiFE” study, 85% of the pupils prefer seeing and doing. Integrating 3D into the classrooms brings a new motivation and makes the students more enthusiastic; they are “keen to have 3D [...] in their learning”². 3D is playful, it increases the level of attention of the pupils and it favors interactions between them and with the teacher. In terms of numbers, 92% of the pupils were attentive with 3D, compared to 46% in a classic lesson
Erreur : source de la référence non trouvée.

But 3D is not only some new fun material, it has a real educational impact. “Visual learning improves the pupils’ understanding of functionality”
Erreur : source de la référence non trouvée and “complex concepts become more easily digested when reduced to imagery”
Erreur : source de la référence non trouvée. 3D has proved to be “more easily understood because more detail is given through the use of colours, lights and shades

² Dr Anne Bamford “LiFE” study.

and shadows”³. 3D improves learning and retention: pupils learn better and faster.

Many studies stress the fact that, as we are living in the digital age, our attention span is getting shorter. This is particularly true for the younger generations who have grown up with digital tools. As they are less used to printed and written words, their attention drifts away more rapidly. The use of videos in class can help getting their attention, and concentrate. It can then be used as a discussion point and get the students involved.

However this is not the only benefit for students. As we live in a society of image, it is important that the students learn how to use these images. By making the video a part of their education, teachers give students the tools to evolve in a society based on image. It teaches them how to use the image to convey their messages.

Conclusion

The introduction of these new technologies has changed the core of the information designing, writing and teaching. Both writers and teachers have to review the way they manipulate data in order to suit new formats and new teaching techniques.

The recent emergence of the tablet as writing/teaching and reading/learning formats has brought new ways of interacting with data and is changing the nature of the relation between

³ BERTOLINE, Gary R. "Technical Graphics Communications, Fourth Edition". Boston: McGraw-Hill Higher Education, 2009. Print.

teachers and learners, who are slightly leaving their passive state to participate more actively to the learning process.

3D models are great tools that can revolutionize teaching and learning but only if they are used properly: they are to be simple and well designed to be useful. Just as the tablet, 3D models can totally change teaching and learning. It can make the lesson livelier, capture the students' attention and make them understand better.

The use of videos is also changing the technical writing industry as well as education. Videos call for a new range of tools and therefore the development of new skills. These new skills do not only concern students, but also teachers and technical writers who have to learn how to "write" videos.

References

- Barney Dalgarno, "The Potential of 3D Virtual Learning Environments: A Constructivist Analysis", *Electronic Journal of Instructional Science and Technology* (2002)
- Odile Meulien Ohlmann, "3D and Education", *Journal of Physics: Conference Series 415* (2013)
- A. Blavier, A., Q. Gaudissart, G-B. Cadière, A-S Nyssen, "Impact of 2D and 3D Vision on Performance of Novice Subjects Using Da Vinci Robotic System." *National Fund of Scientific Research, University of Liège, Liège, Belgium.*
- Barney Dalgarno, John Hedberg, "3D Learning Environments in Tertiary Education"
- Professor Dr Anne Bamford, "The 3D in Education White Paper", *International Research Agency.*
- Ojeda-Zapata, Julio. *Ipad Means Business: How Apple's Tablet Computer Is Changing the Work World.* Happy About, 2006.
- Dave A. Berque, Jane Prey and Robert H. Reed. *The Impact of Tablet PCs and Pen-based Technology on Education: Vignettes, Evaluation and Future Direction.* Purdue University Press, 2006.
- Todd Smith, Anthony Ruocco, Bernard Jansen, "Digital video in education", *SIGCSE '99 The proceedings of the thirtieth SIGCSE technical symposium on Computer science education* (1999)

Chareen Snelson, "Web-based video in education: possibilities and pitfalls", *Boise State University* (2008).

Ariane Rinna, Lindsey Gopal, Nadège Abdallah-Ali, "Video tutorials: the future of technical documentation?" *Paris Diderot University* (2011).

Special thanks

We would like to thank our colleagues from Dassault Systèmes, Sciences Po and Thales for their help and for sharing their knowledge with us as well as Virginie Ahrens for her supervision.