THE VALUE OF DESIGN RESEARCH

A SEMIOTIC APPROACH TO USAGE DESIGN

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ABSTRACT

We propose a novel semiotic approach for incorporating usage into product design of an educational software product. This approach pays particular attention to the purpose of use, but fundamentally has the ethical aim of improving individual and collective well-being. We understand usage as the combination of a setting where someone makes use of something, and an objective and with an ethical aim. In the same way as design of a product or a service, we believe in establishing usage through a design process. We call this usage design. The latter is understood as a drawing (shape, configuration) and a purpose (objective, ethical aim) of a usage device, be it software or hardware. Our approach is anthropocentric rather than technocenteric and allows to distinguish between technical and pedagogical innovation.

Keywords: design, usage design, semiotic, educational

1 INTRODUCTION

As digital design researchers and collaborators in a project focused on software design for educational uses, we have implemented a semiotic approach that incorporates, in a novel way, usage into product design. This approach pays particular attention to the purpose of use, but fundamentally has the ethical aim of improving individual and collective well-being. We understand usage as the combination of a setting where someone makes use of something, and an objective and with an ethical aim. In the same way as design of a product or a service, we believe in establishing usage through a design process. We call this *usage design*. The latter is understood as a drawing (shape, configuration) and a purpose (objective, ethical aim) of a usage device, be it software or hardware. Our approach is anthropocentric rather than technocenteric and allows to distinguish between technical and pedagogical innovation.

Usage design improves over *experience design,* an emerging practice which focuses solely on emotional quality, sensitive to the relationship between users and objects, spaces, services, tangible or intangible (Drouillat, 2013: 57; Magerkurth et al; 2005); User Experience which refers to the subjective perception, ergonomics, emotions that one receives from interacting with a product, a service, or an environment (Garret, 2002).; Participatory Design which allows future user to integrate the design team so that the product may combine expectations and user aspirations (Drouillat, 2013 : 44-45).

Semiotic Approach to Usage Design

Nicole Pignier

The first two approaches do not take into account the ethical aim of use. In the case of participatory design, if ethical conceptions of future users motivate their choice of use, they will remain secondary compared to the definitions of expectations and usage goals. The term "usage design" brings future users to question the interrelationship between usage of the object and usage of the overall device[1] within which fits the practical, political and social configuration of this usage.

We present a concrete example where *usage design* has been integrated as part of creation of an editing software called Creadona. In the first part of the paper we detail the framework within which the Ceradona project took place. The second part of the paper will focus on the methodology for taking into account usage design as part of product design. Finally, we present the results of applying this approach to software design.

2 PRESENTATION OF CREADONA

The project presented here, Ceradona, is an example of collaborative design where teachers are involved. Implemented in schools that volunteered[2] in the region Haute-Vienne (Limousin), this software allows for classroom editorial work leading to publication of various types of texts (stories, notebooks, journals, documentaries, etc.) on paper and digital media, from kindergarten to CM2. The project is financed by the European Union and the Limousin Region and is undertaken in collaboration with a Limousin company Pixine, the Centre of Semiotic Research (Centre de Recherches Sémiotiques), the schools that have volunteered among those invited to take part in the design the test version, and the school Inspectorate which has given consent for the various exchanges and interviews with school teachers and headmasters. We coordinate the research part of this European Union funded project which started in May 2013 and will be finalized by the end of 2014**.** Teachers have the opportunity to install the free application in their schools on PC and Mac desktops, laptops and tablets, throughout France.

3 METHODOLOGY OF QUESTIONING USAGE DESIGN

As previously stated, design is understood as the combination of two entities. On the one hand one or more objectives, such as the ability to communicate, self-

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[1] We take the definition that Michel Foucault gives the device as a political and social order (Foucault, 1977).

[2] We sent a letter presenting the project after approval from the School Inspectorate, to approximately thirty, both rural and urban, schools, with various levels of available equipment. We have fifteen tests schools. We wanted to focus on school visits for regular exchanges on teachers' expectations, their views on different proposals for our software, hence the limited number of requested schools. The selection is based on geographical proximity to the Centre of Research and the company in charge of the project.

Semiotic Approach to Usage Design

Nicole Pignier

educate and educate**,** and goals and ethical aims (Besnier, 2009: 28; Pignier, 2013: 171-172). In this case, what improvement of individual and collective well-being do teachers that integrate the product into their educational practice envision? Does this concept of well-being rely on the ability of the student to understand the intergenerational cultural heritage, information and communication media, and experience or, does it break off this legacy? Additionally, design is associated with the following considerations:

- for a software or hardware – choice of shapes, sizes, colours, as well as functionality, performance, and technology (Pignier, 2013a: 172);

- for use – the choice of scenarios, and choice of practical settings for learning.

3.1 UNDERSTANDING THE TEACHERS' CONCEPTION OF LEARNING

The Creadona project was conceived based on voluntary interviews with teachers. The first round of interviews, lasting around two hours with presence of school headmasters, was aimed at giving an overview of the project as a whole, as well as gathering teacher expectations. Expectations were related to the teaching of reading, writing, storytelling, and visual arts, as well as gathering teachers' views on our proposals for the project. Qualitatively, discussions were preferred to specific enquiries with the following themes, avoiding questionnaires and question lists:

- available equipment in schools that have volunteered

- the sense of use of traditional materials

- the place of digital media (for teaching writing, creative writing, production of written work, visual arts, reading, etc.)

- the presentation of the software project

We collected speeches of fifteen teachers headmasters (7 male, 8 female) from schools located in Haute-Vienne, with 8 rural and 7 urban schools. We chose to allow the respondents to determine the role of the subject of perception, action, and to take only the role of adjuvant of the project that was to be theirs. We did not want to record the sessions in order to maximally preserve a flexible framework of communication in classrooms, within a familiar environment for teachers. Our methodology joins that of the authors of the book *Connect : design for the year empathic society.* These researchers indeed base an approach of design on the following criteria: 1) to be empathic to the user, 2) to facilitate the meetings personally, 3) to favor the discussion, 4) to offer an positive experience, 5) remain open to favor the trust to the system.Thus, our presence in the classrooms was not an "observation" of teachers (Wildevuur, Sabine, van Dijk, Dick ; Äyväri, Anne ; Mie, Äyväri ; Thomas Äyväri and Lund Jesper, 2013).

3.2 ANALYSIS OF USAGE DESIGN THROUGH GOALS AND OBJECTIVES

Exchange sessions allowed us to identify, from notes taken by two staff

Semiotic Approach to Usage Design

Nicole Pignier

members of the research laboratory, whom were interlocutors to school teachers, a common semantic denominator regarding proposed uses.

For all schools, it was about accomplishing a work through synergising different learned skills (writing, written comprehension, written production, discovery of the narration, reading, informatics, visual arts, oration). For some, it was an album, for others, a documentary text or a travel blog, etc.

We have analysed the axiological valuation/devaluation position of ICT within the school. The ethical aim, namely improvement of collective and individual well-being, was mostly agreed (14 of 15 teachers) to be: encouraging students to think about the use of ICT to complement traditional supporting materials and techniques, rather than replacing them. This was expressed strongly in the remarks by the same valuation of traditional and innovative media, with exception of teachers who promote use of touch-screen tablets over computers and paper.

An analysis of narrative roles granted to media highlights on one side (14 speeches of 15), a perception of media both traditional and innovative as complementary and not substitutable aids. On the other side, in one discourse, a tablet is perceived as the main aid allowing for working in an "intuitive, playful and creative" manner. A purpose of use which consists, unlike the others, of seeing in the media and objects recently put on the market, the ultimate way of Culture.

4 USAGE DESIGN AS PART OF SOFTWARE DESIGN

Teachers generally provide an educational device that integrates writing materials, varied creation for learning gestures in the matter-substance interrelation (ink, paint, hand to hand in the face to face oral, etc.). It is important for them that the software does not absorb story creation activities (invention of stories in speaking, writing, illustration) but is limited to editorial work. In this context, the semiotics of media along the lines of Emmanuël Souchier (2000, 2012) has allowed us to think about software design as a setting of an enunciative space-time second enunciation, integrating and extending the first enunciation – story creation. This second enunciation and setting do not replace the first, where the child creates work on traditional media (drawing on paper, sculpture, painting, imagination of a story in orally in the classroom and with the teacher). Indeed, it completes and renews it with addition of sound into a digital version. The editorial enunciation allows the text to take shape. Students can build their book by understanding what each level of enunciation has allowed them to do using various media.

The paper version of the created text can be printed in A5 format through the printing service offered by the company that develops the software, for the price of 2 or 3 euros per book, depending on volume. Alternatively, this can be done by the school for manual preparation of the book-object. The student can incorporate text created in a material medium that offers a tactile-kinesthetic apprehension, apprehension of volume, weight, texture. The digital version, meanwhile, remains on display and includes an important work on sound as background music or oral dramatization when children record their voice. The

Semiotic Approach to Usage Design

Nicole Pignier

consideration of *usage design* has led the design team to significantly reduce technical innovation resulting in an admittedly very modest program in terms of features, but one that, according to the teachers involved, provides educational innovation. For them it is about easily comparing the variations and meaning differences between a thought-up story to a written paper and a thought-up story to a story on digital medium, open to very different reception practices.

In terms of shape and pattern, the Creadona software is based on a very simple design, since teachers' wishes were for easy and fast handling, in order to avoid losing the student to the screen during an activity. Software operation is divided into three modules which may be used for collaborative work in so far as each module can be active simultaneously with different children. In the illustrator module (Figure 1), the child has a library of existing albums. It includes illustrations, creations of painting, ink, pastel, pencils, and so on.
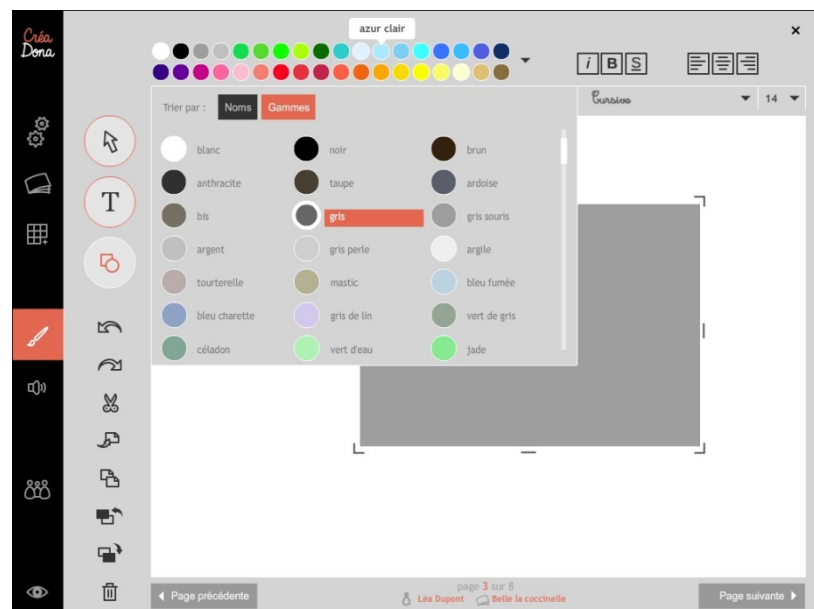

Figure 1. Illustrator Module

The editor module (Figure 2) allows the child to have an interface for keyboard input and / or import and format of existing texts. It can also import texts written by hand.

THE VALUE
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Semiotic Approach to Usage Design

Nicole Pignier

Figure 2. Editor Module

The narration module (Figure 3) gives the child the opportunity to voice record the story written by the editor using a headset with a microphone. The pupil can listen, delete and redo recordings. Editing is done on a "timeline" (sounds can be associated with the story through drag / drop with onset as a time setting). Students can also record their own sound effects.
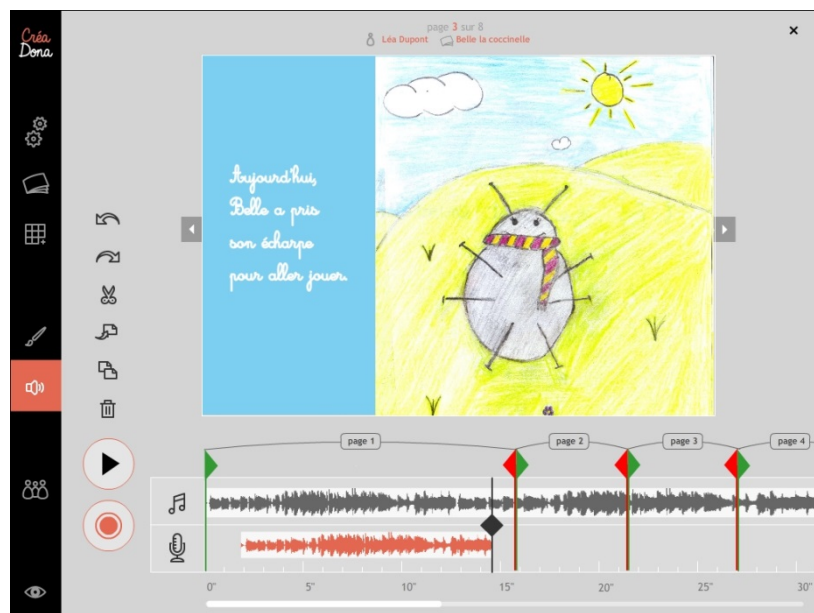

Figure 3. Narration Module

Semiotic Approach to Usage Design

Nicole Pignier

5 CONCLUSION

This semiotic approach, questioning whether usage should be within a design approach, has allowed design of a digital product for schools, without confusing technical innovation and pedagogical innovation. To hear and take into account the wishes of teachers is to allow an approach that is not technocentric but deliberately anthropocentric; teachers can thus build, and back up their choice of use of digital media, sometimes by non-use with regard to ethical and political reflection, practice the act of learning. This has allowed them to envision an editorial work medium, which according to their wish, does not offer a technical break off, but allows to combine, supplement, and tinker with what is considered pedagogically creative by fostering within a child awareness of singularities and text changes meant for a particular medium.

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