

Design & Trust as Key Factors for e-Teaching

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Abstract. *The offer of new possibilities for teaching and learning with new media increase the complexity of educational environments. This fact consequently increments the possibility of negative learning outcomes, and makes the development of student-instructor trust more difficult. The design of procedures for learning activities may decrease s complexity by guiding students in the use of complex learning devices. On the other hand, if procedures are not designed, students are pushed to find out by themselves how to use learning devices, acquiring meta-cognitive abilities. On the basis of both theory and a case study, conclusions are drawn and expressed as guidelines for managing the introduction of new media in education from the point of view of instructional design.*

Introduction

The introduction of new technologies in education has led to previously impossible learning environments and to the discovery of unexpected potentialities. On the other hand, learners find themselves in an increasingly complex learning environment: while before traditional classes took place one after another, nowadays online classes are interposed between videoconferencing presentations and distributed teamwork. And this complexity affects not only learners: e-learning comes with its counterpart e-teaching –but while learners can count on staff introducing them to technologies, who will teach the teachers?

The issues we are concerned with in this paper will be presented from the teacher's (or instructional designer's) perspective: we will analyze the delicate relationship between student-instructor trust and new media. In particular this paper addresses the following issues: How can teachers help learners to trust a learning environment which presents new technologies and unexpected situations? How can teachers provide guidance for learners in a technologically complex environment?

Our goal is to provide some guidelines that may help instructors to achieve a successful integration of new media into their courses.

Media Affordance & Trust: a Paradigm

Clark & Brennan (1991), and later Brennan (2001), introduced the concept of *media affordance*. The use of any media (such as talking, writing letters, the phone, email, etc.) has a certain *cost*. Let us take the email: its usage cost would include the time spent writing the message, the degree of technical complexity in using a computer, connecting to the Internet, using the email application, etc.

The more we get acquainted with the medium (in our example, with email), the more the cost is reduced, and its affordance increases. Consequently, a new medium's affordance is usually low: users experiment a lack of experience, i.e. proofed procedures, rules and tricks for using it. The specification of a *usage protocol* for the medium, i.e. of procedures and guidelines for exploiting it in a specific organizational or social context, is a way of increasing its affordance. Think of the telephone: children quickly learn to use it as they can rely on a whole set of shared rules and practices for using it, while this is not the case with videoconferencing.

Media Affordance in Learning Environments

This considerations holds in learning environments too. New multimedia learning material (e.g. streaming video clips), or a new communication tool (e.g. a forum) may not be *affordable* for low experienced students, and represent a challenge to them.

In a learning environment, media affordance is an element of the educational contract. In its turn, the educational contract is relevant for the creation of *trust* between students and teacher (Luhmann & Shorr 1998)¹.

The concept of *trust* is related to that of *risk* (Luhmann 2000). We experience risk when we see a possible gain but we are afraid of the action that we need to perform (or of some conditions) in order to get it. The only way of avoiding taking the risk is waiving the associated advantages. Trust is an element that can support the decision to take the risk *with someone else*.

In education, students perceive trust as the teacher's support in learning something new, in the risk of mixing up in a new experience of learning, i.e. into a process with the specific goal of changing them. The topic of motivation addresses indeed these issues (see e.g. the ARCS motivational design model in (Keller 1983) and (Keller & Suzuki 1988)).

We claim this can be a useful paradigm for interpreting a set of common issues in technology-based learning environments, where new media are integrated in the greatest part of the learning activities. Moreover, this interpretation leads to three practical design guidelines.

We will present our research through a case study analysis at the University of Lugano.

L'Istituzione nel Contesto della Società

*L'Istituzione nel Contesto della Società*² is an introductory course in institutional communication for freshmen at the Faculty of Communication Sciences at the University of Lugano (ICeF 2002). The edition considered in the case study took place during the Summer Semester 2002 with about 180 students.

The general objectives of the course can be summarized as follows:

1. Understand general concepts of organization theory to be applied to institutions.
2. Be able to properly describe and classify institutions (e.g. according to typologies, mission, context, financing, etc.).
3. Acquire the ability to understand complex situations and to figure out possible actions in an institutional environment (e.g. develop a governmental campaign against gender discrimination).
4. Raise interest for institutional communication.

Course Design

The basic tenet of the instructor's disciplinary approach was that, due to their degree of complexity and heterogeneity, institutions could hardly be described in one thorough model, while experience can be a good teacher. The course aimed to provide chances for a "direct look" into real institutions, guided and integrated with a theoretical background

This statement was translated in a double-track program:

1. Presenting and discussing general concepts about institutions and institutional management and communication
2. Providing a most possibly lively picture of the life of real institutions.

The first track was pursued mainly through classroom lectures (two lectures of two hours each per week). Lectures were used for frontal explanation, discussion, examples, and all the activities usual for this setting. After the lecture, the lecture slides and the other materials were available in the course website. Moreover, each week students had to fill in a weekly feedback form on the course website, composed of two elements: the lecture wrap-up (five keywords and a ten-line text) and the class assessment. This was done to gather feedback from the students and to provide them with a chance to consolidate the lecture concepts.

The second track was developed into a set of 22 *multimedia case studies*, each presenting a single institution (such as the UNO, Amnesty International, CERN, etc.) through a collection of digital documents (texts, audio and video clips, websites - from 10 to 60 for each institution)³. Technically, the case studies were implemented with the *Media Juke-Box* (Botturi 2002). They were available online in a password-protected area of the course website, which also provided the syllabus, the slides presented during the lectures and a list of references.

By the week before the end of the course students had to perform a double analysis of the case studies:

1. An extensive analysis, i.e. analyzing three documents for each institution in a selection of 17 out of 22 (the selection was up to the student);
2. An intensive analysis of a whole case study and all its multimedia documents.

The results of the two analyses were to be submitted in the form of a written report. The report was due after the summer if the exam was postponed to the Autumn session in October (the choice was up to the student⁴).

¹ The educational contract is highly relevant as well for the relationship between the institution and the students, which we call *confidence*. Although confidence and trust are intertwined, in this paper we will focus on the former.

² In English, it would be *The Institution in the Framework of Society*

³ A demo version of the case studies is available at www.lu.unisi.ch/icef/istituzioni

⁴ At the Università della Svizzera italiana, students can choose if to do the exams right after the course (at the end of Winter or Summer semesters), or to postpone exams to other sessions. Available sessions are in June (and of Summer semester), October and March (end of Winter semester).

The set of case studies represented the main technological element in the course. Of course it was the major implementation effort, as the case studies required a great editorial work⁵ for the instructors. On the students' side, it was as well the greatest challenge, as it brought to new learning situations.

Outcome & Issues

The first edition of *L'Istituzione nel Contesto della Società* was indubitably a novelty for students, as the deep integration of multimedia materials and class lectures represented an unprecedented case for them. Namely, the multimedia case studies are complex objects and the overall course environment affordance was surely high.

By the end of the semester, the students' satisfaction was good, and their performance in the exam just slightly below the instructor's expectation. All the same, the post-course evaluation (which included students' feedback, exam results, and interview with a sample of students) revealed three issues:

- 1) *The complexity of institutions*: a certain number of students claimed that for some case studies, they could get no definite idea of what presented institution was like, or they got a blurred view, which resulted in confusing their ideas more than anything else. This was probably due to two main factors:
 - a) Many case studies contained mostly documents coming from newspapers or TV news programs, and were not didactic documentaries. Therefore, they offered the news perspective on the institution. Students were in charge of re-contextualizing the document from the news setting to the course setting, and this was indeed no easy task.
 - b) Previous knowledge of the institution would have helped as contextual information, but this actually happened only for the most well-known institutions, e.g. the UNO, or political institutions, and was not possible for less widely known ones, such as the CERN (European Organisation for Nuclear Research), or the Soccorso Operaio Svizzero.
- 2) *The theory-practice mismatch*: the students' comments revealed the difficulty in linking the theory presented during lectures with the "practice" of the multimedia case studies. This was confirmed in the final classroom discussion, along with the difficulties that many encountered in the simulation that was part of the final exam. Students perceived the multimedia case studies as a vivid (and sometime enjoyable) attention-catching device, but not as a core part of the course.
- 3) *Time-mark correlation*: the quality of the reports obtained from students who submitted the case study analysis report after the summer (September 2002) is significantly higher than that of the students who submitted the report just after the end of the course (June 2002).

We will now try and understand these issues according to the *media affordance and trust* paradigm present at the beginning of the paper. This interpretation brought us to define three instructional design guidelines that we followed in redesigning this course for the following academic year, and in other teaching activities.

Understanding the Course Outcome

Trying to understand the course outcomes, we noticed that the course syllabus just described the expected product of the multimedia case study activities (the final report) but did not provide guidelines on *how* this was supposed to be performed. This generated two different reactions.

Some students perceived this lack of precise procedural guidelines as an added difficulty (let us keep in mind they were freshmen). Learning how to use the case studies was perceived as an overhead learning task, which generated complexity and increased uncertainty. This situation was addressed in several discussions during classes – a discussion that was not easy to manage with almost 180 students, with different ages, learning styles, motivations and interest. For the majority of students, this situation was an obstacle to trusting the teaching staff and the general course organization. And for many of them, as the final exam proved, it blocked the risk-taking process of learning.

But the third issue (the time-mark correlation) of the previous paragraph provides some hint for a further understanding of the cognitive process at work in this situation. Other students in fact decided to take some more time for finding out how to use the multimedia case study, and postponed the exam after the summer. These students achieved on average better results. Moreover, they acquired a meta-cognitive ability, a new learning-to-learn skill: that of creating their own way to exploit a rich learning materials set such as the case studies. But which students took this approach? The ones able to compensate trust with self-confidence: they had previously *understood* that they needed additional time in order to do a good job. Moreover, they were the ones who *could* do it, i.e., they had few or no exams for the autumn session, having completed them in summer. In one word, they were *good students*: the lack of protocols turned out to be as a selector for students already possessing basic meta-cognitive skills and performing well at the exams (this confirms what had been reported by Light & Light 1999: good students learn even better, those with difficulties lag behind).

⁵ The majority of the multimedia documents came from the RTSI – Archive of the Radio and Television of Italian speaking Switzerland – and included articles taken from Swiss and international newspapers and documentaries or news produced by the RTSI². The institution itself kindly provided other documents (like presentations, or parts of the institutional website). Lastly, *ad hoc* documents were produced during the project (mainly interviews).

Consequences on Design: Three Guidelines

This experience, under the light of the *media affordance and trust* paradigm, has revealed a particular dynamic concerning the introduction of new media in education. We expressed it in three design guidelines, which we hope are useful to instructional designers and teacher educators.

- *Guideline 1:* Course designers should take care in defining guidelines and rules (i.e. protocols) for the usage of new learning devices in the learning activity. The multimedia case studies in *L'Istituzione nel Contesto della Società* were presented without clear guidelines, and resulted in a non-affordable media. Usage guidelines and rules make the new media more affordable and direct students in how to interact with the learning environment.
- *Guideline 2:* Guideline 1 should be balanced with an opposite consideration: *the lack of usage guidelines for new devices fosters the development of meta-cognitive skills* (learning-to-learn). A “designed lack of design” can be therefore beneficial, given that this will require more time and effort from the students. It can be noticed that a cognitive entry point is the condition for the development of meta-cognitive skills in such a lack of rules and guidelines. Some students may *need* guidelines - otherwise they would lag behind.
- *Guideline 3:* Trust should be considered as a key success factor for the introduction of new media in education, both on the level of a single course and on a wider institutional basis. The complexity of the learning environment should be managed in order to enhance the creation of trust, and vice versa. Trust and media affordance are circularly connected, as shown in (Figure 1).

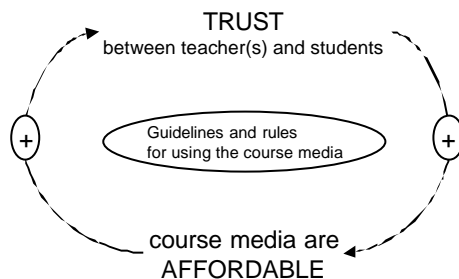


Figure 1 - Trust and affordance: a circular relationship

The ability of the educator or course designer consists into finding a balance between design and un-designed activities and into creating a learning environment favorable to the development of trust. And we believe that good teaching is nearer to an art than to a set of formal rules.

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