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Between New Technologies and New Paradigms in Academic Education A Non-Reductionist Approach

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and New Paradigms in Academic Education
A Non-Reductionist Approach

Abstract

The article presents an insight into an exploratory study carried out between February and May 2014. The study looked into the process of teacher training enhanced by new technology: an MA CALL seminar facilitated in the blended format as a series of online and offline tutorials. The participants of the class were 9 first-year students of the TEFL MA programme at the Pedagogical University in Cracow, Poland.

The study and its results were described in detail in previous publications (Turula, 2015, Turula, in press). The present article investigates an aspect of the process researched: negotiating between the digital realm, with its different tools and their affordances and a social context of the digital—or blended, as is the case here—education.

Keywords: reductionist/non-reductionist approach, affordancing; ICT

The Perspective

When reflecting on the role of the material culture in the 21st century language education, one can hardly avoid considering *the virtual material*. Alongside the decreasing clarity of distinctions between the material and the non-material culture noted in modern research, similar liquefying of borders can be observed between the so-called traditional and digital environments and artefacts, including those typical of language learning and teaching. In fact, when considering the word *material* in its broader sense, including that of *relevant and consequential*, the younger generation may decide that the online and its culture are *more material* than the offline aspects of our life. This is why,

any contemplation on the contemporary language pedagogy need to see both: the two sides of the *material* coin; and their mutual influence and dependencies.

However, in examining the relation between new technologies and different manifestations of social life (including language education), it is easy to get trapped in one of the available deterministic viewpoints. As a result, one may argue that the Internet and its uses dictate the way we act; alternatively, it is often claimed that our social practices and rituals influence our mode of computing. In education, such a reductionist approach will draw a line between those who believe that it is digital tools that determine the shape of schooling and those who subscribe to the approach-first stance. Confronting what is declared on the topic of digital education with the actual status quo, it seems that while words speak for approach-first, common deeds show an inclination towards a certain degree of technocentrism (cf. Kurek & Turula, 2014). In other words, while theoreticians claim that digital tools should always be secondary (in Poland, mainly by Morbitzer, 2009, 2010, among others)—and practitioners assure they are—new technologies per se make their way to the fore of the modern classroom, backgrounding pedagogical issues more frequently that we would like them to.

In an attempt to describe the digital educational reality, which is by far more complex, this article goes beyond the reductionist perspectives into a non-reductionist stance on the relation—or rather multiple relations—between new technologies and university teaching. It starts by clarifying where the followers of the reductionist/non-reductionist positions stand. Then it applies these perspectives to the opportunities new media offer, referring to the NMC Horizon Report 2014, one of the most important publications listing modern technologies which are likely to influence education. Following this is an example of a computer-assisted educational practice implemented at the academia—an EFL teacher training course enhanced by new technology—that has been subject to the author's exploratory research.

New Technologies and Education
The Perspectives on Mutual Relations

In his article on the methodology of the Internet-related research, Dahlberg (2004) departs from three different aspects of what he calls the circuit of technology: the uses of the new media, the digital artifacts and the social context in which all this happens. Consequently, he claims, if we choose to adopt a linear, one-direction view of cause-effect relations in this circuit, we have to consider it from the three different angles determined by these aspects. Resulting from

this are three types of determinism. They are discussed, following Dahlberg (2004), below, with a slight change of focus (education) and based on sources which are more contemporary than those cited in the original work.

The first mentioned by Dahlberg is the *uses determinism* which ignores the artifact (seeing it as neutral) and concentrates on the needs of the agents using it. This approach is based on the conviction that "the gratifications sought from the Internet by individuals can predict the use of the medium" (Dahlberg, 2004 p. 5). In other words, the motive/interest/attitude of the user determines the choice of tool and its use. In education it means, for example, that a need for a more controlled learning environment may encourage the teacher to use a Learning Management System (LMS) rather than a more open Virtual Learning Environment (VLE). As for the student motivations and related choices, how they use, for example, social media may determine their attitude to the idea of networking in education. A recent study (Pollara & Zhu, 2011) demonstrates this idea and its implementation generate privacy issues between teachers and students. Such issues seem to result from the fact that learners are occasionally apprehensive of educational contexts being extended to social networking sites (SNSs), which they perceive as related to interacting with friends and not to education (Lantz-Andersson et al., 2013). Some uses, as Dahlberg (2004) notes, may surprise the experts, as the applications of technologies may change rapidly with a new generation of users (with their specific needs and motivations) entering the digital market. Such a generation change can be observed in the use of mobile phones, primarily communication devices, now—mainly entertainment centers (cf. Morbitzer, 2009). New motivations resulting in new uses may also lead to abandoning a digital tool previously opted for. Based on nine simultaneous ethnographic studies into the preferences of 16–18-year-olds concerning social media, run in eight countries, Miller et al. (2013) discovered that teenagers are now choosing different social software (Snapchat, WhatsApp) over the so far unbeatable Facebook. Lying at the root of the withdrawal are the new e-motivations and uses, the basic being communicating rapidly, from a mobile rather than a stationary device.

The second type is *technological determinism*, with its claim that the technological shape of the Internet affects its users in a number of ways. First of all, new technologies have impact on the way we communicate: Dahlberg (2004) mentions depersonalisation and disinhibition, both of potential interest in education. The former may affect the rapport between the participants of the learning situation, in a positive or a negative way. The latter may help relieve tensions, especially those associated with oral production, and help alleviate performance anxieties. In online communication there will also be hierarchy flattening and, consequently, new ways of establishing relations of power (Poster, 1997), including those between teachers and learners. If medium is the message, as McLuhan (1964) claims, the very act of communicating

with the teacher via a democratic digital channel paves the way for a more peer-to-peer-like exchange and, inevitably, affects the language and organisation of the communication. Besides, the Internet offers multiple channels of communication. As a result, the new discourse—including learner-learner and teacher-learner exchanges—will be not only more direct but also increasingly multimodal. However, the Internet affects not only the way we communicate but also how we learn. Carr (2011) quotes numerous studies documenting the changes to cognitive functions (attention, memory, higher-order thinking) that are caused by the digital—as opposed to the traditional—exposure to text. Finally, even the concept of human knowledge—now envisioned as a network (Weinberger, 2012)—follows the model of the web structure. All this can be summed up by a very technologically determinist claim made two decades ago: "the Internet, cyberspace, and virtual reality … are parts of our very selves … *they are languages ... what they do is structure seeing*. They act on the systems—social, cultural, neurological—by which we make meanings" (Stone, 1995, p. 167).

Finally, *social determinism* focuses on "the way outcomes are affected by social and economic structures and by the social construction of technological artifacts" (Dahlberg, 2004, p. 11); "the way technology is socially embedded and constituted" (12). The present article will leave aside such interpretations and their conclusions to the effect that the way in which new technology develops is determined by who owns and controls the new media, because these issues go beyond the intended scope of the present text. Instead, the author intends to concentrate on the changing social contexts and relations—including those created and maintained online—and the ways in which they affect the perception and use of digital tools in education. Some of the examples given earlier in the text in relation to the uses determinism are equally well interpreted as socially determined. First of all, for both generation-specific uses of the new media (mobile phones and social networking) the important underlying factor is young age and its culture. The escape from Facebook, in addition to uses-determined causes, may equally well be an attempt to bypass the control of the Facebook-using parents or withdrawing from a social network whose culture is becoming increasingly middle-age and thus unattractive. Similarly, the choice of LMS over VLE—made by a teacher based on the intended use—may also be a manifestation of the educational culture this teacher is part of. To finish with, the claim that depersonalization of online contact may have a positive or a negative effect implies factors underlying both effects; factors going beyond artifacts, like the attitudes and preferences of the user, their view on the nature of education, and so on.

The fact that some examples can be used in relation to different deterministic outlooks makes one reconsider the unidirectionality of all the three perspectives presented above, especially that there also are certain reservations

that can be expressed in relation to all three types of determinism. Subscribers to the uses determinism need to consider that "it is a mistake to assume that individual actors are in complete control of media technologies. Such an assumption overlooks the structuring of actions by technological systems and neglects the social embeddedness of these systems and their users" (Dahlberg, 2004, p. 6). As for the technological determinism, the interaction between the medium and the user as well as the power to influence is far from unidirectional. While new technologies shape our lives, it is also true that if and how they are used depends on a number of social factors, including social status, age or education. In relation to the latter, one of the most important determiners may be the level of digital literacy of the user: where on the tech-comfy/tech-savvy (Pegrum, 2009) continuum s/he is. Those who are familiar with new technologies and use them with ease (tech-comfy) but have not yet had time to reflect upon these uses, let alone broaden their repertoire (tech-savvy), may be prone to misaffordancing in their use of digital tools (Kurek & Turula, 2014). Consequently, it is extremely difficult—if not impossible—to find examples in which the influence between involved elements/participants will be simple and unidirectional. A good instance of such complex, multidirectional interactions between uses, tools and the social context is the one coming from Miller et al.'s study. The escape of young people from the popular network is motivated by social factors (belonging to a certain culture determined by their age); but also uses factors—a want for privacy and instantaneous, non-verbal communication. The latter, which makes the younger generation choose applications like Snapchat is, in turn, the outcome of ongoing technological changes, one of which is the growing iconization of online messaging—today anything is a message and non-verbality (audio, video, image, emoji) is gaining in popularity. All in all, it is hard to disagree with Dahlberg when he opts for a non-reductionist perspective on the interplay between users, their motivations, the cultures underlying these motivations and the constantly changing modern technologies.

New Technologies, New Tendencies
The NMC Horizon Report

In order to examine the contemporary network of mutual relations between uses, technologies, and social life it is important to first delineate the *modern*, which, in the case of technology, is an elusive concept, always ahead of the ones trying to understand and describe it. In the fast-changing world of new media, one of the most reliable sources of knowledge about

new technology-related tendencies in education in general and, specifically, in university teaching is the *NMC Horizon Report* (2014, 2015, 2016). It is compiled annually by two non-profit organizations: the international New Media Consortium and the EDUCAUSE Learning Initiative, an association for the promotion of new media in the academia. The report, which is recognized worldwide, is the work of renowned new technologies experts and practitioners from all over the globe. The panel of Horizon experts works through a communication technique called the Delphi method: each participant, based on extensive reading in the field of new technologies, is asked to cast multiple votes until 18 topics: 6 trends, 6 challenges and 6 important developments in educational technology are agreed upon. The aim of this is two-fold: (1) a description of newly introduced technologies; (2) an evaluation of their educational potential and a prognosis how they are going to influence world education in the five years to come. The diagnoses for the years 2014–2019, in the above-mentioned categories are described below.

When it comes to the most important *trends*, the expert panel emphasizes the growing popularity of social media. What follows is the new model of the Internet use, marked by creation, sharing, and communication, which now go hand in hand with—if not replace—the more passive receptive activities of the past. What follows, as the Horizon panel predict, is an inevitable shift of the educational paradigm towards more participatory pedagogies and collaborative learning, with more emphasis on distance and blended education. In such a context learning will be experiential in the sense that students will be able to rely on their technological expertise, which, almost always, is of out-of-school origin. Besides, and still within the experiential mode, schooling will need refocusing: creation of content in place of mere reception of teacher-generated materials; time and space flexibility with more learner autonomy in their management; connective learning based on communication/networking via the channels of online interaction chosen by the students; etc.

In the part of the report devoted to *challenges*, the experts list a number of problems which need to be tackled if the above-listed trends are to be effectively translated into educational practice. The problems include: (1) low digital literacy of teachers; (2) the lack of training opportunities for the said teachers on the available tools and their affordances; (3) low flexibility of universities as institutions, and (4) the unwillingness of academia to open to groups of low educational culture. In the light of all this, as the Horizon panel predict, universities may soon have to face a serious competitor: Massive Open Online Courses (MOOCs), offered by renowned universities via platforms such as Coursera, OpenEd, NovEd, and others. Even if MOOCs are still in their infancy and their quality may be difficult to determine, they have two very important advantages: "[they] help prospective students make informed choices about which courses to take … [and], like any college courses, MOOCs benefit

from critical, independent, and public evaluation from people who don't have a stake in their outcome" (Solomon, 2013, http://tech.mit.edu/V133/N2/mooc.html). In other words, the open courses pose a challenge which definitely is not to be ignored, especially in the face of all the deficiencies listed above.

The last part of *NMC Horizon Report* is devoted to *the most important developments* the expert predict in new technologies. Listed below, the innovations are indirectly ((1), (3), (5), (6), (7)) or directly ((2), (4)) connected with education.[1] They include (2014, 2015, 2016):

1. a growing popularity of consumer goods such as 3D video, electronic publishing, mobile devices and apps;
2. new digital strategies: BYOD (= Bring Your Own Device), Flipped Classroom, gamification and others;
3. internet technologies: cloud computing, the Internet of Things, machine translation, semantic applications, etc.;
4. learning technologies: badges, learning analytics, MOOCs, mobile and online learning, open educational resources, PLEs (= Personal Learning Environments), Virtual and Remote Laboratories, etc.;
5. social media technologies: Collaborative Environments, collective intelligence, crowdfunding, crowdsourcing, and others;
6. visualization technologies: 3D printing, augmented reality, information visualization and visual data analysis, volumetric, and holographic displays;
7. enabling technologies: affective computing, machine learning and many, many others.

From New Horizon to New Paradigms
A Non-Reductionist Approach

Looking at all three—trends, challenges, and the prognosticated developments—from the non-reductionist perspective, we can say that there will be interplay between all three of them. First of all the trends will be both influenced by and influencing technological development. There will also be a constant tension between these trends and challenges: the more effective the ways of overcoming the problems, the more likely the development as prognosticated. On the other hand, though, consistently low literacy levels as well as the lack of institutional flexibility on the part of the universities may lead to fossilization of technology use—a manifestation of which will be Web 1.0 ways utilized in

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[1] Own categorisation (AT).

the era of Web 2.0/3.0—or misaffordancing, resulting from insufficient digital competence (cf. Kurek & Turula, 2014).

Some examples of the latter state of being can be observed in how developments in educational technology proceed in the academic Poland (or, in fact, worldwide—cf. Peachey, 2014). There is a strong pressure on the more modern—and, consequently, more digital—approach to tertiary education. What follows is a turn towards e-learning, which is carried out at 47% of Polish universities (Hołowiecki, 2014), 84% of which use the Moodle platform to accommodate their distance and blended courses. This open-source learning management system, especially if used with the plugins which make individualization and gamification possible, has the potential to live up to the trends and developments described in the *NMC Horizon Report* (2014, 2015, 2016). However, everyday practice shows that Moodle courses are predominantly traditional, teacher-fronted, students-as-consumers learning environments, in which learning through interaction is rare if not non-existent, and which serve mainly as repositories of handouts. The blame can be laid on the—previously mentioned— insufficient digital literacy on the part of the teachers together with organisational problems at universities (cf. the cited *Report*, the Challenges Section).

However, operating from a non-reductionist perspective and considering the multidirectional interplay between uses, technology, and social factors, one is certain to uncover deeper layers of cause-effect relations in this area. It is true that the trend to turn to e-learning is the result of new technological developments and the choice of how these developments are used is strongly determined by one's digital expertise. However, and equally importantly, the underlying factor of the above-mentioned choices is social/cultural: one's educational philosophy. In other words, the quality of Moodle courses described earlier as prevailingly handout-based may very well stem from a belief that knowledge is the result of transmission rather than interaction, that it is acquired rather than constructed, and that its flow is unidirectional, from the know-all teacher to the passive student. The interplay between this belief and new technological developments will very likely result in education which, in spite of the modern medium, is very traditional in the negative sense of this word.

This will obviously re-raise the question of the real meaning of *modern* in education relying on modern technologies; a question that can only be answered if one is operating from the non-reductionist perspective. From this perspective it is easier to see that while new technological developments do have impact on the educational culture and the available (digital) tools and their potential uses, they are also strongly influenced by the educational culture and—together with it, in a cyclical way—determine the choice of digital tools and their affordancing. If this culture is not modern, neither will be its pedagogical practices, even if informed by the latest technological developments.

Consequently, in order to trigger—or simply understand—true paradigm shifts in (academic) education, we need to operate on the level of the complex and multilevel relations between the different aspects of technological developments. Only such a non-reductionist perspective allows for going beyond simplistic unidirectional assumptions as *If Horizon experts prognosticate an increased popularity of social media in education, it is necessary to extend learning spaces into the most popular SNSs*. To make a genuine difference in how we learn and teach, networking for educational purposes—to continue with the same example—needs what Lantz-Andersson et al. (2013) call recurrent negotiation. There is room for such negotiation at the meeting points of the three different aspects of the circuit of technology listed by Dahlberg (2004): uses, tools, and the social context. Within this territory, the reflection on the idea of networking for educational purposes may start with the examination of popular uses of SNSs, abstracting from the tool itself. With such a starting point, the educator is likely to arrive at a model of schooling which is based on interaction, (digital) identity building, creating, sharing, etc. If this observation negotiates well with the educator's own teaching philosophy—participatory and dialogic rather than transmissive—or if the acknowledgement of popular SNS uses motivates the educator to renegotiate his/her current teaching philosophy, s/he arrives at the point where choices are made considering digital tools for implementing the teaching model. This implies going back to the very SNS. However, whether it appears suitable for educational purposes is, again, a matter of negotiation between a given social medium and its social embeddedness. The latter means considering such problematic issues as privacy concerns between teachers and students (cf. the earlier-mentioned Pollara & Zhu, 2011), and may make the educator look for technological options similar to, but other than a given SNS. All this requires a non-reductionist considering and frequent reconsidering of multiple factors.

In conclusion, the whole process of modernizing schools/academia in line with the current trends, complex, and multilayered, needs to be negotiated at the different meeting points of the three aspects of new technologies in education. The next section describes such an attempt. It presents exploratory research on a blended MA seminar taught as a series of on- and offline tutorials. As the complete results of the study have been presented elsewhere (Turula, 2014, 2015) the description and analysis below concentrate on the non-reductionist interplay of uses, tools, and the social context.

Negotiating between Uses, Tools, and the Social Context
An Insight into a Study

The study into the process of teacher training enhanced by new technology was carried out between February and May 2014. It was an exploratory study, carried out as action research into an MA CALL seminar facilitated in the blended format as a series of on- and offline tutorials. The participants of the class were 9 first-year students of the TEFL MA program at the Pedagogical University in Cracow, Poland. Each of the students took part in 4 tutorials scheduled at two-week intervals, 2 face-to-face meetings, and 2 digital classes via Google Drive.

The study and its results were described in detail in previous publications (Turula, 2015, Turula, in press). The present article offers an insight to this study which pertains to the focus of the article: negotiating between the digital realm, with its different tools and their affordances and a social context of the digital—or blended, as is the case here—education.

The starting point of the concept of this class was the teacher's interactive and dialogic educational philosophy. It motivated the choice of the tutorial method, which relies on one-to-one encounters between the teacher and the student. *In practice*, a tutorial revolves around an essay which the student is asked to write for every meeting with the tutor; the essay is then read, discussed, and leads to another written work to be prepared for the following meeting. *In essence*, every such meeting is individualized based on the knowledge the tutor has gained about the student; and student-centered, as the tutor always shifts the focus onto the student, by asking eye-opening questions rather than lecturing.

Based on the teaching philosophy together with the choice of method, the criteria were formulated for the selection of the digital tool to be used in the online part of the blended class. As a result of the negotiation between the social context—understood here as the educational culture that was aimed at together with the students' own preferences concerning the new media—and the necessary uses of the prospective digital tutorial tool(s), the following functions were required: (1) the possibility for the student to share a body of text with the tutor; (2) the possibility for the teacher and the student to comment on this text and respond to comments, synchronously and asynchronously; (3) the availability of the tool to all parties involved. Based on these criteria, Google Drive was used as the medium. The choice complied with all the three requirements above: everybody in the group and the teacher had Gmail accounts granting access to this online drive for storing, sharing, and co-editing documents, presentations, forms, etc., with the comment and chat functions available when collaborating on a given file.

When implemented, the course practicalities were as follows:
– the offline meetings lasted for 30 minutes, and each of them was devoted to essay reading (15 min.) and the following discussion, in which the tutor asked questions concerning the essay and the tutee answered them (15 min.);
– the online meetings were unrestricted in time (but for the two-week time frame within which the student shared the essay online), the tutor asked questions using the *comment* function, the tutee answered the questions (the ask-answer process was usually repeated); occasionally, though infrequently, both the tutor and the tutee met in real time to discuss some aspects of the essay via Google Drive chat.

The whole procedure was subject to negotiation at the meeting points of uses, tools, and the social context (already signaled in the paragraph devoted to the criteria of tool selection). The negotiation became even more complex and multilayered as the class in its blended format was implemented over the two months. Evidence of this negotiation can be found in the data gathered at the end of the course by a survey in which, among other questions asked, enquiries were made about the students' course satisfaction, as well as the perceived advantages and drawbacks of the MA seminar in its blended format.

With the student general contentment with the course ranging quite high (5.33 on a scale 1–6), there is an interesting picture of the whole tuition process emerging from the comments regarding strong and weak points of each mode of the tutor-tutee interaction. While the possibility to dialog with the teacher on the one-to-one basis (9 out of 9 respondents) and the question-not-lecture mode (7/9) are listed as the strong points of both online and offline meetings, the students ascribe different, and mutually complementing, advantages to the two tuition modes. All students (9/9) value face-to-face meetings over the online encounters for the direct one-to-one contact with the tutor. At the same time, however, they admit that the digital tutorials had a definite virtue of enabling the dialog to happen in what one student referred to as *slow motion*: the lack of time constraints resulted in a much deeper level of processing in the tutor-tutee exchanges. Most students (7/9) valued the online format for the time to think before answering the tutor's questions which, as all of them admit, helped them better prepare for the ultimate goal of the class—writing and defending their MA thesis.

The results point to two potential areas of interaction between the three aspects of the digital circuit (Dahlberg, 2004). First of all, in addition to the impact of the teaching philosophy on the choice of methods and tools (described earlier), we observe a reverse influence potential: that of the technological choice impacting the quality of the teaching method in question. As the survey data show, through the use of new technologies, the traditional tutorial method gains yet another advantage: the possibility to strengthen and extend its previous potential for promoting critical thinking and reflexivity in the student. At

the same time, student (dis)satisfaction expressed in the survey quoted above, especially the complains about the depersonalization and lack of immediate contact typical of the digital tutorial mode, are likely to motivate the tutor to rethink course design, which may imply a shift from the ADDIE[2] instructional mode to rapid prototyping, the latter being ongoing and reflection-based. This has the potential to initiate another complex social context / uses / tools / social context negotiation and resulting in modifications in every one of the three aspects of the technology circuit.

Conclusions

New technologies have already become an integral part of every sphere of life. Education is no exception, and the importance of the new media will grow, expanding, in the years to come, into new territories, potentially beyond those prognosticated in the NMC Horizon Report (2014, 2015, 2016). However, the influence of the digital upon the so-called traditional is by no means straight-forward, unilateral, and monoplanary. As demonstrated in the article, to change the ways and paradigms of education—or simply to understand these changes—a non-reductionist perspective need to be applied; a perspective from which one is able to grasp the complex network of mutual interactions between the three aspects of digitally enhanced education: the varied, individual, tech-informed, and socially determined motivations of the user; the tools available and subject to proper affordancing as well as socially embedded; and the social context which, mostly, is both the starting and the end point of all technological change.

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[2] Chronologically: Analysis, Design, Development, Implementation, Evaluation.

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Anna Turula

Zwischen neuen Technologien und neuen Paradigmata
im Hochschulunterricht. Eine nicht reduktionistische Auffassung

Z u s a m m e n f a s s u n g

Der Beitrag schildert einen Teil der zwischen Februar und Mai 2014 im Magisterseminar aus dem Bereich der Methodik von Englischunterricht durchgeführten Forschung. Das Seminar wurde mittels einer hybriden Tutormethode geführt: die Teilnehmer ($N = 9$) sollten vier Essays schreiben und diese der Verfasserin als routinemäßige Tutorials (zwei Arbeiten) präsentieren oder in Cloud Computing zugänglich machen (Google Drive; zwei Arbeiten). Die besagte Studie und deren Ergebnisse wurden in anderen Publikationen detailliert beschrieben (Turula 2015; Turula wird gerade gedruckt). Der hier dargestellte Forschungsteil konzentriert sich auf die Qualität der Ausbildung von künftigen Lehrern mittels neuer Technologien. Besondere Aufmerksamkeit wurde dabei geschenkt dem didaktischen Prozess im Berührungsgebiet von zwei Wirklichkeiten: von der Welt der digitalen Werkzeuge und vom gesellschaftlichen, wirklichen und digitalen Kontext, in dem die Lehrer und die Studenten fungieren.