

The iPad in a Classroom: A Cool Personal Item or Simply an Educational Tool?

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Abstract — In this paper, we discuss the dual role of the iPad among the teenage high school students using the tablet as a 1-1 (one tablet per student) educational tool. On one hand, the iPad is a personal, mobile and cool piece of technology. On the other hand, it is a piece of technology provided by the school and given to students as anytime, anyplace mobile educational tool. Our goal is to understand the space between the use situations related to school work and those that are private and personal. After ten months of observations of the use of the iPad, we conclude with that the iPad is treated by teenage participants in our study as purely educational tool.

Keywords - cool; identity; iPad; education; learning; techno-cools.

I. INTRODUCTION

When the iPad was launched in the 2010, numerous iPad oriented projects and studies emerged worldwide within diversity of settings. Specifically, for the field of education, the interest was, according to Apple [1], reaching unprecedented heights.

This new artifact came quickly to represent a promise of a paradigm change in learning, nearly a promise of a revolution in the field of education [5]. It also represented a possibility to change a known trend of classroom technology non-acceptance [8, 20] and become a tool that proves that technology can bring considerable benefits to education [1].

Creativity was expected to play a major role in moving the education towards more constructivist practices [7]. The iPad has a large number of applications supporting productivity and creativity. In using them, students may open up a possibility to take a more active part in their own education, by, for example, designing a part of their own curriculum through the use of different apps.

However, creativity in the digital era is quite complex. It involves navigating in a plethora of platforms, channels and applications, all of which may demand some learning and mastery. A cognitive aspect of multimodal representations of content in the learning processes typically supported on the iPad [4] requires a new kind of literacy to deal with, both for teachers and students. The multimodality theory advocates an understanding that communication, when using a device such as the iPad, occurs through multiple but synchronous modes such as images and graphics from the camera or the Internet; touch using the touch screen, and audio input and output. This problematic is not new. For instance, Sneller describes an earlier study [25] done with a class where

students used a tablet PC. The study showed that students had a positive attitude towards the use of the tool that supported their active learning styles. It also showed that much more work was required from the teacher; the effective use of the tool implied a major redesign of the curriculum to be taught in a classroom. Sneller concludes with *“Even on those days when you feel like this challenge is akin to that involved in herding cats, the victories will come.”*

An obvious use of the iPad for students is to use it as an e-book reader and read books on this electronic platform. An increasing part of new e-books, including the academic ones, developed for the iPad or other electronic reading devices offer brand new features. Some examples of those features include direct interaction with the content, word search, video or images access, hyperlinks to references etc. This kind of reading can be described as is an intermittent, digressive and collective act [14], where, in spatial transitions, remembering words becomes very difficult to achieve or is no longer possible [14]. For students, the book is transitioning from a product to a service.

Given that the cognitive complexity has increased and different kinds of skills are needed to deal with new, multimodal, mobile learning tools, it is difficult to say if the iPad actually enables increased creativity and production and in which ways it does so. There are three angles of approach to investigation of this: studying the problem with the tool in focus, focusing on users involved in a use situation and a combination of both. The later is the approach we chose in the study described in this paper.

In our previous study with the iPad as an educational tool for geosciences university students [11], we found out that productivity and creativity were strongly related to various ownership issues such as time investment into mastery of the device one does not own, cost of applications that are to be installed on the device that one does not own, proprietary software that is hard to modify and customize, issues around annotating curriculum related articles, ownership/copy rights issues related to that, etc.. Additionally, factors from the educational Technology Acceptance Model (TAM) [27] such as perceived usefulness, perceived ease of use and teachers influence were found also relevant for the use of the iPad in the classroom ecology.

The study described in this paper takes into account users, the use situation and the tool. The users are technology savvy students, also referred to as the Net generation, digital natives, millennials, etc. These ever more mobile students

actively use different technologies offering them content access anyplace, anytime. The technologies such as smart phones and tablets have become a new arena for the “cool” products, making the Net generation students more aware of the choices they make. Coolness is a factor that this youth responds to [9, 19, 21]. As an attribute of the product, it is somewhat elusive and paradoxical. In [9], the term techno-cool is used to describe such products. Clearly, designing techno-cools is different from designing cool products that are not technology based. The design and production of technology must strike a balance between short-term, fast changing product versus long-term product and brand building. Most large, mature technology producers trying to cater to the “cool” market understand the need for branding efforts that give sustainable, long-term advantage. Thus, really well designed products may become what we call mainstream techno-cools, the iPad representing one of them. The high number of sold iPads can not only be understood as a demand from the market for this device, the coolness effect was also a factor [2]. In their turn, researchers in interaction design have recently begun to study coolness as a factor to take into account when designing new technology [9, 16, 24]. It is interesting that Holtzblatt [16] proposes a model for designing cool innovative products with joy, identity, connectivity, sensation and accomplishment as drivers, coupled with use situations (see Fig. 1). The components in a wheel of joy are precisely those that are generally important for the Net generation we are considering in our study.

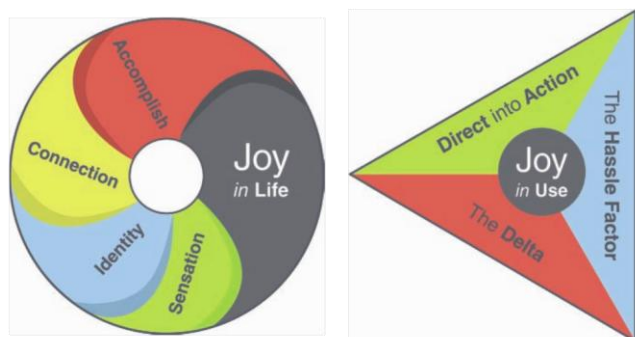


Figure 1. Holtzblatt’s wheel of joy and a triangle of design.

The group perception of coolness is obviously important in the social context for these young people at school, work, home, or out and about with friends. In [9] we define some attributes of coolness relevant for the iPad:

“However, if one invests in a piece of technology, one expects it to do what it is designed for and much more, to be useful and easy to use, almost never unique, but possibly customizable and definitely, one expects it to be fun.”

Attributes making a product cool like usefulness, ease of use, mainstream techno-cools, connectivity, identity, fun and happiness are thus representing the appropriate context investigate in relation to “cool” educational technologies we well. Coolness can also be related to different attitudes young people may have, from rebellious [23] to more laid back [26].

Related to the use of the iPad and identity, it is of importance how users personalize this artifact. More and more of our lives is now kept and represented by a large group of software in the cloud. Users need then to take a stand where, when and how they shall be in touch with this “second”, “cloud” representation of their lives. Turkle [28] advocates and defines this representation as the “second self”. In the earlier 1980s work, Turkle [28] defined how then new, personal computer affected the identity of the user and her angle of studying it:

“...my focus here is on something different, on the “subjective computer”. This is the machine as it enters into social life and psychological development, the computer as it affects the way we think, and especially the way we think about ourselves.”

The iPad has the possibility to acquire and reflect a number of attributes, and represent the content of our second self in a new wrapping, re-sorted, re-made, sometimes better than the original, almost as a simulacrum [3]. For the user, the iPad can be a new companion, with all the positive and negative aspects this companionship involves.

In this paper, we report from a case study in a high school, where we focus on the personal and the educational use of the iPad. Factors such as self identity and coolness affect these uses. We also recognize the importance of factors like joy and fun as mandatory for a positive user experience with the device. Yet, this study shows that students prefer to use the device mostly for educational purposes.

The paper is organized in five sections. In the next section, Section 2, we describe our case study. In Section 3, we present our methods and findings, followed by Section 4, where we use an identity and coolness driven approach to discuss our results. Section 5 concludes the paper.

II. THE CASE STUDY

Our case study involved teenagers, aged 16-17 and their use of the iPad both as a personal mobile device, and as a mobile educational tool. They are the generation that has grown up with technology and are being educated with it [10, 17, 22]. This research project was a joint venture between different actors: a private school, a representative from Apple, a company offering help to introduce technology in education, and us as researchers. The whole project had a broader purpose of seeing if the iPad could help students in their studies, if it is a game changer in education [5]. For this case study, as mentioned in the introduction, we focused on relation between the identity (including personalization) and coolness (including fun, joy, cool behaviors, etc.) and how they influence private vs. educational use. Since in Norway every high school student receives both school books and a laptop for free during their studies, the project also gave us the possibility to explore the following question: is the iPad cooler and more personal than the laptop?

The private high school at which the study took place is in the situated very central, in the heart of a major city in Norway. A class of 25 first year students was chosen, and after two preliminary stakeholders meetings in January of

2012, we started our study. A study was of one-student-per-iPad type. The students have received iPads 2, preloaded with about 200 applications, as well as an external keyboard and a small cover.

At the start of the spring semester (January – June, 2012), all the students had a week long support from the company facilitating the introduction of the iPad in education (see Fig. 2). During this week, it was explained how the iPad and all of the preloaded apps worked. The support from this company did not stop there. The school organized monthly visit by the same team for the rest of the semester.

The classroom was also equipped with an Apple TV system in order to provide students with the possibility to present their work for the whole class directly from their iPads. The classroom, and the rest of the school, had a wireless connection to the Internet.

The teachers had received the iPad four weeks before the students, at the end of the fall semester and had time during the Christmas break to play with the device, explore it both as a personal item and as a tool it was soon going to be. They too received some intensive course training at the start of the spring semester. The focus for teachers was on learning how to use different apps for re-creating the curriculum, when possible, and how to use them in class teaching. For instance, iMovie was recommended as a tool for recording homework assignments and iThoughts for making overviews of diverse subjects and assignments.

The curriculum books were delivered by the publishing houses in PDF format, and made available to the students to download. For the school this was a large logistic gain. Moreover, for the IT support center of the school the migration from laptops to iPads was a definitive improvement since the iPads were much easier to support and manage. It was planned to deploy one server as a backup of students' iPads. At the end of the semester this server was still not online, illustrating the fact that standard issues with technology, including non-deployment and break-downs were part of this study as well.

As far as we know, there were no restrictions or instructions given to either students or teachers regarding the use of the iPads outside the educational framework.

III. METHODOLOGY AND FINDINGS

A total of five full school day observations were carried out. In addition, a series of interviews were conducted. Nearly all students and faculty were interviewed both at the beginning and at the end of the semester. With one especially interested student, whom we will call Stella, observations and interviews with the family members were carried out in the home environment.

The visits to the school were divided in two periods, one at the start of the semester (3 days) and one at the end (2 days). In addition to observations and interviews, two surveys were carried out. The first survey explored students' perception of the iPad as a techno-cool artifact and contained questions around private use as well. The second survey, carried out at the end of the semester, covered a range of subjects, from the use of the curriculum on the iPad to the

Learning Management System (LMS) of the school, i.e., focused on the use of the iPad as an educational tool.

At the start of the study, almost all teachers were positive toward introduction of the iPad into classroom ecology and had envisioned new ways of teaching using the iPad in the classroom. Having all the books available at all times in class, organization and systematization of their notes, making of subject mind-maps, and extensive use of movies were all new and exciting. One teacher said:

“If they use pen and paper for taking notes, the next time they have a class they have either forgotten what the notes were about or they forgot to take the notes to school with them. Now, using iThought, it is easier to check if they have done it right and then it is certain that they have it ready for the next session” (author's translation). The euphoric mood around the iPad and remarks on its coolness were also present among the teachers. One of them stated in an interview: *“I like my iPhone, but I love my iPad!”*



Figure 2. Introductory workshop for students on use of the iPad.

Introducing new technology in the classroom ecology was also difficult for the teachers. New plans for the curriculum required new expertise. The use of camera, touch screen, and microphone in various ways by various applications represented a challenge. One of the teachers made an interesting remark related to how to prepare the students to deliver homework. If the teacher chooses an app, then it is mandatory for him/her to test if it is possible to use the app correctly towards specific learning goal, and prepare some potential tips to give them. Another major issue was related to whether students will be able to, or not, learn the curriculum using the iPad. The aforementioned multimodal literacy, bringing a new pedagogy into the classroom, requires a huge effort, thus confirming the findings of [25].

The end of the semester interview period with teachers still showed a positive attitude. What seemed to be appealing to the teachers was the possibility the iPad had to provide a greater variety in the way students can deliver their work. Allowing the students to use videos, drawings, comic strips and mind maps led a larger number of students to take a more active part in the classroom life. This view was also confirmed by observations: the students were indeed more active in class at the end of the semester than they were at the beginning. The possibility of presenting the results of

their work, sharing the results and observing what others have made, invited all the participants to repeat and have a greater focus on the content of the lesson. Interviews with the students at the start of the project revealed a very enthusiastic approach to this new technology. Some the early feedback from students also touched upon well known problems [13] such as the lack of Flash support. In particular, the students found a lot of appropriate content on the web for science classes which was not available on the iPad. Using the iPad for mathematics homework proved to be difficult also, since it was not so easy to write fast all the calculations. One student, Stella, found a workaround: taking pictures with the iPad and inserting them in the homework (see Fig. 3) using Notability.

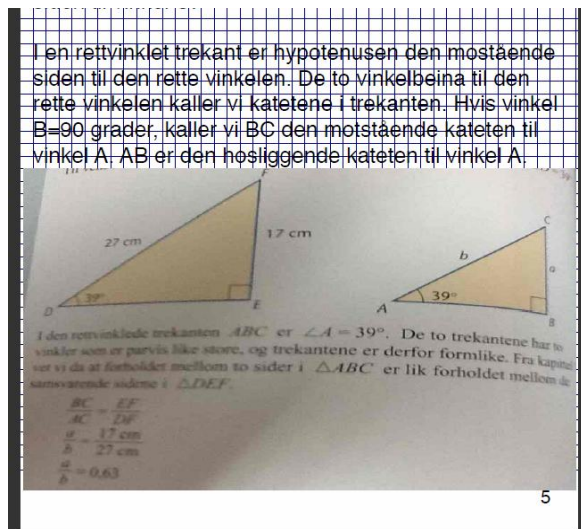


Figure 3. New ways of doing homework in mathematics

From the very start Stella was unique; she loved the iPad, and she loved using it. She gives the iPad credit for improving her grades and a feeling a larger degree of mastery over her school days. She used the iThought to organize all the content for all her different subjects. For instance, Fig. 4 shows an excerpt of a map where 200 keywords for a specific subject are plotted. Stella had some problems with her vision, so reading text was sometimes difficult. Enlarging fonts gave the possibility to read with much less strain on her eyes. She also duplicated, to the largest extent possible, the apps she had on her iPad on her iPhone, thus making it possible to do homework truly any-place, any-time. Stella was so engaged with the iPad, the principal of the school asked her to make an introductory video presentation of the iPad for education that was to be shown to the next generation of students. At the end of the semester she was still using her iPad for the school work, but a change occurred. When it came to leisure use, the PC was still necessary to satisfy her needs. To update the iPhone with iTunes or to see movies, the iPad did not function optimally. She tried some workarounds with mixed results. The end result was the use of the iPad for education and of the PC for leisure. She told us that this was actually her impression for the rest of the class too:

”I got the impression that most of the students do not use the iPad for leisure. This is particularly true for those that play games a lot.”

During other interviews at the end of the semester the rest of the students confirmed Stella’s statement; the use of the iPad was marginalized to school work only. As reasons for this “go back” effect, students had problem to explain what motivated them to do so. One girl, deeply reflecting over the issue, managed to say the following:

“Maybe this is so for me because I am old fashioned. For me, the laptop is better than the iPad. At the start, the iPad was really cool, but now, it is so related to school work and learning. Thus, I prefer the laptop since I do not use it at school. When I use it, I know that it is for fun”.

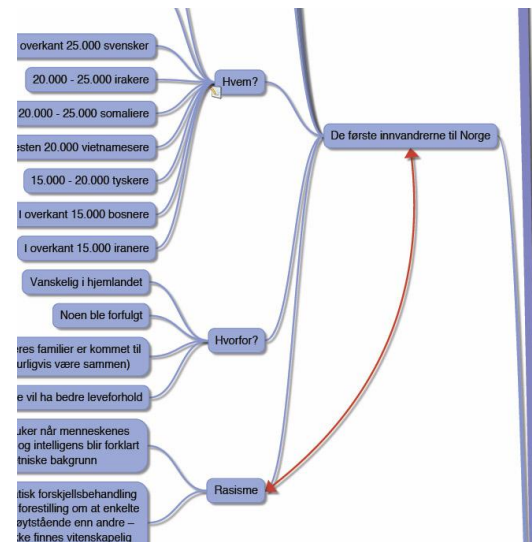


Figure 4. A portion of iThought map for Stella’s social science class.

The results of the end of the semester survey supported this finding: only 1 out of 10 respondents said that he/she uses the iPad more than needed for school work, 2 did not know what the distribution of hours between school and home use was. The remaining respondents said that their school use equals their total use, Fig. 5.

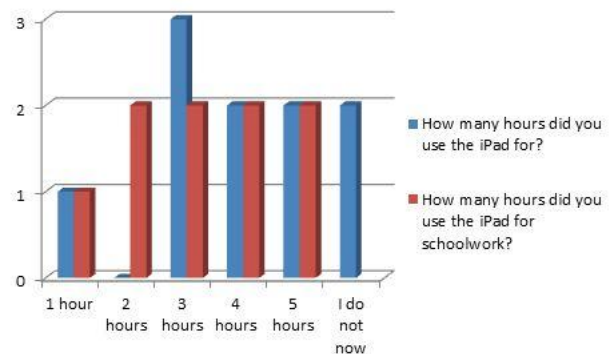


Figure 5. Total time of iPad use per day vs. the time for school work.

IV. DISCUSSION

The most interesting finding from this case study was the emergence of the need for separating the educational and leisure use of the iPad. Students had some issues against the use of the same technology in the educational and in the leisure contexts. We have observed the same phenomena in our elementary school study [10, 13] with 5th and 6th grade students. The effect though, was a reverse one: they all used the iPads for play and leisure, while at school, the iPads ended up on the classroom shelves, unused. The reasons for this reversal may be many, for us, it suffices to note that the separation of use spheres occurred in both studies.

Other studies [6, 15, 18] have also revealed a possible resistance students may have against personalization and appropriation of technology that supports their learning. Hossein [15] also points out a possible reason for this defiance students may have against the personalization of learning technologies: *“Younger students may see this as an encroachment into their recreation and resent the educational provider for taking over their space unless the technology can seamlessly be integrated and be seen by the students as a hybrid of a recreational and study tool.”* Our findings support this understanding. For instance Stella says in one of the interviews: *“It (iPad) has applications for everything your PC has. Well, almost everything. At least, it is certainly enough to work with it effectively at school, and that is what it should mainly be used for.”*

Next, we consider the identity and reflexivity issues and their influence on this split. This discussion is followed by the discussion of the influence of coolness.

A. Identity and reflexivity

Our findings support the need to define the identity of the users in the context of new technologies, both in an educational context and in the private sphere.

We have mentioned the “second self” as a possible approach to understanding the dynamics in the behavior of the students. From Turkle’s ’80 representation until today, a major change has occurred; our identity is more and more placed in the cloud. Facebook, Twitter and other services are indirectly a representation of ourselves, our *second self*, and the iPad is one of many windows into that world. Turkle made also a new edition of the book twenty years later [28] and she adds an important observation:

“In 2004 the cultural message of digital technology is not about simplicity but complexity, not about transparency but opacity”.

This description is representative for the problems users may have to deal with, when relating to this second self. Complexity and opacity can be factors the iPad amplify using a world of apps that filter and represent the content in a new wrapping, re-sorted and re-made. The user then must take a stand to choose if this new reality is better than the original.

The iPad can act as a projective medium, requiring the user to accept the reflexive effect and deal with this new changed representation of identity. The students in our study selected the option of putting aside the iPad in their spare

time. We may understand this behavior as an act of avoidance to deal with this “second self” on the iPad.

It is interesting to note that, connectivity, a need of this Net generation to be online with others present at all times, was not satisfied through schools new social network, called Connect. Connect functions much like the Facebook, except that all interaction is stored on a local server. However, Connect could not replace the Facebook, and was used, again, only to discuss educational issues, not for connecting with peers. The “second selves”, the cloud identities of our students “preferred” PCs and the “original” social media.

B. Coolness

Coolness alone was not enough to make the iPad indispensable in both educational and private use. Even when the important attributes such as usefulness, fun and joy in use were all present.

Even though the iPad definitely had a “cool” status according to the data we collected through interviews and the first survey, the iPad did not reach the “I can’t go back” point [16]. While the students could not even imagine going back from the iPod to the “Discman” or the “Walkman”, they had no problems going back from the iPad to the laptop for their entertainment and “connectivity” time. Moreover, this going back to the laptop happened in a short period of time. Why is the iPad then still considered to be cool?

One could argue from our data that usefulness, fun and enjoyment in use were more dominant in educational, that the iPad was a cool tool to use at school. We further assume that the coolness from one context of use (the school) is then transferred to the device itself (and thus the device is still considered as cool by a large majority of students).

V. CONCLUSION AND FUTURE WORK

In the classroom, the iPad came to be viewed by the students as a tool for self-improvement in the educational arena. At the start of the study, the iPad was also used for private purposes, connectivity and self-representation in social media, but this route was quickly abandoned. It seems that students have a need to separate the educational and the personal use of the iPad.

On the other hand, the educational goal of the private school was reached; the migration from the laptop to the iPad was successful and many positive effects in the learning arena were experienced. A period of time will be necessary for the teachers and schools to adapt the curriculum to these new ways of using the device involving images, text and audio. The potential is, according to both teachers and students, large. Future research should focus on deeper and broader investigation of reasons for separating the personal and the educational use of tablets, as well as its implications.

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