

Situated Techno-Cools: factors that contribute to making technology cool in a given context of use

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ABSTRACT

The concept “cool”, as it applies to technological products, is discussed in this paper. We offer a model showing how different factors in situated use of techno-cools affect the perception of coolness. The model is discussed using a case of the iPad in educational use. The case is grounded in our experience from four case studies related to introduction of the iPad as a cool educational tool in two elementary schools, a high school, and a university. The space between iPad’s coolness as a device and factors influencing that coolness in education, such as mastery, usefulness, added value, self-presentation and identity, novelty and fun, was studied. The age of participants was a determining factor for what subset of these was making the iPads cool at school. Tween students considered self-presentation, fun and novelty as the most important factors. For older students the important ones were usefulness, added value and mastery.

Keywords: *Cool, situated cool, techno-cool model, iPad.*

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1. Introduction

It is ironic and rather interesting that the word “cool” may be used as a synonym for two classes of adjectives, a verb or a noun. In the first adjective class it can mean: cold, chilly, annoyed, apathetic, frigid, impertinent, indifferent, insolent, lukewarm, offish, precocious, reserved, standoffish, unapproachable, uncommunicative, unenthusiastic, or unwelcoming. In the second adjective class it can mean: beautiful, divine, exquisite, fashionable, fun, glorious, hip, hunky-dory, trendy, neat, nifty, peachy, popular, sensational, stylish, sub-zero, swell, well designed. As a verb it can mean: calm, calm down, chill, compose, control, dampen, lessen, moderate, quiet,

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reduce, rein, repress, restrain, simmer down, suppress, temper as well as go with the flow, hang easy, lay back, let go, let it all hang out, let up, mellow out, moderate, quell, recede, reduce, slacken, slow, subdue, subside, take it easy. Finally, as a noun it can mean: assuredness, bliss, common sense, dude, king, endurance, poise¹. Out of context, the word “cool” has paradoxical tendencies.

A pragmatic content of a word is bounded by its contexts of use and meanings within those contexts. When a word enters into a new context of use, new meanings may become a part of its pragmatic content. Cool is not an exception. During the White oppression in the US, African American culture created its own new aesthetics around cool. “Be cool” was defined as “to be calm, unimpressed, detached, perhaps to make failure as secret a phenomenon as possible” (Rice, 2003). This meaning of cool is similar to that of its African origin (Thompson, 1973) where the Yoruba tribe used the word to define the “ability to be nonchalant at the right moment”. The word cool was soon adopted by the jazz milieu and by the early 1960s spread worldwide, keeping much of the same pragmatics.

The word cool has also been adopted into the Norwegian language (both the Bokmål and the Ny Norsk). An etymological analysis (Fridtun, 2012; Graedler and Johansson, 1997) of the Norwegian term “kul”, or as the younger generation calls it “kuul”, reveals that joy and fun are added meanings, probably borrowed from the Swedish language (Landfald and Paulssen, 2006). However, cool (written and pronounced in English) is perceived as more posh and modern, while the Norwegian counterpart is understood as more neutral (Graedler and Johansson, 1997).

The use of the word in popular culture, also Norwegian (Rysst, 2005), has been closest to that of the word “hip”. In fact, Pountain and Robbins in their book “Cool Rules: Anatomy of an Attitude” opted to use the term cool because:

“Cool is and has been an attribute of many more groups than the 50’s hipster, and that, unlike Hip, Cool can be an attribute of objects as well as people”
(Pountain and Robbins, 2000, p. 9).

It is precisely cool as an attribute of objects, specifically digital objects, that is the main concern of this article. We will call such digital objects *techno-cools*.

Cool has been studied from many perspectives before: ethnic (Majors and Billson, 1993), age-specific phenomenon (Danesi, 1994), historical (Stearns, 1994), marketing

¹ Thesaurus.com, “cool,” in Roget’s 21st Century Thesaurus, Third Edition. Source location: Philip Lief Group 2009. Last retrieved October 25, 2012, from <http://thesaurus.com/browse/cool>

(Nancarrow, Nancarrow and Page, 2002) and others. Lately, the design (Read, Fitton and Horton, 2012) community became interested in theorizing and investigating cool.

Read, Fitton, Cowan, Beale, Guo and Horton (2011) have hierarchically ordered their initial theory of cool consisting of having *cool stuff*, *doing cool things* and *being cool*, with *being cool* at the top of the hierarchy.

Marketing researchers and practitioners have long understood the importance of marketing and branding products as cool and have tried to convince everyone that by *having* cool things, you may be able *to do* cool things, and thus, you may have a shot at *being* cool. They have achieved an enormous success with both Gen Y (generation Y: people born between 1980 and 1995) and Gen Z (those born after 1995, including the new emerging group “tweens”, children aged 8-12).

In “The Price of Being Cool” (Rysst, 2005), Rysst considers coolness among Norwegian tweens and its role in inclusion or exclusion of ethnical minorities into aspired ethnically Norwegian groups. The conclusion of the study is that when *being cool* is important to tweens and *being cool* costs money, the minority children may experience the lack of possibility to be cool as hindrance to belonging and integration. Owning techno-cools may be a new, costly way of being cool. Gen Z is particularly interesting as it is considered to be the first truly mobile generation. As JWT report (Palley, 2012) points out, Gen Z is the generation that takes the availability of Internet everywhere for granted. With their Kinects, Wiis, iPods, smart phones, and tablets their lives are imbedded in the use of techno-cools.

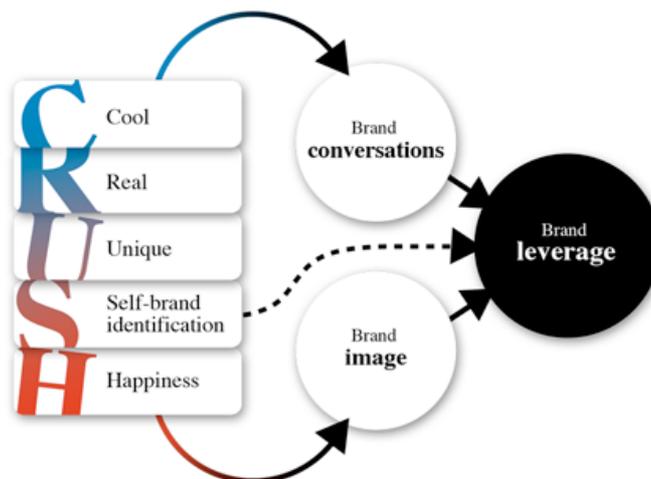


Figure 1. Bergh and Behrer’s model for how cool brands may stay hot.

In their award winning book “How cool brands stay hot” Bergh and Behrer (2011) speak about Gen Y as the most marketing savvy and trend influencing generation. Based on five years of research on and practice with Gen Y, they propose the CRUSH model (see Figure 1) with its five success factors for successful branding of products for Gen Y.

The coolhunters are new actors in defining the cool (Gladwell, 1997; Tikos, 2012; O'Donnell and Wardlow, 2010). Marketing moguls are hiring them to observe the teens and identify the possible next cool products, actions or people. Merchants of Cool² describes these marketing moguls as “the merchants of cool: creators and sellers of popular culture who have made teenagers the hottest consumer demographic in America. But are they simply reflecting teen desires or have they begun to manufacture those desires in a bid to secure this lucrative market?” (p. 1)

The perpetual race for discovering and pushing the cool products on younger and younger consumers is problematic. As O'Donnell and Wardlow (2010) note, it is also intrinsically flawed: “Coolhunters’ research suffers from the researchers’ positions as observers of coolness. Effectively, they are outsiders peering into the fishbowl of cool, reporting on what is already important to teens.” (p. 13).

Some of the findings coolhunters provide are used to forecast what users will want, both by jury of experts (Berelowitz, 2011) and using predictive models such as (Bass, 2004). Further, sociologists and market researchers observe the diffusion of products. In the case of digital objects, information scientists are interested in the same data.

Anderson (2008) writes:

If you stood in line this weekend waiting to buy the new iPhone 3G, you may have noticed demographics consistent with sociological models of social diffusion. A year ago when the iPhone was first released, the lines were populated with mostly male geeks in the young to middle age range. This year, there were some of those, but a far greater diversity. Not only were there 20-somethings but 70-somethings as well. This time the women outnumbered the men. (p. 1)

This change in dissemination demographics shows that the iPhone has become a mainstream techno-cool.

Like the word cool itself, mainstream cool has some paradoxical tendencies. If something is mainstream, how can it also be cool? Is cool not something reserved for

² Merchants of Cool (2001). Last retrieved October 25, 2012, from <http://www.mustwatchfilms.com/videos/merchants-of-cool/>.

the privileged? However, if coolness is associated with some new and really good features of the product, or joy in interacting with it, understanding the mainstream cool may be closely related to understanding what defines good usability and design goals.

Apart from what they are designed to do, techno-cools can usually do a number of cool things in addition. Examples include persuading one to jog and providing bio-feedback, entertaining with fun and enjoyable games, watching or making videos, receiving voice commands among others. These cool features may be powerful enough to enable use of a techno-cool as a tool in a context distinct from the one it was designed for. Several questions emerge:

- ~ How do generations Y and Z use techno-cools?
- ~ Why do they consider a digital object as cool?
- ~ How long do techno-cools remain cool?
- ~ If everyone has a piece of technology, such as an iPhone, is it still cool?
- ~ Is it cool precisely because everyone has it?
- ~ How does this change with age?
- ~ Are techno-cools experienced as cool within their primary context of use?
- ~ How coolness influences use of digital objects?
- ~ Is it possible to distinguish attributes of mainstream techno cools from other cool things?

This paper aims to explicate mainstream techno-cools. In an effort to answer some of the questions posed above, we propose a model of how coolness of a digital product may be viewed in a specific context of use and which factors play a role in increasing or decreasing this *situated coolness*. Further, we discuss our model using the case of the iPad as an example of a mainstream techno-cool. The iPad, nearly as soon as it came out, was seen by many educators as a tool that would change the present learning paradigm towards more constructivist, truly mobile learning. The iPad was introduced into classrooms worldwide (Chen, 2010; White, 2010). We have followed the process of its adoption as an educational tool in several Norwegian schools with both Gen Y and Gen Z students. Many of the above questions related to techno-cools have emerged strongly during our studies with iPads in education. In this paper we will draw data related to iPads coolness from two elementary schools, a high school and a university case study.

The rest of this paper is organized as follows: in section 2 we first present couple of models from literature that may apply to techno-cools, and then propose our situated

coolness model, which takes into account context of use. Section 3 addresses briefly the use of the iPad in education and continues with description of our case studies as they relate to cool and the situated techno-cool model presented in section 2. We conclude the paper with discussion of the results and future research venues.

2. Techno-cools

Designing techno-cools is different than designing other 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.

It is then natural for the design community to pose questions around what makes products cool and whether it is possible to intentionally design for coolness in products. These questions are the same for techno-cools. The answers may be different than for other products. For example, what makes a piece of clothing cool is most likely not its usefulness. It may be making a statement, being unique, or showing who you are (Rysst, 2005). 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 (Davis, 1989), almost never unique, but possibly customizable and definitely, one expects it to be fun.

Happiness, one of the key elements of CRUSH (see Figure 1), has been recognised in the design community as very important. Holtzblatt (2011) suggests a synonym of happiness, joy, as central feature of intentional design for innovation. Her model consisting of the wheel of joy and the triangle of design is depicted in Figure 2. Blythe, Monk, Overbeeke and Wright (2005) suggest fun as a main ingredient in design for positive user experience. Thus in the design for cool happiness, joy and fun are seen as central ingredients. Techno-cools are innovative products that are accepted as technology and as such need to have some overlap with TAMs (technology adoption models) (Benbasat and Barki, 2007). Clearly, adoption is not enough for the technology to be designated as cool: it needs to be highly desired, innovative, successful etc. For example, desktop computers are widely adopted, but are not considered to be cool. Holtzblatt’s hassle factor and direct into action design principles

overlap with two major factors in TAM: perceived ease of use and perceived usefulness (Davis, 1989).

Holtzblatt's model is envisioned as a model for the design of innovative products, with many examples of what we call techno-cools.

According to Holtzblatt, there is a sense of "I can't go back" or "we cannot go back" (to whatever product was used earlier) after using a cool product (Holtzblatt, 2011). An example of this would be using an iPod instead of a Discman to listen to music while jogging.

Read et al. (2011) take the design approach that allows for cool behaviours, thus raising the "cool" from the first level of the hierarchy (having cool things) to the second level (doing cool things). The authors initially propose six essential categories for cool: rebellious, anti-social, retro, authentic, rich and innovative. These are explained and supported by the literature in their paper. This view is justified by presenting examples of inherently cool products, and examples of products that need to be appropriated by a "cool" person in order to make them cool in a certain context.

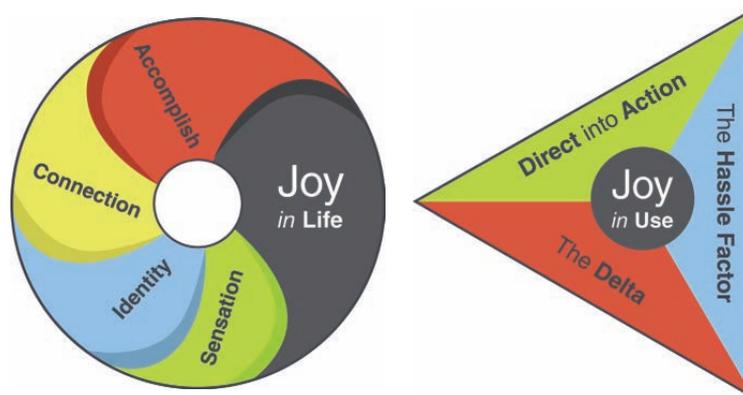


Figure 2. Holtzblatts wheel of joy and a triangle of design.

While we consider joy, Figure 2, as a valid and important driver for the design of techno-cools, we also see a danger in focusing on a model with joy as its primary driver. It may lead to the design of products that give joy for a short period of time, only to, just like marketers desire, have to be replaced by the next techno-cool.

Other drivers for innovation need to be more explicitly taken into consideration: values, mastery, sustainability, authenticity, context of use, culture and social circles, extending use of the product towards cool behaviours etc.

For example, Figure 3 shows a picture we took of a boy in town Bagamoyo (Tanzania) driving a cool little car that he has made himself. While it is fun to drive this

car around, the joy was in making it and getting it to work. Mastery is a huge component of this: the boy needed to implement solutions to diverse range of problems to make this design work.



Figure 3. A boy in Bagamoyo, Tanzania, made his own cool car with high steering wheel.

When cool products become mainstream, they usually change the ways things are done on a large scale and they often get used in several different ways, possibly engaging their users in cool behaviours. As an example, photography lovers could use their iPhone pictures to participate in a group exhibit called *ubiquography* that “aims to make people think about the traits that define iphoneography: ubiquity and immediacy” (Ubiquography, 2012). Participants can upload their iPhone pictures, which are then shown both on the web and in a series of participating galleries, immediately.

New techno-cools, such as an iPad, may be used actively in more than one use context. An iPad may be used for reading and entertainment at home in a cosy sofa, as well as a tool in a workplace. The same iPad, considered to be a cool item in itself, is not necessarily perceived as cool in both contexts of use (in the sense of “I can’t go back”). While entertaining oneself with games, movies, books or other things on an iPad, there is only individual perception of coolness to consider. But in the work context, a group perception may also be important: how the others using the iPad perceive its coolness.

We introduce the concept of perceived coolness as a measure of how cool a techno-cool is to an individual or a group in itself, but also taking into consideration the entire experience with techno-cool in all of its use contexts, see Figure 4. As perceived coolness can vary from not cool, all the way up to sub zero cool (the top of coolness scale), understanding the factors that influence perceived coolness is important.

The perceived coolness may be seen as a space that may be filled with both cool technology design and design for cool behaviours with potential to increase the coolness of the object in situated use.

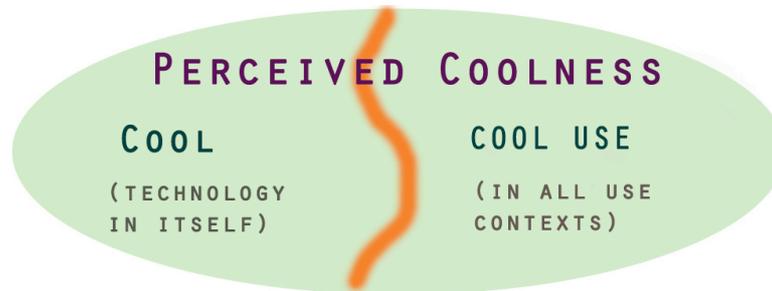


Figure 4. Perceived coolness: how cool is the device itself + how cool is it to use.

Coolness is elusive and difficult to capture. Most likely, there is no single model that is going to list all the factors contributing to successful design of a techno-cool. However, we believe that perceived coolness is something that one can discuss as an intersection of important factors for a given context of use, as depicted in Figure 5. The perception of coolness in a specific context of use is increased the more fun one has with the piece of technology, the more mastery one has (making the use easy and effortless as well as opening possibilities for other types of use), the more one can engage in cool behaviours that may be related to innovation, self-presentation, the more one experiences that the tool is useful, the more one feels that the techno-cool adds a specific value to use context that is important, etc. In different contexts, different factors may be important. Figure 5 shows those that emerged as relevant during our study of iPads in education. Situated coolness is about perceived coolness in situated use and factors that affect it.

In Culén, Gasparini and Hercz (2012) we have considered the space between the usefulness (as a factor directly influencing perceived coolness) and the coolness of the iPad in education and in banking, as two distinct contexts of use. The iPad was not necessarily perceived as a cool tool for both purposes. For example, a teacher may not consider the iPad useful as an educational tool, but he/she may love the new cool, personalized app for paying his/her bills. Thus, already complex situation with perceived coolness in a single context of use is further complicated by multi-context use, where perceived coolness in each potentially influences the others. Our study of the Gen Z's iPad use as an educational tool has shown clearly that positive attitude towards the iPad as an educational tool comes from perception that the iPad is really cool for entertainment and leisure.

We next provide a very short overview of what the iPad is, some details on how it became mainstream techno-cool and then turn to its introduction as educational tool and the pilot studies we conducted in that context.

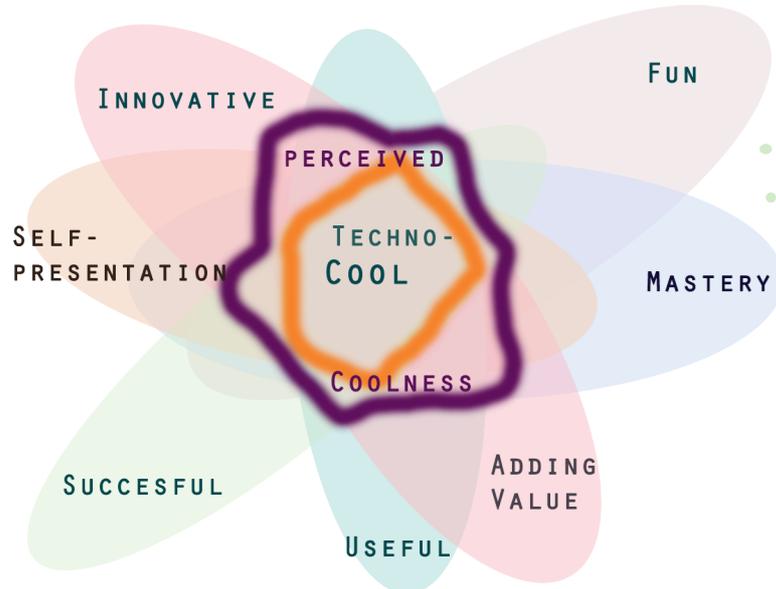


Figure 5. Situated coolness: a use context with factors affecting the perceived coolness.

3. Situated coolness case studies: the iPad in the Classroom

The iPad was launched in April 2010 primarily as a platform for audio-visual media including books, movies, music, games, apps and web content. On first day of sales 300,000 units were sold, and in less than a month that number reached one million, beating the sale numbers of iPhone. Within six months the iPad was selling better than Macs. It was a product consumers wanted, and a product acclaimed by critics: “The iPad was selected by Time Magazine as one of the 50 Best Inventions of the Year 2010, while Popular Science chose it as the top gadget behind the overall “Best of What’s New 2010” winner Groasis Waterboxx.” (Wikipedia, 2010). The iPad was cool. It became mainstream within a very short period of time.

Even though the iPad was not a product designed specifically for education, it obviously could be used to support it. In fact, more than support was expected from it. A lot of media attention was focused on iPad-centered education (see for example Chen, 2010; Hu, 2011). Large numbers of educational institutions took the iPad into

use (Culén, Engen, Gasparini and Herstad, 2011) already from the fall semester of 2010.

Apple picked up on this tremendous interest and introduced a variety of services such as iTunes U, iBookstore, iBook Author publishing tool and is now marketing interactive multi-touch textbooks (DailyFinance, 2012) under the slogan: “The device that changed everything is now changing the classroom” (Apple, 2012). A series of other accompanying products, such as racks that can hold multiple iPads with chargers, connectors to other classroom devices, positional viewers, keyboards etc. that support the use of the iPad in classroom, are available. In other words, a variety of resources, apps and products, are made available in order to make the use of the iPad in classrooms easy and to increase its usefulness for learning.

Cuban (2001) said that many technologies in educational settings have come and passed, without leaving permanent trace in the classroom. Can the iPad, as a mainstream techno-cool, change this trend?

We look at the iPad situated in the bounded environment as shown in Figure 6, adopted from the product ecology figure in Forlizzi (2008).

We have completed four case studies with the iPad in the classroom (Culén, Engen, Gasparini and Herstad, 2011; Gasparini and Culén, 2011). We are still engaged in broader studies with iPads, trying to see what happens to the iPad in the classroom ecology over time. Our research has been based on the information ecology approach of Nardi and O'Day (1999).

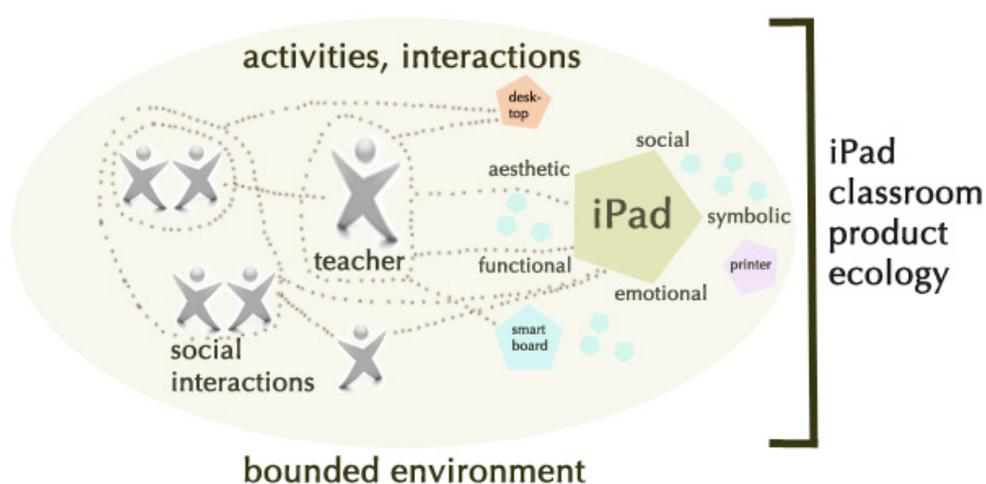


Figure 6. Schematic diagram of product ecology modified from (Forlizzi, 2008).

The journey with iPads in the classroom has been quite a rocky one. Two of the case studies involved Gen Z tweens (born after the year 2000) in two different primary schools. One of the primary schools was located in a rural part of the country where in a yearlong (entire 2011) study 25 students shared 6 iPads, using them both at school and at home. These were the first generation iPads, all there was at the start of the study. But just four months into the study, the second generation of iPads was released. The second school was located in a wealthy part of Oslo where 19 students shared 6 iPads during the fall of 2011 semester, from mid August until mid December. They used the first generation iPads, but the second generation was available at the time the study started. The remaining two studies were carried out with Gen Y learners (born between 1980 and 1995). One of them took place at a private high school in Bergen during the spring semester of 2012 (January-June). In this study one class of 25 students received an iPad 2 each and a supplementary keyboard. The iPad 3 came out during this pilot. The last study involved graduate students in a geosciences class at the University of Oslo and took place from September – November, 2010. The class of 40 students received an iPad each. Additionally, one student with dyslexia was assigned to this study by the student services office. We followed the dyslexic student throughout the school year and describe her case separately. This university study was the first study with iPads in education in Norway. They were not even sold in the country yet. These four studies together covered a period of two school years, appearance of three versions of the device and included 45 tweens, 25 teenagers and 22 students aged 20-25, 11 aged 26-30 and 7 over 30. Data around cool was collected through interviews and direct in class observations. During the interviews, we asked participants about what they do with iPads and how they feel about using them in different situations. The interviews were transcribed. In the analysis of interviews we have simply marked the words related to cool (the words we looked for were kul, cool, toft, morsomt, spennende, grei, vidunderlig etc.), as well as noted all behaviors that could be described as cool, or related to sense of cool. Minimum two rounds of interviews were conducted with selected students from each class and their teachers, one at the beginning of the study, when iPads were just introduced into the classroom ecology and one at the end of the semester. Observations in class included all activity we could see with the iPads, accompanied by notes on the experience the participant seemed to have (fun, happy, frustrated etc.) Some of these observations were brought up later in the interviews as well, in order to make sure that we have understood them correctly. Four students were additionally interviewed in their homes; interviews

included their whole families. These interviews lasted between 1-2 hours, depending on the size of the family. Further, for the high school in Bergen, the leader of the iPad project was interviewed, as well as the leader of the company supporting the introduction of the iPad as educational tool.

All participants, in all four studies have signed a consent form. For gen Z tween students, teachers have first sent a form describing the study and asked if they would be interested in having their children participating. The parents have unanimously answered that they were interested in the study. Consequently, consent forms describing the study in details were sent out to all families. All data was anonymized and used for the purposes of the study only.

3.1 Gen Y: the High School Case

Ana, a 17 year old high school student, was interviewed just a week after she and her classmates were given iPads as part of our pilot project. On that occasion she said: *“iPad, it is a miracle! On Monday, all students in the class got an iPad! We were looking forward to this for some weeks now. I was really, really looking forward to this. I could not sleep. From the first moment I took it in my hand, I loved it. It has so many programs that can be used for all sorts of things. It has among many others iThoughts, Keynote, Pen and Paper, music, film, photo editing, GPS, atlas, Internet, games and not the least, schoolbooks. On an iPad, one can do almost everything one can do on a computer. Until now, we have done some mind maps, some math. Learning is faster and more effective. Everything seems better organized and it looks better. And as one gets to use it a bit, it goes faster! I have had several Apple products, even Mac, but none of them have fascinated me as much as iPad. I am so immersed in this little tablet that my mother has to tell me every once in a while to put it down. I actually use it all day long. To say it simply and straightforwardly, it is totally awesome!”*

Six weeks later, Ana tells us: *“Yes, the excitement around the iPad has died a bit. I was very excited about it, but academically, I got a bad start. We did not have proper writing application at the start. We got Notability later, so everything was hard at the start. It was really fun to get the iPad, but so everything became harder. There was a lot I did not know how to do. It was more complicated than I thought it would be at first. But I think it is still fun.”*

The goal of the study was to see if iPads could enable learning any time, any place, making a shift towards establishing a more constructivist learning practices, increase the learning effect and support cool activities, both in the individual and in the social

arena. If iPads were deemed a positive influence on classroom ecology, all students at that high school would receive their own tablet. The school has resources, leadership that is positive towards the use of this technology, but also understands that established work patterns and values do not change overnight. Both students and teachers needed to be supported in transition from the laptop to the iPad. A company specializing in assisting schools with introduction of the iPad as an educational tool was hired. Faculty and students (separately) got a course in use of the new tool, equipped with nearly 200 preselected, tested and curriculum oriented applications. Experts from the local Apple office, as well as the company retailing Apple's products in Norway, were providing technical support. Research was seen as important, and documenting problems or benefits related to use was viewed as essential (therefore, the authors were invited to participate in this pilot). Thus, in this school, from the start, all factors that could be optimized prior to the actual use were optimized. In deciding to go for the iPad, the coolness of the product was one of the main factors. The leader of the school's iPad project told us: *"We tested several tablet-PCs in advance. The iPad and the Samsung Galaxy Tab 10.1 were our top choices. The main reason we chose the iPad was that we found Samsung's tablet to be more technically demanding to get started with. We believe that it would have resulted in more problems for users. Ease of use, the total number of Apps, as well as the number of custom Apps for Education were also important. And, finally, it was of course essential that the market believes that the iPad is THE Tablet-Pc."* Thus, the leader's belief in the market's judgment that the iPad is the coolest tablet was a deciding factor when purchasing. Additionally, he pointed out that he himself thinks that the iPad is fun.

The decision was made towards the end of the pilot that the school would provide iPads for all of their students. In spite of the fact that the interest in the device has decreased among the students and several went back to laptop use. There was no evidence that the iPad helped with learning. Yet, as mentioned earlier, the attitude among all students, faculty and leadership was similar to Ana's: it is cool and fun, but I do not use it so much.

3.2 Gen Y: the University Case

That coolness in itself is not enough to ensure successful adoption is best seen from the results of the university study. As reported in Gasparini and Culén (2011), even though iPads were not even sold in Norway at the time the university pilot study started and were definitely considered to be cool (so much so that the story of this pilot

found a place in several newspapers, in print and online), and students were as excited as Ana to try them, the iPads ended up not being used for a variety of reasons.

The interesting thing with this study was that during the course of the semester, the iPad lost its cool status for these students. The following fact illustrates this point: 40 students got to use the iPad for the semester with an option to buy it at the end of study at a favourable rate (unspecified at the start). In a survey (Survey, 2010) that was taken by 28 participants towards the end of the semester, only 14 students said that they would consider buying it if the price was right. When the semester was over, the offer they got was close to 50% off the store price at that time. Only three students purchased the iPad that they got as brand new and used for approximately 10 weeks. As researchers, we thought that this change from very cool to “well, I really do not need this thing, even though it has some cool things about it” as one student expressed it, was quite interesting. The sense of “must have” object that defines cool in Holtzblatt (2011) was absent. The iPad in itself did not change; what changed was students’ perception of its coolness. Although we had conducted interview sessions with all participants about their use of the iPad, in order to better understand issues around coolness, we interviewed four students from this study again, six months after the study was over. None of these four have opted for buying the iPad. *“It is just another thing to relate to. I found out that I like my laptop much better. There is nothing I can do with iPad that I cannot do with my laptop. In fact, there are lot more things that I am interested in on my laptop. And I am used to it,”* said one of the female interviewees. This same sentiment was reflected in the remaining three interviews. For these students, very high efficiency was central and the coolness of the iPad was directly related to its *perceived usefulness* in the context of the class they took with iPads. One of the students told us that having really fast and really good 3D app for geosciences would be just amazingly cool, and could have changed his interest in the iPad. *Adding value*, something (like 3D manipulation) that would give them something extra, useful plus something they value, was very relevant for this group. What “adding value” meant for interviewees seemed to be individual. Several students also mentioned in the earlier set of interviews that 3D manipulation of their geosciences data would be cool. Others told us that it was cool to be able to use the iPad in collaborative group situations. Yet others would have found the iPad cooler if the software was non-proprietary.

In general, this group of 40 students was not really interested in being cool; they had a much more immediate goal of getting good grades. If they saw how the iPad could

help that, their motivation to invest the time in mastery of the device would have been higher. Instead, perception was that learning to use the iPad with ease and efficiency would require the investment of time, with uncertain return (*success in terms of better learning outcome*).

In summary, the Y generation was focused on usefulness, success, added value, fun and mastery as important factors for perceiving the iPad as cool (see Figure 5) tool for learning. For the students we worked with, innovativeness and self-presentation were less important, although one of the interviewed University students mentioned that: *“It is cool to sit on the bus and read from the iPad. It is much cooler than reading the (paper) book on the bus.”* In the light of the fact that at the time this student was taking the bus with an iPad, there were very few people owning one in Norway. The sense of coolness in this case originated from the feeling of exclusiveness.

3.3 Gen Z Tweens: at the Rural School

At the start of this pilot, the iPad has made its way as a product on the Norwegian market, but it was still only a few owned one. There were only two of 25 families whose children were involved in this pilot that had an iPad. Getting to use the iPad at school was really exciting for the children: they got to use the cool new item that even their parents and older siblings were interested in! And not only that, but they were the only class with iPads in the entire school! *Self-presentation* and social status were important coolness factors for these children.

The children developed new patterns of use, at school, but before the classes start, centered on games. Fun was also an important factor for these children. One child said in an interview: *“the best things we ever had at school are iPads and chickens”*. It seemed like a very successful story (Gasparini and Culén, 2011). If the study lasted only one semester, full success would have been the conclusion. The study, however, continued after the summer break. During the break, the iPad 2 appeared on the market and eight families purchased one. The children, all interviewed at the end of the study, still said that their iPads were cool, but they ended up not using them nearly as much as during the first semester. The ones having an iPad 2 at home admitted that it was more fun because of the camera and possibility to make videos. Thus, the appearance of the new version influenced use of the iPad they had. iPads became less desirable and less cool, the children told us. Their teacher confirmed this saying: *“It is not often that they take iPads home now. I have them on the shelf and I can monitor the use.”*

3.4 Gen Z Tweens: at the School in Prosperous Neighborhood

In the semester-long pilot study at the public school in a prosperous neighborhood (running in parallel with the second semester at rural public school) all but one child had an iPad at home; most of these were the newer iPads 2. The same phenomena were observed: the children still thought that their iPads are really cool, but they were not using them. In this school, they had no problems saying that the iPad 2 was cooler than the ones at school, already old first iPads (see Figure 7).



Figure 7. The teacher and students working in groups of two on an iPad project. Photo by Anders Hofset, NRK beta. Printed with permission.

Druin et al. (1998) findings on what is cool for this age group support this last point:

Our research has shown that there's a great deal of peer pressure among children, even at early ages. They want to wear headphones as opposed to listening to built-in speakers because headphones are "cooler." They want to use the newest video games not last year's, because last year's are passed the "cool prime." They want what their friends have because that is "what's always cool." (p.6)

Below is an excerpt from an interview with two tween boys (age 10) from this school.

Boy 1: "iPads were fun! They could be at times irritating with some apps." For example, our school paper would always be deleted. Note: the school paper was locally developed app; it had a bug – when zooming out, the content would often disappear.

Boy 2: "That was a technical problem, not an iPad problem. The iPad was both fun and inspiring. But they should have games like we have on PC at mangahigh.com. We compete with other schools."

From the above we see that PCs were used when the class was learning through play and not the iPad. The second boy obviously thought that competing with others at

mangahigh.com is fun. It was hard to see, summing up interviews from this school, why students still considered the iPad to be cool. The above dialogue, in particular what Boy 1 was saying, was typical: the iPad is fun, but ... (a list of problems they had with the iPad follows). The students told us that they liked using iPads at home for entertainment and unstructured play. Preferably the ones their families owned. That was better, not only because they were mostly iPads 2, but also because they get to keep the games they download after the end of the semester. At school, the iPad was not used for structured play such as, for example, learning maths using apps based on play or competition with others. The only conclusion we could draw about why the iPad is still considered cool is that coolness extended from one context of use into the other. For Gen Z this was happening through sharing with friends about games they think are fun and play at home.

3.5 Gen Y: the Coolness of the iPad for a User with Dyslexia

Through our case study on the use of iPad as assistive technology for students with reading difficulties (Gasparini and Culén, 2012) we got some insight into what is cool for the person who does not see herself as cool. Mary is a university student, diagnosed with dyslexia. We worked with Mary for nearly a year (September 2010 until June 2011). The goal was to investigate if she, and thereby a larger group of dyslexic students, could be helped in her studies by using an iPad. It is known that dyslexic students may suffer from self-esteem problems and often think of themselves as not cool (Humphrey, 2003). In Mary's case, she allowed us to observe her with her iPad in a large classroom, but did not let us come to small work group meetings. She said: *"If I let you make observations during small work groups meetings, then I for sure will not make any friends in this class."* Mary thought the iPad was cool. She used it in spite of technical difficulties we all faced at the beginning of the study. She became really good at using the iPad and after a year, she said laughingly that she is sticking to it and that she will now buy her own. What was cool for Mary is that with the iPad in the classroom she looked just like anyone else. No stigmatization. That was really cool. Mary needed to make the iPad work for her and its coolness helped her both emotionally and socially. It helped Mary's *self-perception*.

The iPad was perceived by Mary as very useful. She persisted in using it until she became very proficient at it. Along the way, she customized everything she could so that her interaction with iPad was most efficient and effective. One major difference between Mary and other students we described previously is that the iPad made her

indistinguishable from other students, which in turn gave her higher self-esteem. This may be seen as an added value. For Mary, all of the factors from Figure 5 played an important role in perceiving the iPad as really cool. Among all participants in all four studies, she was the one with the highest motivation to succeed in working with the iPad as an educational tool.

4. Discussions and Conclusion

The concept of situated coolness helps frame factors that make a techno-cool cool in a given context of use. For different use situations, different factors are relevant for product's coolness. A collection of those factors, together with coolness of the item as a piece of technology, define perceived coolness of the product.

Many techno-cools are made for some primary purpose, but end up being actively used in other contexts and for other purposes. This is particularly true for mobile devices, with cloud computing and Apps.

The iPad is a great representative of mainstream techno-cools; its very fast adoption in education serves well as a highly relevant example of situated use.

Analyzing the results of our studies, we could identify three dimensions of cool: context of use, age and the temporal dimension (the length of coolness).

The factors related to perceived coolness from Figure 5 were relevant for all four pilot studies. However, their strength differed for Gen Z and Gen Y. For example, we could observe and were told in interviews that it mattered a lot for Gen Z students that others (their families, their teacher, other students at school) considered the iPad to be cool. Self-presentation was important for them. This was not as important for Gen Y students. Another example is the novelty of technology. It was important to Gen Z and not as important to Gen Y students. For example, Gen Y students remained very calm through the version change (from iPad 2 to iPad 3), while almost everyone from Gen Z brought up how much cooler the iPad 2 was than the iPad 1 that they were using. Of course, the changes between the iPad 1 and the iPad 2 were much more substantial, in particular with camera being part of the remake. Yet, the university geosciences students said that a camera would not make a difference for them. They explained that for photographing in the field they needed very good equipment. The iPad camera could not add value and make the iPad cooler for this group.

For Mary, the area of intersection of different factors shown in Figure 5 is large. The innovative platform gave her a large added value upon her mastery of the device. Her self-perception changed positively, and her adoption of the tablet was successful. The change in iPad version did not affect her. Mary is happy to have a mainstream cool item to help her in her everyday study life. The mainstream part was important, as being just like others was important to her.

In the other four cases described, the iPads have ended up being very little used. Thus, the "I can't go back" experience associated with cool products did not happen in these studies, neither did prolonged, joyful, use of the product. Yet, with the exception of some university students, nearly everyone we interviewed still thought that the iPad is cool.

As a techno-cool may be used in several different contexts, it does not need to be seen as cool in all of them. The coolness in one context makes users more accepting of the product in a different context. An example of this is the coolness of the iPad at home for Gen Z that influenced their view of the iPad as cool in school situation.

Factors contributing to coolness may differ between the contexts, but it is important to understand them. Both Gen Y and Gen Z have high demands from techno-cools. From our interviews it comes through that what they perceive as cool are things that are innovative, that they can master and do cool things with, that give them some added value, and often it is cool if they can customize or make something themselves. Further, the techno-cool should be useful, successfully adopted for use in at least one context. When it comes to temporal dimension of coolness, Gen Z proved to be more sensitive to technology that is older. Gen Y has shown some tendencies towards liking what they are used to and in general, has been much more critical and reluctant to simply adopt techno-cools for the coolness sake. At least in the case of the iPad and the university students, usefulness was the most important factor in deciding what is cool or not for them.

The concept of situated coolness for mainstream techno-cools has helped eliminate much of what one otherwise thinks about when considering cool as aesthetics or attitude.

Understanding the cool as the space spanned by factors that are important in a given use situation may be a good start towards understanding design for techno-cools.

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