



Contents lists available at ScienceDirect

## Computers &amp; Education

journal homepage: [www.elsevier.com/locate/compedu](http://www.elsevier.com/locate/compedu)

# Drawn to distraction: A qualitative study of off-task use of educational technology



Jesper Aagaard

Department of Psychology and Behavioural Sciences, Aarhus University, 8000 Aarhus C, Denmark

## ARTICLE INFO

### Article history:

Received 22 May 2014

Received in revised form

15 January 2015

Accepted 2 March 2015

Available online 18 April 2015

### Keywords:

Attention

Distraction

Educational technology

Habits

Postphenomenology

## ABSTRACT

Today's educational system increasingly integrates digital devices such as laptops and tablets in the classroom on the assumption that the use of these technologies will increase student motivation and learning. However, research shows that students often use technologies for distractive purposes like off-task activity and multitasking. Few studies address the processes involved in this activity. This article offers a postphenomenologically informed qualitative study of students' off-task use of technology during class. Building on interviews with students in a Danish business college about their off-task technology use, findings suggest that off-task activity is not always a conscious choice. Because of deeply sedimented bodily habits, students often experience habitual distraction in the form of pre-reflective attraction towards certain frequently visited websites (e.g., Facebook). Laptops are experienced as endowed with an attractive allure that "pulls you in". Students sometimes go as far as closing the lids of their laptops to avoid this habitual distraction. Theoretical and practical implications are discussed.

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## 1. Introduction

Today's educational system increasingly integrates digital devices such as laptops and tablets in the classroom on the assumption that using these technologies will increase student motivation and learning. Nevertheless, when spending time in a classroom one quickly realizes that these devices also challenge educational practice. Numerous studies show that students frequently use educational technologies for off-task activity and multitasking, which in turn leads to significant decrements in educational performance (Bowman, Levine, Waite, & Gendron, 2010; Fried, 2008; Gaudreau, Miranda, & Gareau, 2014; Hembrooke & Gay, 2003; Junco & Cotten, 2012; Ravizza, Hambrick, & Fenn, 2014; Risko, Buchanan, Medimorec, & Kingstone, 2013; Sana, Weston, & Cepeda, 2013; Wood et al., 2012). When social networking sites, news, funny images, and videos displace educationally relevant material, digital technologies become sources of distraction instead of tools for learning. In a progressively digitized educational system, understanding technological influence on student attention thus becomes crucial. However, most existing studies focus on the outcomes of off-task use of educational technology in the form of test scores and grades, while few address the processes involved in this activity (for an exception see Andersson, Hatakka, Grönlund, & Wiklund, 2014).

The purpose of this article is therefore to present student experience of off-task use of educational technology. This empirical inquiry is informed by postphenomenology, which differs from classic cognitive theory by shifting focus from mental processes to bodily use of technologies. As such, the remainder of the article is structured as follows: I begin with a brief review of existing cognitive literature on attention and its inadequate consideration of embodiment and instead present a postphenomenological framework (Section 2). I then translate this theoretical perspective into a methodological background for my interviews and situate the current study (Section 3). This is followed by a presentation of the results with particular emphasis on the experience of being drawn to distraction (Section 4). On the basis of these results, I develop notions of *habitual distraction* and *mediated impatience* (Section 5). Finally, I discuss limitations of the present study (Section 6), before concluding with addressing its implications for educational practice (Section 7).

E-mail address: [jaagaard@psy.au.dk](mailto:jaagaard@psy.au.dk).

## 2. Background

### 2.1. Exorcizing the ghost of cognitive psychology

Existing research on educational technology mainly relies on a cognitive understanding of attention. Like with any other theory, this implies certain ontological, epistemological, psychological, and biological assumptions (cf. Dreyfus, 1992). In the case of attention, it is assumed that.

1. The outside world consists of discrete bits of information
2. An internal mind perceives the world by processing these bits of information
3. Perception is caused by attention, the processing power of the mind
4. Because of the brain's physical limitations, attention is a finite resource

The mind is understood as a self-sufficient entity that is separate from the world. This is evident in the bifurcation of attentional processes: According to cognitive psychology, attention is mostly voluntarily controlled by the mind (this is *endogenous*, top-down, or goal-directed attention), but can also be redirected by unexpected external stimuli such as a loud noise or a flashing light (this is *exogenous*, bottom-up, or stimulus-driven attention) (Corbetta & Shulman, 2002; Posner, 1980). Attention is either directed from within or triggered from without. This division is readily adopted by educational researchers, who conclude that technological distraction is primarily voluntary and endogenous, but can also be caused by exogenous stimuli.<sup>1</sup>

While I acknowledge cognitive research on the outcomes of distraction (i.e., poorer performance), I find these explanations highly problematic (Aagaard, 2014). They rely on what Gilbert Ryle (1976) called the dogma of the Ghost in the Machine. Put briefly, this is the idea that there is a ghostly consciousness within our bodies. This ethereal mind exists outside of space, beyond the laws of matter, while the material body is a mechanical instrument like a clock that functions merely as handmaiden to the mind. A description of embodied first-person experience, however, rejects this dogma and shows the body to be active and skillful (Merleau-Ponty, 2002). This insight is vital in the field of educational technology, where engaging with a tablet, laptop, or smartphone is a highly embodied relation that includes being *face-to-face* with a screen and *hands-on* with a keyboard (Friesen, 2011). An inadequate consideration of embodiment hinders an understanding of the manual nature of media use (Moore, 2014). To firmly grasp the crucial relation between bodies and technology, we instead turn to *postphenomenology* (Ihde, 2002, 2010).

### 2.2. Postphenomenology and technology

Postphenomenology is a contemporary school of philosophy that is being increasingly used in the study of human–technology relations (Ihde, 1993; Rosenberger, 2012; Verbeek, 2011). The prefix “post-” implies a movement beyond classical phenomenology, and postphenomenology entails two revisions: Multistability and embodiment. *Multistability* ontologically replaces the essentialism of Husserlian phenomenology and alludes to an artifact's various partially determined trajectories in different contexts (Ihde, 2009). A technological artifact, as Don Ihde puts it, becomes what it “is” through its uses (Ihde, 1990:70). A lighter, for instance, is usually applied to light a candle, but can also be used to open a bottle. There is no “essential” use of a lighter. New technologies like laptops, tablets, and smartphones are even designed to incorporate this kind of multistability (Ihde, 2012). Just as multistability replaces the essences of classical phenomenology, *embodiment* replaces a transcendental notion of subjectivity and its “disembodied view-from-nowhere” (Ihde, 2008:3). Postphenomenology is not concerned with immaterial consciousness, but with situated, embodied relations to material technologies. Using a lighter to open a bottle requires a different handling than when used to light a candle.

Performing different actions with technological artifacts requires different *relational strategies*, i.e. bodily habits, intentions, and conceptions (Rosenberger, 2009). A relational strategy is what fixes the multistability of a given artifact to a specific stability. Robert Rosenberger (2009) uses the concept to explain the use of computers where a novice is forced to concentrate on each individual keystroke, whereas a skilled user barely notices the computer itself but rather focuses on its contents. Over time, past experiences have sedimented into a bodily habit that now informs the immediate experience of the computer. A user deeply accustomed to accessing specific pages on the Internet, for instance, has developed a specific relational strategy to the computer: “Armed with a highly-developed relational strategy, she or he approaches many aspects of the computer through deeply-sedimented habits and expectations” (p. 178). These deeply sedimented habits may be embodied to such an extent that the user is hardly aware of performing them. The question then is how relational strategies developed in students' everyday use of laptops and tablets intertwine with their educational use of these devices.

<sup>1</sup> Evidence for this claim can be found in the following selection of quotes from the scientific literature:

Attention is affected by “voluntary allocation of cognitive effort”, but distraction also depends on “distracter stimulus properties” such as novelty and abruptness of onset (Bowman et al., 2010:928).

Attention is often “controlled voluntarily”, but visual stimulation like pop-ups, instant messages, movement of text, and low-battery warnings prompt “involuntary shifts of attention” (Fried, 2008:908).

Distraction may either result from “conscious and intentional mechanisms inherent to the individual” or from “attributes intrinsic to the information or message” (Hembrooke & Gay, 2003:50).

Disrupting one's own learning is said to be “individual choice”, while stimuli “cause involuntary shifts of attention” in students in close proximity of laptop users (Sana et al., 2013:25).

### 3. Methodology

#### 3.1. Doing postphenomenological interviewing

Despite an increased sensitivity to embodied use of technologies, postphenomenologically oriented scholars rarely conduct empirical studies of *other* people's technologically mediated experiences and practices (Forss, 2012). Empirical phenomenology has instead become almost synonymous with Amedeo Giorgi's Husserlian descriptive phenomenological method (e.g., Cilesiz, 2011). The goal of this method is to address human consciousness while respecting the rigorous spirit of science. According to Giorgi (2009), this is done by interviewing people about a phenomenon to obtain concrete descriptions, rereading transcriptions to become familiar with data, breaking descriptions into "meaning units", transforming the meaning units into psychologically pertinent expressions, and finally articulating the invariant structure of the phenomenon. Psychological meanings are thus teased out from the raw data of descriptions, and this material is ultimately boiled down to a stock cube of *essential meaning*. Throughout this process, the researcher refrains from interpreting or bringing in her own non-given past knowledge to account for whatever she is trying to understand (this bracketing is known as the *epoché*). In fact, the researcher approaches the subject in a "naïve, pretheoretical way" (p. 135).

While admirably rigorous and clear-cut, this methodology cannot be directly transposed to postphenomenology due to its Husserlian legacy. In agreement with Linda Finlay (2012), I argue that empirical phenomenology can benefit from postmodern epistemological and methodological developments. This means moving from realist attempts to unearth essences towards inquiries into *multistability*. I examined contingent bodily relations to technology, not fixed essences or structures of consciousness. It also means rejecting the *epoché* in favor of *researcher reflexivity*. It is neither possible nor desirable, as Finlay explains, to bracket researchers' experience and understandings (p. 24). An open mind is not an empty head (Dey, 1993:229). What Giorgi calls raw data is never simply "given", for it is always produced, constructed, or "taken" in accordance with a certain theoretical lens (Brinkmann, 2013). Embracing multistability and researcher reflexivity, however, does not entail wholesale acceptance of radical postmodern claims about language ("there is nothing outside the text") or abandonment of lived experience in favor of discourse analysis. Postphenomenology retains faith in the idea that we can describe truthfully delimited segments of peoples' lives outside of the interview (Miller & Glassner, 2004).

#### 3.2. Situating the current study

The data presented here is part of a broader study of educational technologies' mediation of student attention in an educational context. The study is conducted as a long-term, multi-method qualitative inquiry at a large business college in Denmark. A business college is an institution that provides general upper secondary education in commerce covering lines of study that range from global marketing and communication to innovation and event management. Students are young men and women aged 16–20 years. This particular college and its institutes are located at three addresses in a large Danish city and employs a technological strategy of letting students bring their privately owned devices to school in a model known as *BYOD, Bring Your Own Device*. These devices are all wirelessly connected to the Internet. Laptops still by far constitute the majority of educational technologies in this college.

I was initially put in touch with six teachers selected on the assumption that they would subsequently be willing to let me observe their lessons.<sup>2</sup> I conducted exploratory interviews with the teachers about their experiences with technologies in the classroom, and all six teachers kindly agreed to let me follow their work through open, ethnographic participant observation (Spradley, 1980). During my observations, I often received witty remarks about off-task activity when initially presenting my interest in student use of technology ("oh, we use Facebook quite a lot"). I never kept it secret that I was in fact interested in this off-task activity, but explicitly stated that I was not a "snitch", i.e., not a delegate of their teachers. Situated in the back of various classrooms, I silently participated in a number of courses such as marketing, business economics, and English, while gathering an impression of the contextual embedment of technology documented through hand-written fieldnotes (Emerson, Fretz, & Shaw, 2011). I quickly saw that to some extent most students use laptops for off-task activity.

After six months of observation, I started formally interviewing students. At this point of time, I hoped to have built a mutual understanding with students as they had the chance to adapt to my presence. The sole selection criterion for participation in the interviews was *volunteering*. This criterion was chosen to avoid pinpointing individual students, which could give my observations an inimical aura of surveillance. When a student volunteered, we went into the hallway, sat down at a quiet table, and I recorded our conversation. I framed the interview as anonymized and restated that I did not report back to the teachers. The interviews were semi-structured with an interview guide consisting of questions about the student's experience with using technology ("how do you use technology in class", "have you ever used it for off-task activity", "when do you do this", etc.). Interviews lasted for approximately 15 min. In total, 14 students were interviewed. The interviews were transcribed verbatim and analyzed in accordance with a revised phenomenological methodology, which means multiple readings of data to identify experiential patterns and themes through a combination of theory, methodology, and data. I will now outline the findings. The quotations used below are those which best illustrate the points of research interest and all names are pseudonyms.

### 4. Results

#### 4.1. The mixed blessing of educational technology

From observations and interviews I quickly learned that student use of technology is ubiquitous. Digital technologies have largely superseded pencils, notebooks, and calculators. Students often do not even bring books to school because they can rely solely on their laptops. They read, write, and submit assignments on laptops. They take notes in Word, produce presentations in PowerPoint, make budgets in Excel, perform math calculations in TI-Nspire™, share files in Dropbox, search information on Wikipedia, co-author documents in Google Docs,

<sup>2</sup> This is not a given, since the culture of teaching is steeped in individualism and privatism (Hargreaves, 1994).

and exchange educationally relevant material via Facebook (“it’s faster than by mail”, students told me). These technological activities are not merely employed for delimited and well-defined purposes, but have changed the structure of educational practice itself. For example, teachers often assign information search tasks to students, but students can also use information searching to contradict what a teacher says and thus challenge the traditional power structure with the teacher being the expert. Teachers expressed great admiration of this technological democratization of knowledge. But just as laptops and tablets open up the possibility of bringing the world into the classroom, they also constitute a backdoor through which students may escape. This particular multistability presents a major challenge for the educational system. During interviews with the students, I expressed an interest in off-task use of technology and asked them whether they had ever undertaken such activity.

Frank: Well, of course I have. I do it daily, and I pretty much do it in every lesson, and I think that’s general for almost all students at school. Certainly in my own class I know that, when I look around, practically everybody is on Facebook all the time. It’s constantly running in the background. Additionally, many people often play games. This can be everything from World of Warcraft to little games online.

The question must have seemed contrived, because students usually sent me a puzzled look before responding that yes, “of course” they had. Indeed, based on my observations, I had no expectation of encountering a student that would deny ever engaging in off-task activity. Most students have Facebook open all day, and some students even watch videos on YouTube and play games during class. But how do we understand the processes behind this off-task activity? How is it experienced?

#### 4.2. Being drawn to distraction

Students often described the temptation to engage in off-task activity as a prereflective attraction towards frequently visited, educationally unrelated websites (paradigmatically encapsulated by Facebook, which is widely used among all students). Students are drawn to distraction.

Dan: I don’t know whether this is relevant, but I’m aware that it’s wrong, so I try, and have especially tried lately, not to do it. I think it’s really hard, because it pulls you in. It’s a habit you have. When you open the Internet, you just go to Facebook, or I go to 9gag [an image-based social networking site where users upload humorous images].

Jesper: So it’s practically in your fingers?

Dan: Yeah, but I try to shut it down immediately.

Jesper: But not until after you enter it?

Dan: Yes, and I can be sitting there for five minutes and then suddenly think, “Whoops, what am I doing?” and then I shut it down.

The laptop is experienced as endowed with an attractive allure that “pulls you in”. When becoming aware of this distraction, students can break at any moment and resist the attraction, but it may take several minutes before this happens. Students explain that engaging in off-task activity such as visiting Facebook can indeed be a conscious choice (as described in the cognitive literature), but this mainly happens when their visit is rooted in a specific purpose such as writing to somebody or posting something. Otherwise, distraction is usually experienced as taking place beneath the level of willful choices and purposeful decisions.

Karen: If, for instance, you’re about to do group work and have to download an assignment online, it’s just the first two letters you think about. It’s just “F”, “A”, because that’s Facebook, and then “Enter”. And then you accidentally catch yourself saying, “No, I was actually going on Student Planning [the school portal for student assignments]”.

Much like entering the personal identification number for ones credit card, the process of logging onto Facebook has become embodied in ones fingers and happens almost automatically. As a relatively active user of Facebook, this eloquent phenomenological description immediately struck me. Without ever realizing it, this is what I tend to do when, for instance, struggling with writing an article. Open the browser, move the cursor to the address bar by a smooth movement of the middle finger and tap the touchpad to highlight the current URL. Then it’s just “F”, “A”, and “Enter”. Although this only takes a few seconds, it is a deeply sedimented relational strategy that requires extensive familiarity with ones laptop. Since these acquired habits are strongly present during class, students may inadvertently and unconsciously slide into distraction. They often “catch themselves” on unrelated websites and realize they have spent several minutes on off-task activity instead of, say, writing notes.

Jim: The problem is that when you open the Internet, the first things that pop up are Facebook and YouTube and a couple of other sites. So you’re quickly caught up in it. When you’re sitting with a computer in front of you, it’s easy to accidentally do all sorts of other things if the lesson is boring or if you don’t feel like paying attention.

Students experience the seductive pull towards off-task websites when their browsers are open and unrelated tabs are visible. Getting caught by this temptation and “accidentally” scrolling down your Facebook newsfeed is different from endogenously *deciding* to go on Facebook to write to a friend or having an exogenous notification *pop up* on your screen to alert you of new messages.

#### 4.3. Difficulty and structure

When are students most susceptible to succumb to off-task use of educational technology? Across interviews, two crucial factors emerged: Difficulty of the material and structure of the lesson. First, there is *difficulty*. If material is considered too hard, students fall behind

and resort to distraction. They become mentally exhausted, disconnect from class and go to unrelated websites. A student told me she would simply “give up and go on Facebook instead”. After unsuccessfully trying to understand what is being taught, allowing oneself to lean back and relax by surfing online can be a comforting experience. At the opposite end of the difficulty spectrum, students also engage in off-task use of technology if the taught material is considered too easy. If a teacher is explaining a new theory or the class is reviewing material that students feel they have already grasped, they disconnect. This type of distraction is generally more accepted among teachers. A teacher told me she had just witnessed a student searching for off-task subjects online, but she let it pass because there was no need for the student to sit idly by and wait for the next part of the lesson to commence.

Another important element in off-task use of technology is the *structure* of the lesson. If there is a short break in a lesson, when for instance a presentation group is opening their slideshow at the smartboard, students check Facebook while waiting. This is generally accepted among teachers. Another structural factor is the interpersonal rhythm of the classroom. Students often used words like “boring” and “dull” to describe situations in which they engage in off-task activity. But what does that mean? A student explained that a lesson is boring “when we go through theory for 3 h in a row, and the teacher’s just up there talking”. When a teacher (or a presentation group) talks at the blackboard for an extended period of time, students find it difficult to concentrate. They become drowsy, lose focus, and go off-task to take breaks.

Neil: Yesterday we had two hours of math theory in a row. I was gone after half an hour. I went on[line], I’m on there for five minutes, and then I’m back to math. So I just disconnect for five minutes, and I’m ready again. And it’s because it was just theory on theory on theory. And what we did yesterday was mostly repetition.

Jesper: So what do those five minutes do?

Neil: I disconnect a little and get relaxed and gather energy. Then I can concentrate again.

Jesper: Then you’re ready. But what then when you return to class? Haven’t you missed something during those five minutes?

Neil: Yes, I have.

Jesper: You’re a little more clear-headed, but you’re behind? There’s an ambivalence here.

Neil: Yes, exactly, precisely. It’s hard coming back. But then you just have to fight extra to get back in.

Paying prolonged and undivided attention to the talk of a teacher is experienced as boring and exhausting. Students therefore take technological breaks to gather energy. Sometimes students return to the lesson almost immediately, other times it may take them several minutes. Either way, these breaks are costly. When returning to class, students have to “fight extra” to make up for lost ground, which in turn may leave them exhausted again.

#### 4.4. Closing the lid

Teachers are acutely aware of the challenges posed by off-task use of educational technology. One teacher poignantly explained that when students look at their laptops and smile during English grammar, he knows that it “probably doesn’t have anything to do with the lesson”. This remark reveals a tremendous challenge to the modern educational system: The constant accessibility of entertaining alternatives to an ongoing lesson. English grammar has to compete with funny images and social media. Teachers agree that this is a never-ending battle, but approach this situation varyingly. Sometimes they try to eliminate distraction by fighting for student attention. They try to “occupy their brains”, as one teacher put it, by sequencing lessons (i.e., 5 min of A, 7 min of B), using little shifts and variation to keep the lesson in constant flux. However, as some teachers noted, not all lessons are apt for this rapidly shifting structure. Sometimes classes need to spend time going into depth with subjects. In these cases, sequencing may be an unsuitable solution.

Other times teachers therefore implement a so-called “open/closed” policy: When a teacher gives the word, students close the lids of their laptops, and only when the teacher grants permission are they allowed to reopen them. Implicitly acknowledging the attractive nature of laptops, teachers refer to this tactic as “taking away the goody bag”. I often observed students secretly using smartphones beneath their desks during these sessions, and an open/closed policy is no magic bullet regarding off-task use of educational technology. Nevertheless, during interviews students surprisingly (and especially so if one subscribes to the idea of distraction being voluntary) expressed satisfaction with this initiative and even took similar precautions in their own fight against distraction. Student strategies varied in severity from merely closing a tab (e.g., Facebook) to quitting their web browser (e.g., Firefox) to physically closing the lid of their laptop. But what is it that closing the lid does?

Jesper: Why can’t you just refrain from looking at it?

Carol: Well it’s standing right in front of me, and then you might look down for a second and you’re just caught by Facebook. Then you sort of forget the other thing you’re supposed to focus on.

Jesper: So unless you physically shut down the screen, it’s simply too tempting?

Carol: Yes, it is for me. Maybe not for everybody.

The laptop is often described as having an uncanny ability to pull you in. You get “caught” up in it. Closing the lid of the laptop effectively eliminates this attractive nature by blocking access to both keyboard and screen. By closing the lid, students transform their laptops into hunks of plastic and metal that merely take up space on their desks. Although this is a temporary solution that also closes off the possibility of taking notes, it is a powerful way to prevent distraction.

## 5. Discussion

### 5.1. Habitual distraction

In an increasingly digitized educational system, understanding why students often use educational technologies for off-task activity is crucial. This article introduced the notion of a prereflective attraction towards frequently visited, educationally unrelated websites. I call this phenomenon *habitual distraction*. *Habitual*, because it is explainable neither in terms of mental choices nor mechanical reactions to stimuli, but as deeply sedimented relational strategies. *Distraction*, because being drawn-towards (“at-tracted”) unrelated websites means being drawn-away (“dis-tracted”) from educational activity. This is neither a willful choice, nor an involuntary reflex triggered by pop-ups and text movements. Habitual distraction challenges the dichotomous division of attention as either endogenous or exogenous. At present, the paradigmatic example of a tempting off-task website is Facebook, but as the popularity of this website decreases, students may move to other websites like Instagram or Twitter. This, in turn, will spawn new relational strategies, but as long as students interact with educational technologies through some sort of keyboard and a screen, the experience of habitual distraction will presumably remain the same (e.g., “T”, “W”, and “Enter”).

When, however, the notion of habitual distraction is methodologically described as “taken”, how does one assess its validity? Good phenomenology *makes the obvious* (Brinkmann, 2013). The vital factor is not that research claims correspond to an objective reality cleansed of human interest (“subjective bias”), but that they tap into a shared realm of experiences (Friesen, 2012). Is the present article experientially resonant? Ultimately, the judgment lies with its readers, but many technology users, this author included, are frustrated by the ease with which they drift into distraction when using their computers. This is evidenced in the influx of so-called Zenware programs such as StayFocusd, SelfControl, Antisocial, Freedom, and Chrome Nanny, which block specific websites or even break your Internet connection (Pang, 2013). In fact, acclaimed author Zadie Smith (2012) explicitly thanks Freedom and SelfControl for “creating the time” in which to write in the acknowledgments of her novel *NW* (p. 295). Relational strategies developed in our spare time intertwine with our professional use of the same technologies. In 2012, as many as 96% of all Danish 15–19 year olds used the Internet for leisure activities daily or almost daily; 46% for more than 3 h every day (Danish Ministry of Culture, 2012). This everyday activity is bound to influence students’ relations to educational technologies. The findings of this study are thus in accordance with those of Downes (2002), who argues that children who have grown up using computers to play games and communicate with peers at home see the computer as a *playable tool*, but this affordance may conflict with the perception of schools and teachers.

### 5.2. Mediated impatience

Students react particularly strongly to the perceived monotony of lecturing. They describe these lessons as “boring”, which is why they give into temptation and become distracted. But what is the role of educational technologies in this process? We often understand technologies as inanimate objects that cannot affect the inner inclinations of their users (Peterson & Spahn, 2011). Teachers sometimes link off-task use of educational technology to the “mind wandering” they personally experienced as students when writing notes or staring out the window. Notes, windows, or laptops; distraction remains the same. Distraction is taken to originate *within* students, while technologies function merely as means to alleviate tension. This sentiment is echoed in the scientific literature in which off-task use of technology is considered a symptom of a deeper humanist problem, namely “lack of academic engagement” (Risko et al., 2013:281).

Postphenomenology, however, claims that technologies are active agents that give shape to what we do and how we experience the world (Verbeek, 2005). More than just fulfilling a fixed function (i.e., “relieve boredom”), technologies introduce new possibilities that may alter the perception of its users. That a lesson is perceived as “boring” is not necessarily an expression of a factually existing experience that prevails independently of technological artifacts and is then alleviated by surfing the web. When a lesson is experienced as boring, this may to a certain extent be *because* technological alternatives are constantly available and ready to be utilized at a whim. This can be described as a kind of *mediated impatience*. As Bruno Latour (2002) puts it, “If the robe does not make the monk, wearing a frock makes us slightly more pious” (p. 253). Modern students seem to experience difficulties with the traditional educational structure in which they must listen to a teacher for an extended period of time. As mentioned, some students go as far as closing the lids of their laptops during class to avoid the problem.

## 6. Limitations

### 6.1. Paying attention outside of school

While a qualitative examination of off-task use of educational technology in *actual* classrooms is an increase in ecological validity compared to experimental setups, this article does not claim to have the final word on the subject of technology use. Skeptics might argue that habitual distraction and mediated impatience are merely symptoms of academic disengagement. In favor of this view it should be noted that official regulations of the school state that attendance is “compulsory for all planned lessons” and, as such, students are obliged to attend every single lesson. This indeed raises questions of engagement and motivation. To circumvent these issues, future studies could examine the interplay between attention and the use of technology *outside of school* in settings that young people choose more freely: How do they, for instance, handle technologies when sitting in the couch with their partners? Around the dinner table with their family? Or when

hanging out in cafés with their friends? The results of such studies could help determine whether the present issue is merely a symptom of a pre-existing humanist problem (“lack of academic engagement”) or whether it does in fact raise new posthumanist questions (“human–technology relations”).

## 7. Implications

### 7.1. Cultivating technological habits

How do we as educators cope with off-task use of educational technology? Should digital devices be banned from the classroom? This is not only impossible, but also highly unwarranted. As Peter-Paul Verbeek (2013) reminds us, dealing with technologies is neither a question of uncritical acceptance nor blind resistance. Between “yes” and “no”, he argues, we are looking for a “how” (p. 80). We need a deliberate shaping of our involvements with technologies to develop a free relation to them. However, this “never-ending battle” may be fought differently.

Certain cognitive researchers suggest that restricting the use of external educational technologies does not remove distraction within students, so trying to limit the use of educational technology merely shifts the burden from *external* distractors to an *internal*, anxiety-laden urge to check for messages and news (Rosen, Carrier, & Cheever, 2013). According to this perspective, requiring students to focus (“unitask”) for longer periods of time will ultimately turn out to be a “fruitless effort” (p. 956). Instead, these researchers recommend short technology breaks every 15 min to quell internal distraction. This suggestion, however, relies on the sharp division between “internal processes” and “external objects” which the notion of habitual distraction attempts to challenge. If the strong pull towards off-task use of technology is connected to a prereflective attraction developed through a long personal history of human–technology relations, catering to students’ mediated impatience through technology breaks may paradoxically perpetuate the problem of habitual distraction. Ultimately, students may become unable to focus for more than 15 min in a row, thus impeding their ability to go into depth with subjects. Instead, it is suggested that teachers opt for a hands-on approach to educational technology like asking students to close their laptops or “flip their tablets” during specific parts of a lesson (e.g., before going through difficult theory). As educators we must help students cultivate good technological habits.

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