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Exploring students' explanations for off-task practices in an innovative learning environment (ILE) using a typology of agency as theoretical framework

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ABSTRACT


Learner agency is a key factor in success with technology-infused Innovative Learning Environments (ILEs). Focussing on informal practices unrelated to the learning agenda (off-task practices) and considered undesirable by students (school-net-conflict), this paper explores how students who experience a school-net-conflict explain their off-task practices using four conceptions of agency as a theoretical framework. An analysis of interview data from focus groups with a purposive sample of Norwegian secondary students suggests the dominance of sovereign conceptions of agency, i.e., off-task practices understood as individual self-regulation failures. Other common explanations included a) a drive-like 'pull' of social media (material conception), b) peers' off-task practices as triggers (relational conception), and c) adjustment to a grade- and test-oriented incentive regime (ecological conception). Findings also suggest a disconnect between students' explanations (situational nuance/detail) and attributions of 'blame' (dispositional default). Implications, limitations and further research are also considered.

KEYWORDS

Agency; learning Infrastructure; procrastination; innovative Learning Environments; technology-Rich Environments; student Explanations

Introduction

Over the last decade, Innovative Learning Environments (ILEs) have been designed to encourage learner engagement with connected, digital technologies (ICTs) in order to provide new opportunities for knowledge production and sharing through innovative work practices (Imms, Cleveland, and Fisher 2016; Istance and Kools 2013; OECD 2013). ICTs can provide easy access to a range of contexts beyond the confines of the classroom and can strengthen relevant student experiences by interconnecting content from various arenas in a symbiotic manner (Royle, Stager, and Traxler 2014). Moreover, the agility of mobile devices opens opportunities for increased participation on the part of students in deciding what, how and where they learn, given a refined understanding of what quality work looks like and where they are in a curriculum progression (Charteris and Smardon 2018, 52). Such a partial 'erosion of the normal zone of order' (Mulcahy 2016, 85) leaves the distinctions between informal and formal learning environments increasingly blurred. Through access to connected mobile

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technologies students can, and do, move between practices of formal schooling and informal friendship or interest-driven practices (Blikstad-Balas 2012), such as hanging out, messing around and geeking out (Ito 2010). This overlap of practices serves to heighten awareness of the inherent interconnectedness between life in- and out-of-school (Barron 2006), and to heighten awareness of the distinctive modes of participation associated with various practices in- and out-of-school (Resnick 1987). Therefore, students' abilities and opportunities to navigate purposefully and intentionally within and between practices becomes an important consideration, and learner agency re-emerges as a key factor for success with ILE initiatives.

The fact that many students struggle with their off-task practices in ILEs, calls for increased research efforts (Ott 2017, 46). The OECD initiated ILE project (OECD 2013) stresses the need for ILEs to be formative and thus able to use information about the learning taking place to inform further development and direction. Research into different aspects of ILEs is therefore considered crucial for generating knowledge about how well the ILEs are working and for suggesting potential solutions to emergent problems (Istance and Kools 2013, 54). A first step can be to gain insight into how students explain off-task practices that they deem problematic for achieving their school ambitions (school-net-conflict).

In the following, we focus on the explanations themselves in order to draw inferences about the repertoire of discursive heuristics used by the students to explain how and why they go off-task. Kahneman (2013, 98) defines a heuristic as a 'simple procedure that helps find adequate, though often imperfect, answers to difficult questions' and stresses that such heuristics are not consciously chosen but are a result of the 'imprecise control we have over targeting our responses to questions' (98). Drawing on Bernstein (1999, 159–160), the set of strategies possessed by any one student is dependent upon the total sets of strategies of the community as a whole, i.e., Bernstein distinguishes between the individual's 'repertoire' and the community's 'reservoir'. In this article, we are primarily concerned with the culturally available 'reservoir' of discursive heuristics used by students to increase coherence and decrease ambiguity in their explanations. The theoretical framework narrows our inquiry to students' reasoning about agentic forces that account for their off-task practices. In line with the aim of in-depth, rich descriptions of students' explanations, we conducted a qualitative case study based on eleven students attending the same Norwegian upper secondary school.

The article begins with a brief background of pertinent aspects of the Norwegian educational context. In the theoretical framework, we consider the role of learner agency and present a four-factor typology of conceptions of agency (Charteris and Smardon 2018). Next, we present the methods used in our qualitative case study, before presenting and discussing the findings. Limitations and further research are considered, before we end with concluding remarks.

Pertinent aspects of the Norwegian educational context

In Norwegian schools, the real push towards integrating 'new technologies' as part of the learning infrastructure in schools and classrooms started in the early 2000s, and gained momentum in 2006 with the formulation of a new national curriculum (Department of Education and Research 2006) applicable to grades 1–13. The longstanding work by the OECD in relation to the key competences framework (Rychen and Salganik 2003) inspired

the inclusion of digital competence as one of the five key competences to be included in all subjects at all levels. Norwegian authorities formally recognised that the development of students' digital competence was as important as speaking, reading and writing for all learning practices. In the upcoming national curriculum that will come into force in 2020, digital competence is still considered an important competence (see, e.g., the new Core Curriculum at Regjeringen 2019). However, the new curriculum shows that there has been a similar shift of emphasis in Norway as in the OECD *from* approaches criticised for implicit 'technological determinism' to approaches focussing on the design of entire learning environments with ICTs as part of the infrastructure for learning.

The school selected for our case study is located in a county known for heavy investments in ICTs, for translating national initiatives into ambitious regional plans and strategies for utilising the potential of digitalisation, and involving schools and teachers in creating learning environments conducive to the integration of digital technologies. The county's objective is that

all students and staff [should] use digital tools and resources in all subjects (...). [R]esource individuals in the educational use of ICT should work actively to develop student and staff ICT skills (...), demands are made and follow-up provided in respect of professional development for individual members of staff. The school is to have an oversight over digital tools, resources, and learning materials in all subjects and should have a set minimum standards for the use of digital tools, resources and materials in all subjects (Elstad 2016)

In the early 2000 s, many schools in this area removed blackboards, re-configured classroom spaces, e.g., by replacing individual desks with tables more amenable for group and project work, and promoted a student-centred schooling based on ideas derived from American progressive pedagogy. The encyclopaedic-centred schooling in the grammar-school tradition was left behind. Local authorities thus promoted an understanding of the relationship between teachers and students in line with a strong version of distributed power in classroom relationships. However, the growing importance of the international testing regime for national priorities gradually rolled back measures designed to level power discrepancies between teachers and students, and brought a re-orientation towards learning outcomes (Elstad 2016). At the same time, ideas about autonomous learning, learning to learn and student responsibility for their own learning have had a renaissance (Regjeringen 2019). 'To learn to learn' and 'self-regulation' are specified as areas of particular importance in the upcoming curriculum. Overall, progressive ideas linked to the use of educational technology and the educational focus on accountability are embedded side by side, i.e., there is an 'amalgamation' of educational progressivism and result orientation in the Norwegian educational context (Elstad 2016).

Theoretical framework

Charteris and Smardon (2018, 62) show that there are references in the education literature to new generation learning environments and the cognitive and affective capacities of the individual student, e.g., student motivation, student engagement, student autonomy, student-centred learning, and self-regulated learners. They point out, however, that there are fewer references to the fields of 'relational agency, where there is co-regulation (...); ecological agency, as the action that takes place in temporal and

relational contexts (...); or the agency of materiality occurring in the non-static arrangements of classroom assemblages (...)' (60). They recommend that research considers approaches to agency in ILEs that acknowledge and engage with both sovereign, relational, ecological and new material forms of agency and how they influence learning.

In this article, we focus on how students who experience a school–net-conflict explain their off-task practices. A typology of agency developed by Charteris and Smardon (2018) is used as a theoretical framework to analyse the nature of the discursive heuristics students mobilise in their explanations. The typology spans sovereign, relational, ecological and new material conceptions of agency. These conceptions are integral to theoretical traditions that differ in terms of the ontological and epistemological assumptions they operate from. It is beyond the scope of this article to explicate the intricacies of these differences, but in general, the conceptions range along a continuum from humanist to posthumanist ontologies, and realist to relativist epistemologies (Charteris and Smardon 2018, 55).

OECD writers stress the importance of learner agency and 'voice', arguing that 'as the learning becomes more personalised, the active role of the learners becomes more evident' (Istance 2015). However, agency is theorised in different ways, and these differences have implications for schooling contexts. A dominant tradition in the literature about education gives primacy to individualised cognitive conceptions of agency that are associated with so-called 'self-theories' such as self-efficacy (Bandura 1982), self-regulation (Schunk and Zimmerman 2007) and self-determination (Deci and Ryan 2012). Presumptions of individual choice and human autonomy and intrinsic motivation for learning are common for these theoretical traditions. Agency is associated with the development of a 'growth mindset' or 'learning orientation' thus attributing substantial understanding and academic success to one's own efforts and self-regulatory and metacognitive strategies (Dweck 2012). This conception of agency is evident in the ILE literature where 'student agency as sovereign ownership of learning is heavily promoted' (Charteris and Smardon 2018, 55). The favoured notion of agency is 'exclusively about empowered learners having opportunities to exercise choice and make decisions in the classroom' (Charteris and Smardon 2018, 55). However, Charteris and Smardon (2018) criticise this notion for conveying a relatively simplistic conception of the relational, ecological and material conditions for agency.

Relational conceptions of agency draw on sociocultural theories, and thus emphasise that agency is situated in a particular relational, structural and discursive context. Therefore, relational agency is a product of interactions and dialogue between people in social environments, and involves a capability to work with peers to 'strengthen purposeful responses to complex problems' (Edwards, 2011). This depends on the ability to engage with and integrate others' perspectives into your own understanding, that is, relational agency is located in the dynamic between extrinsic and intrinsic elements. The outcome is distributed and relational expertise (Edwards 2005, 2010, 2011). While relational agency emphasises the relational and situational conditions for agency, ecological conceptions expand the notion to include the temporal dimension.

The most common definition of ecological agency draws on Emirbayer and Mische (1998) who conceptualise agency as a temporally embedded process of social engagement informed by the past, oriented towards the future combined with a 'practical-evaluative' capacity to contextualise past habits and future projects within the

contingencies of the present. Hence, an ecological conception of agency is situated and dynamic because it is embedded in 'temporal-relational contexts-for-action'. Agency is thus not something you possess (or not), but something that you can achieve in situated action. In ecological terms, agency varies from context to context based on conditions of possibility and constraint, and the way the agent mobilises beliefs, values, reasoning and preferences in relation to particular situations.

While sovereign, relational and ecological conceptions of agency privilege the human actor, new material conceptions emphasise the agency of objects in learning environment assemblages (Buchanan 2015). While ecological conceptions of agency contribute with a more nuanced perspective regarding the contribution of the temporal dimension, new material conceptions fill a gap by providing new ways to understand how objects and structures, the spatial dimension, contribute to making things happen. Understanding how 'matter matters' (Barad 2007) enables a consideration of how humans and objects are entangled in assemblages (Jackson and Mazzei 2016). Agency is thus understood as a spatially distributed practice that includes the larger material arrangements (Barad 2007, 379). Agency understood materially is thus 'generated through a range of elements within schooling assemblages. It is co-produced in relations between objects, between humans and objects, and between humans' (Charteris and Smardon 2018, 56).

Originally, Charteris and Smardon (2018) developed the typology for analysing principals, teachers and teacher educators' perspectives of agency. However, they called for further research into learners' perspectives to supplement their typology. We attempt to meet their call by using their typology to analyse students' explanations for their off-task practices in class.

The case study

The focus of the study reported in this article was how students who experience a school-net-conflict explain their off-task practices. We sought to include students who invested in their own schooling and thus had incentives to want to conform to the existing grammar of schooling, but at the same time engaged in off-task practices that they found problematic. The way these students experienced and explained the interrelationship between their school ambitions and net-practices via an investigation of their views of problematic off-task practices provides valuable insights into the available cultural 'reservoir' of discursive heuristics of agentic forces at play in educational settings. By using different conceptualisations of agency to analyse their explanations for off-task practices, we seek to gain a deeper understanding of how broader discourses and ideas about agency influence students' thinking.

Based on a large-scale quantitative study conducted in 60 secondary schools with 3400 students in the Nordic countries (Arnesen, Elstad, and Christophersen, 2017a, 2017b; Arnesen, Elstad, and Christophersen 2016), we narrowed down our focus in order to find the right type of informants for our case study. First, based on answers to statements about students' views about the relationship between school and Internet-activities, we carried out a Principal Component Analysis (PCA) identifying three main patterns that made sense theoretically. We termed the three: 'school-culture dominance', 'net-culture dominance' and 'school-net-conflict'. Based on the results from the PCA, we created a school-net-conflict index and used it to compare school-net-conflict mean values

among students in Finland (N = 1389), Sweden (N = 802) and Norway (N = 1209), and found that Finnish students experienced significantly less conflict than their Nordic neighbours did. We then compared the 60 schools in our sample using the same index. Among the 21 schools with the highest school–net-conflict values there were no Finnish schools, only Norwegian and Swedish ones. The schools with the highest scores were a couple of Norwegian upper secondary schools from a county that has been a pioneer in terms of providing students with individual laptops and encouraging schools to make use of students' digital devices in education. We then contacted one of the high-conflict schools known as an ICT pilot school that actively tried to turn classrooms into technology-infused learning environments. We conducted a simple survey (N = 109) using variables from the school–net-conflict index to identify high-conflict students who fit our pre-set requirement of high off-task practices and high conflict-experience. We also consulted our gateway teacher at the school before we ended up with 11 students who fit the bill.

The 11 students were 16–18 years old, attended this medium-sized (ca. 600 students) upper secondary school in a medium-sized Norwegian town (ca. 50000 people) and in a mid-income neighbourhood. They attended general studies programmes, but two of them were in a competitive International Baccalaureate (IB) track. The 11 students came from across the attainment spectrum; seven were first graders (aged 16 years), two second graders (aged 17 years) and two third graders (aged 18 years).

We carried out semi-structured focus groups with four groups of two students and one group with three students. Each focus group lasted from 30 to 45 minutes and was recorded and transcribed. We then analysed the transcriptions in two cycles (content analysis: trigger and enabling conditions, and theoretical analysis: four conceptions of agency) using Hyper Research.

Findings

Sovereign agency

Sovereign agency is a conceptualisation of the autonomous individual who engages in self-regulated learning. We translated this conceptualisation into an analytical frame for the interpretation of the 11 students' explanations for their off-task practices. The findings reveal a clear tendency for students to utilise this sovereign conception of agency to account for procrastination involving ICTs. They mobilised this discursive heuristic more often than the other three conceptualisations both explicitly and implicitly. All 11 students used some variation of the theme 'self-regulation failure' to explain why they engaged in off-task practices in class. While some of the explanations rested exclusively on this theme, most combined it with some of the other three discursive heuristics. 'I get easily distracted' was the most common explanation for the students' problematic off-task practices. The students interpreted this proneness to distraction as a relatively stable, innate personality trait. We considered sovereign agency as the dominant discursive heuristic not just because of the frequency of occurrences, but because the students tended to evaluate other contextual and situational factors in class in terms of how they influenced their proneness to distraction. In the first illustrative example below, a first-year

student reflects on whether he prefers strict or kind teachers, while in the second example his classmate reflects on what is required to raise the quality of learning at their school.

I get easily distracted, ok, so if the strict teachers are really strict, then I feel that I had done better for myself as well, while the kind teachers only let me sit on Facebook, ok, so I don't feel like I learn anything. So right now I want strict teachers, I do not want such kind teachers (Ben 16).

The first thing they should do was to restrict access to Internet pages, only leaving Google and ItsLearning open. I know that it sounds boring, but then you can actually pay attention. And to use handwriting, in notebooks, one for each subject, science, social science, maths and so on. You can bring your Mac and all that, but you can only use it for finding information, not for note taking. The book is the main syllabus in a way, because now a lot of what we learn is actually online and that is in fact very distracting. (Berit 16).

Their point of departure is that they were easily distracted, and the rest of their interpretation followed up on that common theme. With the presence of what they saw as digital distractions such as Facebook, Ben preferred strict teachers to combat his innate tendencies towards distraction, rather than kind teachers who let him waste his time. Berit would raise standards by barring student access to most internet pages, going back to taking notes by hand in notebooks and using analogue textbooks. While they acknowledged that contextual factors play a role in their off-task practices, the main gist of the problem as they saw it was their difficulty with exercising self-control in the face of distractions – their innate personality traits. By using sovereign agency as a main frame of reference, their reflections were primarily about how to avoid letting their personality traits ruin their education and future prospects.

Relational agency

Edwards (2011, 34) describes relational agency as a capacity to work with peers to 'strengthen purposeful responses to complex problems'. Relational agency is characterised by a dynamic interaction between engaging with others' interpretations and the integration of these into your own decision-making. It involves finding common solutions to situations together with peers by recognising their motives and capacities. Relational agency involves interpreting, negotiating and reconciling social information with one's own interpretation leading to relational expertise (Edwards 2005; 2010; 2011).

The findings with regard to the use of relational agency as a discursive heuristic show that students used it frequently, and often in conjunction with sovereign conceptions. Five relational elements occurred in explanations for off-task practices in all focus groups, a) peers' activities, b) the strictness of the teacher, c) teachers' pedagogical practices, d) students' perception of the subject matter, and e) official rules and *de facto* norms. As instances of relational agency *failure*, the five elements helped thwart purposeful responses to problematic off-task practices. The students' reasoning was mainly characterised by descriptions of how these elements affected their innate lack of self-regulation.

Each focus group mentioned peers' off-task activities as triggers for their own off-task activities. Three focus groups compared peer influence with the spread of an infectious disease. The scenario presented was one where, at first, one or two students at the front of class went off-

task; then, some of the nearby students went off-task, and before long as many as 50% of the class were not paying attention to the teacher or the task at hand. However, the same focus groups also commented that peers also influenced them to stop procrastinating; it felt awkward to be the only one engaged in off-task practices.

The role of different teachers varied depending primarily on how strict they were. As illustrated in the example above, strict teachers implemented the official regulations against off-task practices in class and held the students to account for breaches. The two focus groups that had Thomas as social science teacher agreed that he was strict and that he managed to keep off-task practices under control. The students appreciated the way he helped them stay on-task, and explained that they learned more and got better grades in his subject. At the other end of the continuum was the female science teacher. She was highly appreciated for her kindness and caring personality, but the students saw her as too lenient with regard to off-task practices. She did not enforce the school regulations and did not hold the students accountable for breaches of the rules. Consequently, the students said her approach released their underlying, innate lack of self-control and caused them to procrastinate.

All 11 students commented directly or indirectly on the influence of the teachers' activities on their off-task practices. Unsurprisingly, they agreed that highly engaged, expert teachers largely managed to keep the students focussed. However, even these teachers had to make sure that transitions went smoothly, that the tasks did not become repetitive and boring, too easy or too difficult, and that the students did not have the opportunity to do the work at home alone. Each focus group mentioned these as potential triggers for the constantly lurking lack of self-control in the face of easily accessible online temptations. Project work was the only concrete type of pedagogical organisation mentioned as a good way to keep the students focussed. By holding the students accountable for each other and creating situations where the group depended on each member's contributions, the teacher could help to keep problematic off-task practices at bay.

With regard to the subject matter, the students seemed to agree that it was easier to remain on-task in subjects you appreciated. More surprisingly, in two focus groups, they maintained that it was easier to remain on-task in difficult subjects such as mathematics and physics. They explained that in order to cope in these subjects you had no choice but to stay focussed. Because the subjects are complex they needed the teachers' explanations, examples and explications to understand and get the grades they wanted. According to the students, this was not the case in several other, 'easier', subjects such as History or English. Of course, if the subjects became overwhelming and you fell behind, the odds were that you would give up and then off-task practices would flourish.

According to the official rules and regulations of school, the students were not allowed to engage in off-task practices in class. The students in the most passive focus group were clearly worried about saying too much during the interview despite our sincere assurances that everything they said would be anonymised and untraceable. It emerged from the conversations in each of the five focus groups that the influence of the official rules on the students' off-task practices depended on the teachers' enforcement and accountability processes vis-à-vis the students. However, most of their teachers only enforced them half-heartedly, that is, they either looked the other way or gave them a stern look. This practice did not convince the students to stay on-task in class, but rather to keep their

off-task activities partly hidden from the direct view of the teacher. Interestingly, the students in all five focus groups agreed that the *de facto* norms regarding off-task practices in class were in direct opposition to the official rules and regulations. As the illustrative example below shows, the students themselves would not react negatively if a peer spent class time watching films, especially if the student in question got good grades anyways. David and Doug, two third-year boys, comment on a girl who frequently watched films in class.

There is one in class who always watches films, and then I start to wonder, 'What is she doing?'

(David 18)

But she gets excellent results though (Doug 18)

Yes, that is true (David 18)

Excellent results? (interviewer)

Yes, she does really well (Doug 18)

and watches movies in class? (interviewer)

Yes. She's allowed (Doug 18)

She's allowed. She gets 6 [highest grade] anyways (David 18)

Ecological agency

As mentioned in the theoretical framework, the most common definition of ecological agency is a temporally embedded process of social engagement informed by the past, oriented towards the future and combined with a 'practical-evaluative' capacity to contextualise past habits and future projects within the contingencies of the present. Thus, ecological agency is a process embedded in 'temporal-relational contexts-for-action' (Priestley, Biesta, and Robinson 2013, 18). It follows that agency in ecological terms is not something you can possess, but rather something you can achieve in situated action, i.e., in temporally located relations between actors and the environment through which they act (Priestly et al. 2013, 40).

Used analytically to account for students' reasoning regarding their off-task practices, the ecological conceptualisation of agency has a wide reach and thus encompasses most of the findings already presented above. However, it supplements the previous two by helping to identify, and adding a focus on, the importance of the students' past and their orientation towards the future. In four of the five focus groups, the students used experiences at lower secondary school as a baseline for comparison and interpretation of their current off-task practices. In all groups, the future prospect of getting good grades and thus the importance of tests seemed to play a major role in how they evaluated current contingencies and acted in the present. A final theme that was discussed in four of five focus groups was the students' time orientation, especially the idea that you have plenty of time to do the work in the future ('slack').

A recurring theme with reference to the influence of past experiences involved how the lower secondary school system operated in terms of online access, the use of pen and paper for notetaking, the use of physical books and the level of teacher management and control in class. The first-year students talked about these practices in positive terms, and longed for a similar kind of order and discipline in upper secondary school. They claimed that they were able to focus and got better grades in lower secondary in comparison with the lack of focus

and falling grades at upper secondary school. These students were willing to introduce a similar system at upper secondary in order to avoid unnecessary loss of focus.

In terms of the students' orientation to the future, attaining good grades and the associated importance of tests was a dominant theme among all informants. The students did not see the need to stay on-task in class if it did not affect their grades. This attitude towards investing effort in class infused students' explanations with a sense of instrumental rationality. If grades are the only objectives for your activities in class, and you repeatedly see that what you do in class does not have any bearing on those grades, you have an incentive to do what you please in class.

It is worth noticing that the students did not mobilise the sovereign conception of agency in their explanations here. Two important alternative frames of reference were mobilised instead. First, the students referred the way they experienced the institutional structure of incentives for studying hard at school. Getting good grades was the most important consideration, because grades opened up opportunities for higher education, the job market and 'a good life'. For the students, the stakes were high and they felt that teachers set grades based exclusively on test results. Consequently, the students believed that the tests in subjects that end up in their final grade records from upper secondary were crucially important. This affected their priorities and had consequences for how they studied, just as the following illustrative example shows.

How often do you study hard and really try to understand the subject matter? (interviewer)

The most important tests (Berit 16)

Does it happen right before the tests? (interviewer)

Yes (Berit 16)

and you actually do it? (interviewer)

Yes (Berit 16)

Yeeees ... (Ben 16)

At least in the final subjects (Berit 16)

Like in science, ok, which is a final subject and the most important subject this year, I think (Ben 16)

(...) as long as I get good grades in the final subjects, it is fine, those grades stick with you

So, this is the only thing that makes you really study the subject matter, then? (interviewer)

Yes, because we will not have those subject any more (Berit 16)

Even in their final year at upper secondary, students study at least 10 subjects each with their respective tests and final grades. The students said that they had to be strategic about their effort and do not want to waste energy on lessons that did not affect their grades.

The second alternative frame of reference mobilised by students was an instrumental and performative oriented conception of education that overshadowed a more substantive and mastery-oriented conception. An illustrative example is the way the students considered off-task practices acceptable as long as the student involved got good grades (see the example above). However, the students themselves seem to sense that this way of regarding education was inadequate. Three of the students in the sample normally got the highest grades but still recognised that their off-task practices were problematic. They seemed to have picked up a competing frame of reference about 'doing your best' as part of their socialisation at school or at home, and this frame seemed to affect them and produce their sense of school-net-conflict. Still, the two

alternative frames of reference, the incentive regime and the instrumental understanding of education, provided the students with rational explanatory frames for problematic off-task practices.

There were two more future-oriented ecological conceptions of agency at work in the students' explanations for their off-task practices. From three of five focus group discussions, one could infer two types of orientation to the future availability of time that students implicitly used as frames for explaining their off-task practices. The first is known in the literature as 'hyperbolic time discounting', that is, the subjective value attributed to a future reward is relative to the distance in time, i.e., the closer in time, the higher the subjective value. Overall, the students in the sample saw doing well on important tests and getting good grades as important goals. The students considered these goals as more important than goals related to their net-practices. One would, therefore, expect that the students' current actions in class would reflect these priorities, thus reducing net-induced off-task practices to a minimum. However, in the students' explanations, it was evident that they felt the value of net-induced immediate gratification surpasses diligent schoolwork if the important test was far in the future and the online gratification was available here and now. The term 'discounting' refers to a tendency to choose a 'smaller-sooner' reward over a 'larger-later' reward, while the term 'hyperbolic' refers to situations in which there is an exponential increase in value as the availability of a reward draws closer in time. In other words, the prospect of immediate gratification from off-task practices overshadowed any long-term and more valued gratification of reaching their school objectives, i.e., the subjective value of off-task practices increased exponentially just before they became available and surpassed the value of the studying.

The second frame of reference for the students' off-task practices was linked to the idea of 'slack', that is, the perception that there is unlimited time in the future, but not enough time in the present (Zimbardo and Boyd 2014). Repeatedly, the students said they postponed important schoolwork until they got home, and then failed to do it because the time available at home was also limited. Strangely, and of particular relevance when we address the ecological conception of agency, the students did not seem to learn from numerous negative experiences with delaying work this way as the following example illustrates.

So, when teachers share their presentations online it is less effective? (interviewer)

Yes, I think so, because no one will view them at home, at least not routinely. The easiest is to get all the information you need in class, get it all written down, gone through it (...). Do tasks at home or homework, then you don't do it. The day after you ask everyone Have you done the task? Send it to me on Facebook (laughs) (Annie, 17)

(...). Is it like that for the boys in class as well? (interviewer)

(laughs) That has happened quite often. So I usually [think] "no, I don't need to work this lesson because I will do it at home" and when I come home I just sit there on Facebook and when I look at the clock, yes, suddenly it is ten, eleven or twelve, and the next day I just write to a friend 'have you done the homework?' just send it to me, okay, so I just send it to the teacher. That has happened too many times, all too many times (Anders 17).

That we do homework online or on PC makes it too easy to cheat, in a way, I have not done my homework once (...). We have homework in English due Wednesday, I think, I remember that I wrote it down on the PC, kind of (...). I know I will not do it, and I will sit there on Wednesday before class and ask the girl behind me if she can send it to me. But I want to do it, but I know that I will not have the time or something will come up that prevents me from doing it (Annie 17).

The example illustrates how temporal considerations enter into students' explanations for problematic off-task practices. The perception of availability of time in the future is attributed importance, as well as an inability to learn from past negative experiences. Thus, a lack of ecological agency is present in their explanations of off-task practices.

New material agency

While sovereign, relational and ecological conceptions of agency emphasise the human actors, in new material conceptualisations of agency the human actors are de-centred. Instead, human actors and objects co-produce each other and the resulting relationships have agentic potential. Agency is thus an emergent co-produced phenomenon that can be seen in schools as a relational dynamic between students, teachers and non-human phenomena (Charteris and Smardon 2018). For the purposes of this study, we restrict our focus to the co-constitutive relationship between students and their digital online technologies.

For our informants, the relationship with digital online technologies formed the dominant frame of interpretation for off-task practices alongside sovereign agency presented above. Every one of the 11 students mentioned this relationship as a major reason for their off-task practices. Here, it is important to keep in mind that the students have unrestricted online access in-class. By emphasising their relationship to digital technology and online media, the students shifted the locus of what they saw as the agential, causal core of their practices. Instead of looking outward to elements in their instructional environment that 'push' them into distraction by way of their innate lack of self-control, they now looked into the nature of the material distractions themselves and identified operating agentic forces that 'pull' them into distraction by way of the applications and web pages' persuasive design. The students' interpretation was that 'matter matters' (Barad 2003). A common theme among the interpretations presented by the students was a pre-reflective, habitual, embodied and non-utilitarian urge to check what was going on online even if they knew nothing interesting was likely to have happened since they last checked. The students reported having social media applications open all the time in class regularly checking their Messenger, Facebook notifications or Snaps. The following exchange between two friends, Doug and David, can serve as an illustrative example. We asked them why they used Facebook in class.

- I wonder myself. It is just that I am so stupid that I have my mobile there and then it blinks and then I check to find it is nothing. It blinks when a group conversation is ongoing. (David 18)
- Yes, it blinks because I have chat on Facebook. So my thinking in class goes like this 'OK, what's happening on the chat now?' and then I just have to see. And if they write, I answer and then I just put the phone away. (Doug 18)
- Yes, you must, of course, check what they write. Chat is the most common activity, I think. (David 18).

In the next illustrative exchange, we asked two first-year students, Erica and Eli, if they had access to technology in class. They confirmed that they had constant access to their smartphones and their Mac, and continued:

It is OK with the access that we have, but it can easily make you do other things. And I wish that I managed to only write what I was supposed to write, but it ends up with me, suddenly, OK, I will fix my CV or check Facebook or check for mail, and “did I get the job I applied for?”, sort of, you do so much else than what you are supposed to do. (Erica 16)

You are just a click away from Facebook and it is pretty tempting to just go on Facebook and check if something new has happened and such. (Eli 16)

But it is in fact quite idiotic because nothing really happens on Facebook, but it you just feel that you have to click on it, I don’t know what it is. (Erica 16)

Temptations you cannot resist, sort of. (Eli 16) (...)

Facebook is the most important distraction, but it should not really have been that, because I don’t get it, I don’t know how to explain it, but I have to check, even if I don’t do anything in particular there. (...). But it is not just Facebook, suddenly I get the urge to visit Nelly.com to check out the sale they have on and see what kind of dresses I shall wear in the next party, sort of. (Erica 16)

The examples show that the students mobilised a way of thinking in which the access and nature of the online distractions in and of themselves often acted as sufficient conditions for their off-task practices in class.

Discussion

ILEs are designed to optimise the relational dynamics in learning spaces by acknowledging the contribution of both human (e.g., teachers and students) and non-human (e.g., classroom design and technologies) entities, their interconnectedness and embeddedness in larger infrastructural arrangements (Istance and Kools 2013; OECD 2013). Learner agency is critical for succeeding at creating a relational dynamics that stimulate new knowledge practices in classroom spaces within the infrastructure for learning (Charteris and Smardon 2018, 52). Off-task practices in class can point to areas in need of improvement, especially if the students at the centre of the exploration are school-oriented and want to do well at school. The weakening of horizontal borders carries both great promise and substantial risk. Opening up for educationally beneficial horizontal connections via the most multipurpose infrastructure known to humanity—the Internet—invariably has unintended side effects. Our 11 students experienced their own off-task practices as problematic since they wanted to do well at school (school–net-conflict). They did not feel able to do what was required for achieving their academic objectives, i.e., they experienced some kind of failure of agency. Their understanding of this failure of agency is important since a narrative constructed around individual responsibility and failure can contribute to the gradual loss of initiative/motivation.

Social-cognitive oriented research shows that students can enter vicious circles of procrastination, where perceived self-regulation failure contributes to lack of faith in regulatory self-efficacy, which in turn increases procrastination (Wäschle et al. 2014).

Another similar strand of research indicates that the consequences of procrastination for future possibilities are less severe for 'active' than for 'passive' procrastinators (Chu and Choi 2005). This means that those students who feel that they actively choose to go off-task fare better in their future lives than students who feel that they do not make an active choice, as in the case of the students who say they drift off-task, pulled in by alluring, online distractions. The explanations provided by our informants did indeed draw on this kind of sovereign conception of agency; they blamed their own self-regulatory inadequacy for their experience of school-net-conflict. This was the dominant perspective used by the students to judge their performance, and they thereby seemed to align with the dominant OECD ideology used by (neo-) liberal policy makers in their visions for ILEs and education in general (see, e.g., Davies and Bansel 2007; McPherson and Saltmarsh 2016; Miller 2015).

The OECD position regarding ILEs and agency offers a striking paradox. On the one hand, the OECD promotes a more holistic understanding of learning environments and the role of new technologies emphasising the quality of *relational dynamics* as crucial for innovation in learning (Istance and Kools 2013). On the other hand, the OECD is also a fierce promotor of the narrative of the self-responsibilised individual learner disconnected from the relational dynamics of the same learning infrastructures. The sovereign self is the protagonist of this narrative, a self-sufficient individual who is in a position to choose, reject or accept the way the structural and agential dynamics influence or co-produce the sovereign agent. In other words, the sovereign agent is in a position to exclusively act *in* ILEs, and does not have to act *through, by way and as part of* the infrastructure for learning. The relational, temporal or material elements do not 'push back', but respond in an entirely unproblematic and predictable fashion.

By including four types of conceptualisation of agency for our theoretical analysis, we have demonstrated how students can turn to a deeper contextual understanding to account for their actions. They use relational conceptions to account for how off-task practices are social and become *de facto* norms in the absence of teachers who implement rules and hold students to account. Ecological conceptions were used in their explanations as temporal baselines for comparison and interpretation, but also as agential frames that could account for off-task practices in their own right, such as temporal time discounting and a time orientation characterised by 'slack'. New material conceptualisations of agency were used in students' explanations in relation to how the design of new technologies and online media have the power to pull students into distraction. However, if we combine the findings using all four conceptions of agency, it might support the claim that the agential potential found in the students' explanations lay in constantly changing relationships between objects, humans and structures. It is therefore paradoxical that the students keep blaming their innate lack of self-control for their off-task practices while at the same time their own explanations point to a highly nuanced, contextual and relational understanding. The sovereign discursive heuristic has practical consequences. The students blamed themselves for their off-task practices, and some of the teachers left it to the students to keep on-task in class. This 'un-sociological', and 'de-politicised' understanding of learning environments is problematic since it obscures pertinent structural elements and risks misattributing problematic off-task practices solely to innate individual characteristics. Unfortunately, relational, ecological and new material conditions for agency are less understood, are rarely explicitly mentioned in policy

documents, receive less attention in popular media and are less intuitively accessible in cultural contexts dominated by the rhetoric of individualism. However, the OECD initiated ILE project draws explicitly on a holistic relational understanding of learning environments and the role of ICTs in them. Therefore, the OECD's vision of responsabilised, individual life-long learners is a paradox. In fact, the very idea of redesigning 'innovation hostile' learning environments to create conditions conducive for sovereign learner agency is an oxymoron. The agency attributed to changing the relational constellations confirms a fundamental relational understanding of learning environments as infrastructures for learning. Individual students and teachers do not just act *in* these environments, but are integral parts of the infrastructure themselves and thus act *through* and *by means of* the same environments.

In terms of potential solutions to the 11 students' problematic relationships to their off-task practices, each of the four conceptions of agency can play a role as they complement each other. Sovereign conceptions point towards cognitively oriented measures, such as developing meta-cognition, learning strategies and goal setting, and implementation strategies. Relational conceptions contribute with measures designed to strengthen the relational expertise and dynamics in class and thereby reaching collective solutions to and norms for problematic off-task practices. Ecological conceptions offer measures that integrate students' orientations to the future and thus, e.g., redirect the main direction of the schools' incentive regime from grades and tests, towards mastery, meaning making and interest generation. New material conceptions could contribute with measures that take seriously the attraction of popular applications and internet sites understood in conjunction with school-oriented practices, and thus strategically use or limit online access for predefined educational purposes.

Concluding remarks

The discursive heuristics mobilised by school-net-conflict students to account for their off-task practices are important considerations when designing technology-infused learning environments. The findings show that students have detailed, nuanced and context-sensitive understandings of the forces enabling their problematic procrastination, yet at the same time turn to the default discursive heuristic of an innate lack of self-control when explicitly explaining the failure of agency. The students seemed to take the role of 'the intuitive psychologist' (Ross 1977) displaying a 'general tendency to overestimate the importance of personal or dispositional factors relative to environmental influences (...). [The intuitive psychologist] too readily infers broad personal dispositions and expects consistency in behaviour or outcomes across widely disparate situations and contexts' (184).

In sociological terms, the 'repertoire' of discursive heuristics pertaining to agential forces making things happen in the learning environment is closely knit to the idea of the responsabilised individual on a perpetual quest for the self-sufficient sovereign self. The lack of alternative, culturally resonating, discursive heuristics more attuned to the relational, ecological and new material aspects of learning environments make students' fundamental attribution failure predictable, if not inevitable. From the perspective of these school-net-conflict students, then, most off-task instances were an expression of individual self-regulation failure despite highly unfavourable contextual conditions.

Experiencing self-regulation failures repeatedly can have implications for students' sense of self-efficacy and self-worth. In addition, without access to a cultural 'reservoir' of discursive frames emphasising the potential of relational, ecological and new material ways of viewing the world, students might not 'see' and therefore not seek or enter into helpful and productive relational interactions. It is therefore timely to expand the range of a culturally salient 'reservoir' of discursive heuristics from which a more nuanced individual 'repertoire' can emerge to encompass ideas about the inherent relationality of the human condition (Arendt 1958) or the importance of both agentic capacity and agentic spaces in shaping agency (Biesta and Tedder 2016). Within new generation spaces there can be a range of interpretations of agency. The main contribution of this paper has been to shed light on a disconnect between how students understand the nature of their off-task practices and how they attribute 'blame'. In the process, they reduce contextual nuance and detail and increase the importance of dispositional attributes until the lack of self-control is the gravitational centre around which all other factors revolve.

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