



# Learning to spend time in unusual times: An inquiry into the potential for sustainability learning during COVID-19-induced school closures

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## Abstract

While current research on school closures during the COVID-19 pandemic is predominantly concerned with learning deficits, the exploratory study presented here focuses on the previously neglected question of young people's concrete learning experiences during this disruptive period, with a focus on how they used their time and how this relates to their individual needs. The authors interviewed German secondary school students via Zoom and used a grounded theory approach and a transformative learning theory framework to derive recommendations for environmental and sustainability education (ESE). Their findings highlight two important insights: first, that the predominant focus on academic learning loss obscures a more comprehensive understanding of students' learning experiences; and second, that real-world experiments such as the involuntary school closures during the pandemic may hold the potential to start meaningful, transformative learning processes and experimentation with new strategies for needs satisfaction.

**Keywords** COVID-19 · Environmental and sustainability education (ESE) · Time use · Transformative learning · School · Personal needs

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## Résumé

Apprendre à passer le temps à une époque hors du commun : enquête sur le potentiel d'apprentissage de la durabilité durant la période de fermeture des écoles provoquée par la COVID-19 – Tandis que la recherche actuelle sur les fermetures d'établissements scolaires pendant la pandémie de COVID-19 se penche essentiellement sur les déficits d'apprentissage, l'étude exploratoire présentée ici se concentre sur la question, auparavant négligée, de l'expérience concrète d'apprentissage des jeunes durant cette période de rupture, et plus particulièrement sur la façon dont ils ont employé leur temps à ce moment-là et dans quelle mesure cela répondait à leurs besoins individuels. Les auteurs ont interviewé par Zoom des élèves d'établissements secondaires en Allemagne. Ils se sont basés sur une approche par théorisation ancrée et sur la théorie de l'apprentissage transformateur pour en tirer des recommandations en matière d'éducation à l'environnement et au développement durable. Ces résultats mettent deux points essentiels en lumière : premièrement, que l'importance primordiale accordée à la perte d'apprentissage scolaire obscurcit une notion plus vaste de l'apprentissage comme le vivent les élèves et deuxièmement, que les expériences tentées dans le monde réel, par exemple les fermetures involontaires des écoles pendant la pandémie, recèlent la possibilité de déclencher des processus d'apprentissage utiles et transformateurs, susceptibles de leur permettre d'expérimenter de nouvelles stratégies pour satisfaire leurs besoins.

## Introduction

When German schools were closed in March 2020 due to the COVID-19 pandemic, this led to significant disruption to students' daily lives. Among other things, they spent less time on educational activities than before the pandemic (Wößmann 2020). Educational research has since contributed evidence showing that the exceptional situation caused academic learning losses. At the same time, far less research has been conducted on how students spent their time overall during this period and what non-academic learning experiences they may have had during this time. From an environmental and sustainability education (ESE) perspective, however, such learning experiences could be of great interest. How time is spent to realise and meet individual needs has been a recent focus of research (Grauer 2023). This refers, for example, to the ability to engage in different types of activities without feeling pressured or rushed, in ways that contribute to an individual's well-being (Geiger et al. 2021).

Soon after schools in Germany were closed, we therefore began to inquire into students' time-related experiences. We were particularly interested in young people's learning experiences related to the qualitative aspects of spending time, using a grounded theory approach which allowed us to explore the situation of crisis as it unfolded. From our ESE perspective, our inquiry was guided by the question of how students experienced the radical change in time use during school closures.

Due to contact restrictions, we used Zoom to interview students, teachers and other resource persons. In the process, we came to understand the pandemic as a "disorienting dilemma" (Eschenbacher and Fleming 2020), which led us to interpret

our findings from a transformative learning perspective. Our results show that changes in the qualitative experience of time enabled students to gain insights into their temporal needs. Furthermore, they experienced what we interpret as possible perspective transformation, manifested for example in an enhanced awareness of the connection between individual needs and the organisation of everyday life. Finally, our findings shed cautious light on the fact that young people's learning experiences are contingent on their socio-economic situation, which is supported by other research (Engzell et al. 2021).

Below, we first introduce relevant theoretical concepts and recent research on school closures. Next, we describe our study design and methodological approach before presenting our findings, which we then discuss using the perspective of transformative learning, along with some recommendations for future research. We conclude our article with an overview of the main limitations of our study and an outlook.

## Background

To provide some context for our research, we first briefly review the current state of research on students' school-based learning. Second, we relate this to our theoretical lens of transformative learning, which we suggest as an underexplored framing in this context so far. Third, we introduce the concept of time use competence as a neglected learning outcome when studying the learning-related impact of the school closures.

### School closures and their meaning for education during COVID-19

Much of the educational science research focusing on school closures has found a decline in students' academic proficiencies during the pandemic (Hammerstein et al. 2021; Kuhfeld et al. 2022). One reason, it is argued, is that, on average, students were spending less time per day on school activities than before the pandemic (Andrew et al. 2020; Hanushek and Wößmann 2020). A second reason is that schools were unprepared for switching to remote learning (Forell et al. 2021) and, as a result, students and teachers often lacked the necessary digital equipment and skills. Moreover, many students did not experience conditions favourable to remote learning, such as adequate emotional and academic support from carers and/or a quiet space suitable for daily learning activities (Asanov et al. 2021; Dietrich et al. 2021).

Alongside their academic performance, students' well-being also appears to have declined during the pandemic. Many students reported increased levels of stress, anxiety and depression while feeling isolated during remote learning (Mastorci et al. 2021; Ravens-Sieberer et al. 2021). This was further exacerbated by feelings of powerlessness: young people felt that policymakers neglected the needs of their generation when making decisions concerning them (Andresen et al. 2020; Gabriel et al. 2020). Overall, the evidence is unanimous that children and young people who were

already marginalised and vulnerable before the pandemic experienced disproportionately negative effects on their academic performance and well-being (Dohmen 2021; Lips 2021; Schwartz et al. 2021).

This ties in with evidence showing that not all students experienced learning loss equally (Depping et al. 2021; Gore et al. 2021), and that a minority, especially those living in comparatively favourable conditions, did not experience major difficulties during the phase of remote learning (Bubb and Jones 2020; Levrini et al. 2021). There is evidence that across countries, school closures exacerbated educational inequalities among children from different socioeconomic backgrounds (Betthäuser et al. 2023). While learning loss is indeed of particular concern in the context of rising inequalities in education, we also consider it relevant to widen the focus on learning in the context of the pandemic beyond purely academic achievement. We refer to Gert Biesta who speaks of three purposes of education: qualification, socialisation and subjectification (Biesta 2020). *Qualification* refers to the transmission of knowledge and skills; *socialisation* means enabling students to become active members of a certain society with its socio-cultural and political particularities; and *subjectification* means supporting individual students' development into autonomous subjects with their own sense of being in the world. While these three factors have to be considered in conjunction with each other, Biesta considers subjectification to be the most important factor, since without it, he argues, education would be reduced to approaching learners merely as objects of training rather than as individual subjects (ibid.).

Therefore, while it is undeniable that children and adolescents accumulated academic deficits during the pandemic, we suggest that the focus on academic performance which dominates current education research and policy discourse risks obscuring the other equally important functions of education. Our research addresses this problem by studying young peoples' time-related learning experiences. As we studied these from within the field of ESE, we eventually arrived at applying the framework of transformative learning theory to our findings.

## Transformative learning

Within ESE research and practice, transformative learning is increasingly considered a powerful approach to enable learners to engage critically and reflectively with the global sustainability crisis (Lotz-Sisitka et al. 2015; Sterling 2011). The theory of transformative learning originated in adult education (Mezirow 1978, 2009), but has since become an established learning theory in educational science (Taylor and Cranton 2012) and is becoming increasingly popular in ESE research (Boström et al. 2018; Rodríguez Aboytes and Barth 2020).

Transformative learning is understood as a process through which learners arrive at a permanent change in their frame of reference often triggered by a "disorienting dilemma" (Mezirow 1981, p. 7). This occurs when learners are confronted with a situation in which their existing perspectives no longer suffice to understand what they are experiencing, thus preventing them from devising strategies to solve it (ibid.). Although transformative learning processes do happen in everyday life

(Sterling 2010), there is evidence that certain conditions, such as being provided with opportunities for continuous self-reflection and discourse with other learners within a “safe and accepting learning environment”, make them more likely (Mälkki and Green 2016, p. 169). Transformative learning processes are cyclical and irregular (Alhadeff-Jones 2012) and may therefore happen over longer periods of time. While they can be stimulated, they cannot be induced in a controlled manner, and often only become visible in retrospect. Despite its origins in the field of adult education, transformative learning is by now also an established approach to adolescent learning (Illeris 2014; Meerts-Brandtsma and Sibthorp 2021).

Somewhat similar to Biesta’s critique of schools’ one-sided focus on the qualifying function, Stephen Sterling (2017) criticises what he considers to be an overly instrumental view of education within both educational institutions and education policy. He argues that the narrow focus on academic, quantifiable learning fails to prepare learners for tackling the challenges posed by the many interlinked global crises of today’s world, such as growing social inequality, climate change and related pandemics. Instead, Sterling advocates an overall shift towards an education “nurturing ... individual and collective potential to live well and skilfully in an already complex and volatile world” (ibid., p. 42).

### **Meeting personal needs and spending one’s time**

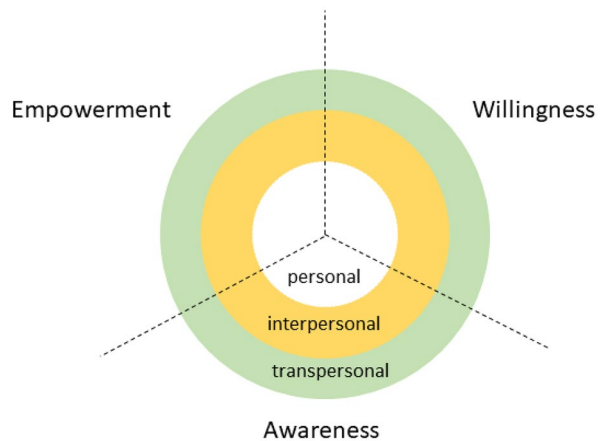
Following previous research on time use and sustainability, we argue that ESE might contribute to this kind of education envisioned by Sterling by promoting the idea of linking time use to individual needs (Frank et al. forthcoming). While individuals’ use of time is always embedded in social contexts, there is also a connection between available time and an individual’s awareness of time-related needs. This in turn influences the ability to use one’s time in line with one’s own and other people’s needs.

However, time use from a sustainability perspective includes more than just meeting one’s own needs. Using time sustainably requires thinking about further ethical, ecological and socioeconomic conditions, and about the needs of other people both today and in the future (Fuchs et al. 2021). It therefore places the focus on individuals’ ability to reflect on their time use and on how it is both influenced by and impacts on the wider socio-ecological environment. This is captured in the recent concept of time use competence:

the ability and willingness of the individual to spend their lifetime in a self-determined and self-responsible manner and to participate in shaping the social organisation of time in such a way that their own needs satisfaction and the needs satisfaction of others living today and in the future are not jeopardised (Frank et al. forthcoming).

The concept (visualised in Figure 1) describes a qualitative approach to the subjective experience of time through its focus on individuals’ needs and their satisfaction. This understanding of time use has influenced the present inquiry into students’ time use and outcomes relevant for ESE.

**Figure 1** Components and dimensions of time use competence (Frank et al. forthcoming)



## Methods

Our research began two weeks after schools across Germany were closed on 17 March 2020. Given that the COVID-19 pandemic was unprecedented and research on its transformative educational potential non-existent at the time, we decided to build our research on a grounded theory (GT) methodology (Corbin and Strauss 2015). This allowed for an explorative inquiry into the phenomenon as it unfolded, as well as enabling us to develop a first theoretical understanding of what was happening in the process. Among the various existing GT approaches (Rupšienė and Pranskuniene 2010; Stough and Lee 2021), Straussian GT seemed to be the most appropriate for our purposes because (1) in contrast to Glaserian GT, it allows for a systematic integration of pre-existing theoretical concepts and technical literature, while (2) in contrast to constructivist GT, it focuses on the phenomenon under investigation without overly focusing on the constructive understanding process of the researchers themselves. Straussian GT (after Corbin and Strauss 2015) remains the most-applied GT approach in qualitative educational research (Stough and Lee 2021) and provides a set of well-developed tools to systematically explore poorly understood phenomena such as the educational potential of the COVID pandemic.

The research was conducted by two research fellows who have several years of experience in the application of qualitative research methods in general, and GT in particular. Our research design comprised an iterative process of data collection and analysis.

## Data collection

Data collection was conducted during two phases: the first from early April to October 2020 and the second between March and April 2021. Schools in Germany gradually reopened in May 2020. When a second phase of school closures began in December 2020, we conducted more interviews to compare secondary school students' experiences during the two phases. We were particularly interested in hearing

the perspective of students and teachers from so-called “democratic” schools which place a greater emphasis on students’ autonomy over their time compared to regular state schools. While most state schools in Germany have fixed start and end times and structures such as timetables which specify certain times for specific activities, free or democratic schools operate differently in that only the start and end times of the school day are pre-specified; during the day, students can decide freely what they want to engage with. This approach aims to strengthen students’ autonomy over their own time use.

Recruitment was initially based on professional contacts from previous research activities. In the process it became driven by theoretical considerations to further diversify the sampling (theoretical sampling). Data were collected primarily via individual and group interviews conducted via Zoom. Individual interviews lasted on average 53 minutes; focus group interviews on average 70 minutes. Audio tracks were recorded and transcribed verbatim by three student assistants. To structure the interviews, we developed and used interview guides,<sup>1</sup> but allowed deviations if the conversation went in new directions. Interview participants were selected to cover different types of schools (see Table 1) and diverse socioeconomic backgrounds.

We interviewed 66 people (see Table 1). We obtained informed consent from all participants (or their guardians in the case of under 18-year-olds) prior to the interviews. Interview data were complemented by online materials collected throughout the research process, such as newspaper articles, student and teacher podcasts and blogs about young peoples’ experiences and perspectives on school closures, time and/or sustainable consumption. Following Juliet Corbin and Anselm Strauss’ (2015) advice on how to integrate such non-technical sources, we used these materials for comparison with our data, to sensitise ourselves to novel nuances with regard to our research question, to advance our data analysis and verify our findings, and as a recruitment source for further interviews.

We are aware that our interview sample lacks size, scope and diversity. It includes 42 students<sup>2</sup> from mostly socioeconomically privileged backgrounds, despite our attempts to recruit young people from more vulnerable backgrounds. Although we also interviewed teachers and social workers working with socioeconomically disadvantaged youth, their third-person perspective is not an adequate substitute for students’ direct voices.

## Data analysis

Data analysis began immediately after the completion of the first interview. Following Corbin and Strauss’ (2015) recommendation, we began with line-by-line analyses and open coding of the first interview transcripts to familiarise ourselves with the data and develop the first *ad hoc* ideas of the phenomenon under investigation. Subsequent interviews were also subjected to (partial) line-by-line coding and open coding,

<sup>1</sup> The interview guides are available in both German original and English translation at <https://doi.org/10.48548/pubdata-82>.

<sup>2</sup> At the time of conducting the interviews we did not ask for participants’ gender.

**Table 1** Interviewees per school type, grade and geographical location

Category	No. of interviewees	Interviewees per school type	Grade <sup>1</sup>	Single person (SP) vs. Focus Group (FG) interviews <sup>2</sup>	Geographical range (federal state)
<b>1st interview phase (March 2020–October 2020)</b>					
Students	37	grammar school <sup>3</sup>	22	SP: <i>n</i> = 1 FG: <i>n</i> = 22 (3 groups)	Hamburg, North Rhine-Westphalia
			12	SP: <i>n</i> = 1 FG: <i>n</i> = 11 (3 groups)	Schleswig-Holstein; Lower Saxony, Baden-Württemberg
Teachers	11	middle school <sup>4</sup> grammar school	1	SP: <i>n</i> = 1	Hamburg
			2	SP: <i>n</i> = 2	Baden-Württemberg
			7	SP: <i>n</i> = 7	Hamburg, Lower Saxony, North Rhine-Westphalia Schleswig-Holstein
		vocational training school	2	SP: <i>n</i> = 2	North Rhine-Westphalia
		comprehensive school <sup>5</sup>	2	SP: <i>n</i> = 2	Hamburg, North Rhine-Westphalia
School principal	1	comprehensive school	1	SP: <i>n</i> = 1	Hamburg
Parents	3	grammar school	3	SP: <i>n</i> = 3	North Rhine-Westphalia
Social workers	2	private pedagogical agencies		SP: <i>n</i> = 2	Lower Saxony, Hamburg
other resource persons	2	representatives of education networks		SP: <i>n</i> = 2	Hamburg
<b>Sub-total</b>	<b>56</b>				
<b>2nd interview phase (March–April 2021)</b>					
Students	5	grammar school	1	FG: <i>n</i> = 3	Lower Saxony
			1		Lower Saxony
		vocational training school	1		Lower Saxony
		free/democratic school	2	SP: <i>n</i> = 2	Saxony
Teachers	3	comprehensive school	1	SP: <i>n</i> = 1	Hamburg
		free/democratic school	2	FG: <i>n</i> = 2	Baden-Württemberg



**Table 1** (continued)

Category	No. of interviewees	Interviewees per school type	Grade <sup>1</sup>	Single person (SP) vs. Focus Group (FG) interviews <sup>2</sup>	Geographical range (federal state)
Parent	1	free/democratic school	1	SP: <i>n</i> = 1	Baden-Württemberg
Social worker	1	free/democratic school	1	SP: <i>n</i> = 1	Saxony
<b>Sub-total</b>	<b>10</b>				
<b>Total no. of interviewees</b>	<b>66</b>				

Notes:<sup>1</sup>Grades indicate an age range: grade 8: 13–14 years; grade 9: 14–15 years, and so on.

<sup>2</sup>If not specified, all interviewees in this section were interviewed individually.

<sup>3</sup>Grammar school comprises lower and upper secondary school.

<sup>4</sup>Middle school includes *Realschule* and *Werkrealschule*.

<sup>5</sup>Comprehensive school includes *Stadtteilschule* and *Gesamtschule*.

accompanied by ongoing discussions about data interpretation within the research team.

Data were analysed by individual researchers while engaging in an ongoing discussion process within the research team to enhance validity (Flick 2014; Reichertz 2013). We occasionally invited external experts from both academia (e.g. a university lecturer) and practice (e.g. teachers) to our interpretation meetings, allowing for a transdisciplinary range of perspectives through “peer-debriefing” (Flick 2007, p. 500) and “member check[ing]” (ibid., p. 501). Once we decided we were nearing theoretical saturation, we began a process of axial coding during which we sought to identify similarities, relationships and contextual factors between the single codes and refine these into a narrow set of core categories. For instance, we formed the category “time-related learning experiences” based on codes such as “self-care”, “(learning to) self-motivate”, “(being able to) work independently” and “teaching oneself new curricular content”, all showing students’ approaches to shaping their time in a way that allowed them to follow remote learning.

In a final step, we discussed global interpretations of our findings. This step included a process of theoretical matching in which “the evolving theory is confronted with other existing theories” (Goldkuhl and Cronholm 2010, p. 197). This led us to draw upon transformative learning as a theoretical framework for interpreting students’ learning experiences.

## **Results: how German students experienced the radical change in time use during pandemic-induced school closures**

Below we present the results of our study. Responding to our research question, we argue that the radical change in time use during pandemic-induced school closures brought with it important learning experiences for students with regard to the pedagogical purposes of ESE. We begin by describing students’ learning experiences throughout the disruption caused by school closures. We then argue that these learning experiences are dependent on a variety of influential factors. More specifically, we present six contextual factors that were shown to be relevant in connection with the learning experiences described.

### **Learning experiences related to disruption of routines**

We believe that, from an ESE perspective, students’ time-related experiences resulting from the pandemic-induced school closures can be interpreted as important learning processes. We identify three types of learning experiences that students had. These are: (1) Awareness of time-related needs; (2) Experimentation with time use; and (3) Perspective transformation (see also Table 2).

**Table 2** Overview of students' learning experiences

Learning experiences		Strategies
<b>Awareness</b>	Developing initial responses to disruption in routines	Realising the differences between prior routines and newly gained autonomy over time
<b>Experimentation</b>	Developing time management skills	Adjusting sleeping patterns
	Developing individual needs-based routines	Realising the need for externally provided time-structuring aids
		Creating individual work plans and schedules
		Organising daily routines according to individual preferences
		Adapting leisure activities to home environment
		Spending more time with family
		Socialising via electronic media
<b>Perspective transformation</b>	Changing mental models and worldviews	Restructuring of daily routines by prioritising individual needs
		Re-evaluating individual ideas about the goal of education
		Appreciation of "small things"

## Awareness of time-related needs

School closures during the pandemic caused significant disruption to students' daily routines. Whereas these had previously been dictated by the school day, students now had to structure their daily routines themselves. In response, students deployed different strategies to deal with the unfamiliar autonomy over their time. While they experienced this situation as stressful, it also taught them to better understand their time needs.

The first few weeks, especially, were described as difficult. Because most schools were not prepared at this stage to switch to remote learning, students felt left alone and missed support and guidance from their teachers and institutions:

“I think the first 1.5 weeks were really difficult. We still had to do a few tests, and I panicked about whether they would be happening or not. And I still had this big portfolio to submit (...) and you were like ‘but I am going to take my final exams next month, please leave me alone’” (SuS1; grade 12).<sup>3</sup>

Students reported that the sudden disruption, which left them with an unprecedented degree of autonomy over their time, made them realise and appreciate the structure their school-related rhythms had provided:

“When I went to school, my daily routine was very structured (...). I got up, went to school, returned home, ate something, did my homework, took a shower and went to bed. Now it's more like, I hardly have an overall perspective. I don't really know what to do every day” (SuSFG4\_SS1; grade 9).

Some students, however, initially welcomed the unforeseen break:

“All of us were quite happy about [the school closure] (...), it was a bit like holidays (...). Shops weren't all closed yet, and it was somehow like normal life, only without school” (SuS3, grade 11).

During the following weeks, however, students began to respond to the disruption by settling into individual routines. One main change that all students reported was the opportunity to adapt their sleeping patterns according to individual preferences. Most students said they enjoyed sleeping longer:

“What I really like about Corona is being able to sleep in. During school, I normally get 6 or 7 hours of sleep and now, if it's only 8 hours, I think, boy, I really didn't sleep well” (SuSFG4\_S2; grade 9).

Yet a few also reported that they appreciated beginning school assignments even earlier during remote learning: “I actually prefer my day here at home, because I am an early riser, and I can concentrate a lot better in the morning” (SuSFG1\_S1; grade 11).

<sup>3</sup> The interviews were conducted in German. We have translated them here for the purposes of this article.

However, apart from starting the day on their own, most students found it difficult to adjust to a routine of their own devising. Those who indicated that they found this particularly difficult said that they were only now realising how much they needed the structure provided by the school's timetable:

“So, I am waiting for school to begin again. I notice that it is better for me if I have a certain structure, and a timetable and clear requirements for when to complete which assignment. (...) So, there are those who say ‘hey, it’s great when you can do what you want to (...)’, but if I am honest, I miss having this kind of structure, I need this structure” (SuSFG2\_S1; grade 11).

While the students reported struggling to varying degrees with the need to organise their school assignments and daily routines themselves, only one reported feeling unable to handle the situation at all. The others reported experimenting with and eventually settling into different kinds of routines and time structures, as we show in the next section.

### Experimentation with time use

One major factor impacting on students' time-related experiences was the need to autonomously organise the completion of assignments during the *ad hoc* transition to remote learning. Creating routines to tackle and complete school-related assignments had a major impact on how students shaped their daily lives, because it required them to balance schooling with other tasks such as helping in the household and leisure activities. In the process, students reported time-related learning experiences which we grouped into two main categories: (1) developing time management skills; and (2) developing individual needs-based routines.

Suddenly having to organise their learning themselves, students were faced with the challenge of working out how to complete their assignments in a structured way. While they appreciated adapting their sleeping patterns to their individual needs, many still reported maintaining a routine resembling the familiar school day: “I usually set my alarm for 8 a.m. so that I can do my schoolwork in the morning and can have more free time afterwards” (SuSFG2\_S6; grade 11). Furthermore, students attempted to organise their learning via different forms of daily or weekly schedules.

Within the first few weeks after schools closed, most schools began to send out assignments in a more systematic manner, either uploading content on cloud-based platforms or sending out work plans and materials via e-mail. Students learned to organise their work accordingly, but many also reported adjusting the schedules according to their own time-related preferences, such as this student:

“I am making my own plan [rather than using the one provided by the school] because if I didn't, I would finish everything last minute, and that wouldn't be very positive” (SuSFG2\_S5; grade 11).

Others learned how to pace their assignments and thus stay motivated:

“So I've started to write lists, to-do lists, and at the beginning I always thought this was useless. But since I do that and then also check off the things, (...)”

I find that (...) I have just the motivation to do more and actually I also take more breaks in between and do not do everything at once (...)" (SuSFG5\_S5, grade 9).

With contact restrictions in place and most shops closed, students reported boredom as a major challenge, next to the need to self-structure: "You spend most of your time inside and maybe you read, but my everyday life is pretty boring" (SuSFG5\_S4; grade 9). Even those who initially welcomed school closure reported that over time their dissatisfaction with the overall situation grew: "At the beginning I thought yes, it's just relaxed, you can do everything from home and so on, but I noticed relatively quickly that I was getting cabin fever (...)" (SuS2; grade 9).

In response, students quickly began to find ways of adapting non-educational activities to their home environments, developing needs-based routines which allowed them to complete school assignments while also making room for leisure activities such as sports or music practice, spending more time with their immediate families, and socialising through electronic media. First, students often adapted activities they had previously pursued outside the home to the domestic context, e.g. replacing team sports like football or hockey with playing alone or with siblings in their gardens. Exercising was an important part of virtually all students' daily routine during school closures: "When I used to go to football training [before the pandemic] I didn't go running that often. Now I go for a run almost every day" (SuSFG5\_S3, grade 9). Students also reported spending more time on other hobbies than before the pandemic, such as reading, gaming or playing music:

"I can still play my instrument over Skype. I play the drums so I can continue to do that with my teacher and I noticed that I now somehow play the drums a lot more, and I actually go running or watch a series or read a book" (SuSGF1\_S2; grade 11).

Some even said they had resumed activities they had neglected before, such as drawing, or begun to teach themselves new skills, such as juggling or playing the ukulele. A few indicated that they felt prompted to become creative while battling boredom: "Somehow my sister and I felt bored and then we would always bake something nice" (SuSFG4\_S4; grade 9). One student explicitly related that boredom made her become more creative:

"You do things that you always wanted to do but have delayed forever, for example, rearrange your room, clean out your room (...) dye your hair. So that usually comes to mind when you're bored, then you become more creative" (SuS5, grade 10).

We also observed that students reported spending more time with their families than before school closures. This was mainly due to contact restrictions which meant that students were initially unable to meet with friends outside of their homes. Almost all the students we interviewed reported that they perceived the increase in time spent with their families as mostly positive. They welcomed the opportunity to spend more time together compared to pre-pandemic life when, during the week especially, family members all had busy schedules and often would not see each other regularly:

“What I find definitely better is that I do a lot more with my family, because before we never had the time because my father either has early or late shifts” (SuSFG 4\_S1; grade 9).

None of the students reported major conflicts at home; only a few mentioned that they were having arguments with their siblings or parents more often: “Because my parents are both working from home now, we see each other much more often (...) and then to be alone you just try somehow to get out of the house (...) you stay in your room” (SuSFG5\_S3; grade 9).

A major pastime for students was cooking or baking, partly out of boredom, but also because of a gain in free time:

“So, I would say that I try to cook more often by myself, simply because I can do it in my free time and actually have fun doing it. Before [the pandemic] I didn’t have the time and now I take my time to cook or bake more often alone and also together with my mother” (SuSFG5\_S5, grade 9).

While students mostly enjoyed spending time with their families, they also reported missing their friends and peers. For many, electronic media had become important for socialising and staying in touch with friends and family. Students often self-critically mentioned the increase in their screen time, while emphasising the beneficial aspect of socialising: “So I was gaming (laughs). A lot. But this enabled me to stay in touch with my friends. (...). Whether this is bad or not, I don’t know, but I needed something to do, right?” (SuS4; grade 10). Overall, however, media use served as a means of battling boredom and staying in touch with other young people.

“[M]y screen time, both computer and cell phone, has increased by quite a bit, which of course is actually not so positive. But (...) I’m not only on the screen to watch videos and play (...) there are also games and that’s also a form of community, that you don’t just talk and sit there, but also somehow play something or can laugh together and that’s valuable again” (SuSFG2\_S7; grade 11).

### **Perspective transformation: Changes in time use leading to potentially transformative experiences**

Transformative learning experiences describe the change of mental models in response to a disorienting dilemma. In our research, we observed three kinds of learning experiences which we consider at least potentially transformative – perhaps because our data only map a particular point in the young people’s lives. These learning experiences are: (1) being able to autonomously organise one’s time in line with one’s individual needs; (2) re-evaluating one’s understanding of the purpose of education; and (3) an appreciation of aspects of life that had previously been taken for granted.

A few students spoke about preferring the autonomy they enjoyed during school closures over their regular school routine, because it allowed them to organise their day fully in line with their individual needs. For these students, school closures actually brought about benefits to their well-being:

“For me personally [school closure] is quite nice. I am an absolute late riser, so I will now get up at 11 a.m., do my homework during the afternoon or evening, can plan my time as I want to, and this is a lot better for me. I am also out and about a lot more. I enjoy fishing, and so you’ll go to some fishing pond, or play the guitar, exercise; this works a lot better now without the fixed model of school” (SuSFG2\_S3, grade 11).

Other students, too, reported having experienced the freedom to complete tasks more autonomously as a positive contrast to the timetable-governed school routine:

“What we liked was that you could organise your time individually. So you knew okay, I’ve got an assignment today, that will take me about this long, and I have to hand it in in a week, at 6 p.m., at 8 p.m. And then you have a whole week to complete it (...), so you can decide will I do it now, in the morning, or will I do it in the afternoon, depending on when I can concentrate better” (SuSFG6\_S1; grade 11).

A second kind of perspective transformation concerned students’ perception of schooling and academic performance. The freedom to pace their assignments more flexibly gave some students more clarity on their academic interests:

“What I also learned was (...) which subjects I really like (...) because when I have like ten assignments, I realise, okay, this one is what I am in the mood for right now. (...) I feel the motivation (...) and with other subjects, okay, I notice I don’t feel like doing it now” (SuSFG2\_S1; grade 11).

One student even spoke about how the freedom to shape her own routine resulted in her re-evaluating her ideas about the goal of education:

“I would say that my understanding of achievement has changed, because of what some friends, who used to have problems following in class, told me. They preferred having the chance to work at a slower pace better and to ask questions individually without everyone noticing (...). So, this changed my view of (academic) performance, which should not mean doing everything super well, but just in a way that everyone manages to understand everything” (SuSFG6\_S1; grade 11).

Finally, students also reported having gained new appreciation for previously unnoticed aspects of their lives, such as certain forms of freedom previously taken for granted:

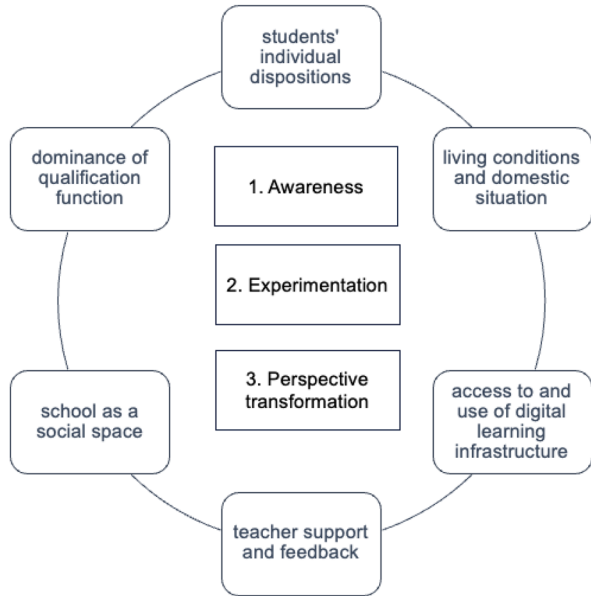
“[O]ne should have appreciated more that one was just so free [before the pandemic] (...) now one realises that it was a privilege to go where you want when you want and for as long as you want” (SuSFG3\_S5; grade 11).

They also reported having learned to appreciate their immediate surroundings and the benefit of slowing down from a previously more hectic daily life:

“Yes, you generally learn to appreciate things more, just to go out or walk – I think I’ve actually gone for a walk every day. That you learn to switch off,



**Figure 2** Students' learning experiences, embedded in relevant contextual factors



so to speak, just to get your head free and generally be happy about the little things, just to get out, to switch off, etc.” (SuSFG1\_S1; grade 11).

One student reported that having more time for themselves increased their self-confidence: “I would say that I have also somehow become more self-confident, because I have had more time to deal with myself” (SuS8; grade 8). Another shared how they learned to slow down due to the changes in routines:

“I also really learned to slow down a bit. There’s always been a lot to do in school and now you are sometimes free to say okay, now I’m going to chill (...). (...) I was also able to try out new things because of COVID, things where I previously thought ‘oh God, I don’t like that at all’, and suddenly I really like it” (SuSFG4\_S2; grade 11).

**Contextual factors relevant to students’ learning experiences**

Notwithstanding the educational potential of the pandemic-induced school closures identified above, it is important to emphasise that not all students shared these learning experiences or conceived of their individual experiences as pedagogically valuable. Instead, we found that a series of factors affected both what kind of experiences students had in this period and how they interpreted them. More specifically, we identified six contextual factors which appeared relevant to students’ learning experiences: (1) students’ individual dispositions; (2) family and living conditions; (3) access to digital learning infrastructure; (4) teacher support and feedback; (5) school as a social space; and (6) schools’ focus on their qualification function. Figure 2

shows these as forming the context for the learning experiences described in the section entitled “Learning experiences related to disruptions of routines”.

### **Students’ individual dispositions**

Unsurprisingly, students who reported having little difficulty organising themselves before the pandemic encountered the least difficulties in switching to distance learning. Young people with an individual disposition towards self-organisation thus seemed to have an advantage over others during a time when there was little external support.

Conversely, students who struggled with establishing a routine resembling their regular school day felt unable to draw clear, time-related boundaries between time spent on school-related tasks and leisure at home:

“I no longer have fixed times for doing homework. Before, you would go to school (...) and did other things during the afternoon and now it mixes throughout the day (...) so that during the entire day (...) it mixes and there are no longer any boundaries” (SuSFG2\_S1; grade 11).

### **Living conditions and domestic situation**

A second relevant factor was students’ living conditions. All participants were living in single-family homes or apartments with gardens, either in villages or in parts of towns or cities where they could spend time outside in parks or other green spaces. All had their own rooms, and none reported having to spend considerable amounts of time taking care of housework or younger siblings. Most also reported that conflicts within their families had not increased significantly while staying at home, and even said that they enjoyed spending more time with their families than in pre-pandemic times. By contrast, teachers and social workers reported a correlation between students’ socioeconomic background and their academic performance. For instance, students whose parents were unable to provide support during distance learning, for various reasons, were more likely to perform poorly or fail to complete any assignments at all.

“[Some] completely lost their sense of time (...). They got up at noon, or 1 p.m., and I taught my biology class via Zoom (...) it was compulsory at first, but eventually I made attendance voluntary because I was tired of (...) watching the students in their beds. (...) I think the majority of those who didn’t have parents who made them get up earlier pretty much lost their sense of time” (LuL12).

### **Access to and use of digital learning infrastructure**

A third factor is digital learning infrastructure. This refers to access to digital devices as well as using digital communication and learning platforms for school assignments. Regarding devices, almost all students in our sample reported having access to either a tablet, a laptop or a desktop computer. However, the majority had

difficulties communicating with teachers and schools electronically because when schools closed, most had not yet rolled out any digital learning platforms. Where these were available, students reported teething difficulties in using them:

“[It] was a total catastrophe during the first weeks because every teacher would just write something into any module and then you got another e-mail saying, ‘here are some assignments for you’ (...) and then you would not find them and they were hidden in some sub-folder. That really drove me crazy” (SuSFG2\_S3; grade 11).

After the first few weeks, students reported, teachers developed certain routines, resulting in better communication and organisation of assignments. But the degree to which teachers provided support to students varied considerably from one teacher to another.

### **Teacher support and feedback**

During the time of remote learning, teacher support meant teachers’ availability through digital communication channels. It also included the frequency and depth of feedback that students received on their assignments. When students felt that their teachers did not respond promptly, or did not return feedback, this had a negative effect on their motivation to complete further assignments. Experiences were mixed, with students reporting that some teachers were committed to giving feedback while others were hardly reachable. However, students also described situations in which they found their teachers particularly helpful in handling a situation of crisis and insecurity, communicating on a personal level rather than insisting purely on learning content:

“We meet twice a week [via Zoom] and we always make a quick round (...) and everyone chats a bit and this was super important so that you notice you are not alone, and also that teachers changed from just giving us assignments to start looking at how we are feeling and reacting to this” (SuS1; grade 12).

### **School as a social space**

A fifth contextual factor is the role of school as an important social space. Once schools closed, it seemed that young people realised this for the first time. With contact restrictions in place which prevented them from meeting their friends outside of school, participants shared what school meant for them beyond learning: “[I miss] being with 20 people in the same room, instead of looking at them on my screen, or just walking through the school and meeting people there” (SuS1; grade 12). Next to socialising, students also realised the importance of their peer group for the learning process:

“I find it difficult now because you have to do your assignments by yourself. Maybe at school you would have split assignments with others, or you would help each other, and this is no longer possible.” (SuSFG5\_S6; grade 9).

Some students reported having self-organised messenger groups to discuss assignments and request help among their peers, but hardly any such spaces to support group learning were created by schools.

### **The dominance of the qualification function of education**

A sixth factor was what we call the dominance of the qualification function of schools. Because schools seemed mainly concerned about students' academic performance, students feared the potential negative consequences of missing out on curricular content.

“I don't like missing so much school because with remote learning we will never be able to catch up with what we missed, and maybe this will be a future disadvantage for us” (SuSFG4\_S6; grade 9).

Most students did not, however, seem to receive any feedback acknowledging their ability to cope with a stressful situation. This may have limited students' abilities to turn their focus to the skills and insights they were gaining through overcoming the challenges associated with school closures.

### **Discussion: the transformative potential of students' time-related experiences during school closures**

Our study offers insights into how students experienced the disruption to time structures caused by pandemic-induced school closures. Next to feelings such as fear, anxiety and boredom, students soon began to acknowledge certain time-related needs and develop various learning experiences related to time use. Our findings therefore complement existing research on the impact of the COVID-19 pandemic on young people which to date seems to be rather deficit-oriented, focusing on the negative impacts of the pandemic on academic proficiency, well-being and mental health. While this is of serious concern, our study offers an additional angle by highlighting young people's non-academic learning experiences which have so far been underexplored.

Our findings show that students report a range of time-related learning experiences. However, these have been insufficiently addressed in previous educational research and policy discourse during and after the pandemic, where the focus has been predominantly on young people's learning deficits. Here, we pick up Biesta's observation that schools seem to focus too strongly on their qualification function at the expense of both socialisation and subjectification (Biesta 2020). This has been reiterated by other recent studies (Estellés and Fischman 2023; Levrini et al. 2021). According to Marta Estellés and Gustavo Fischman (2023), who examined the narrative of “safety” in school learning during the pandemic in Aotearoa New Zealand, the excessive focus on qualification may have contributed to denying students the opportunity to experience safe relationships with teachers and other educational professionals. While this can be explained by the stakeholders' desire to protect young people in a time of unprecedented societal disruption, the authors nevertheless

evaluate it as neglecting the need to accompany students' socio-emotional learning processes during what was an unprecedented crisis. Accordingly, Andrea Husong et al. (2021) recommend looking at the individual strengths and resources that young people mobilised during this challenging time instead of looking predominantly at deficits.

Here, we wish to reiterate the value of reflecting on students' time-related learning experiences by drawing on the concept of time use competence and the emphasis this puts on the qualitative aspects of time use. By connecting time use to learners' individual needs, the concept of time use competence connects students' learning experiences with recent theoretical and conceptual work in ESE such as that on transformative learning. As we have shown, we consider students' learning experiences as potential starting points for perspective transformation, although we are aware that this interpretation is limited because we have not studied students' experiences under a longitudinal research design which would be necessary to describe such transformations retrospectively rather than selectively. We do, however, consider students' insights into their time-related needs and reflections on needs-oriented time use to be highly relevant in the light of recent work on transformative ESE, which aims to enable learners to use their own resources to tackle sustainability-related challenges (Sterling 2011; Walshe and Sund 2022).

One implication of our study is therefore that insights from ESE research and practice might be helpful for formal education policy, suggesting approaches to better prepare learners to cope with crises and the uncertainty that they bring (Gardiner and Rieckmann 2015; Scoones and Stirling 2020). ESE's well-researched theoretical and practical insights into pedagogical approaches that empower young people (Tauritz 2019) might thus be adapted by "post-pandemic" educational settings.

At this point we would like to add that while we consider students' experiences potentially transformative, this needs to be contextualised by an age-sensitive lens. Participants in our study were adolescents aged 14 to 20, meaning that they were going through a phase in their lives characterised by a variety of personal challenges. These include biological developments such as brain development and bodily changes, socio-psychological processes such as identity formation, establishing peer group affiliations and gaining independence from parents, and developing an individual personality with interests, beliefs, and so on (Smetana et al. 2006). All of these developmental tasks were empirically shown to be highly salient for German youth within the age cohort we studied (Seiffge-Krenke and Gelhaar 2008). The severe disruption of the COVID-19 pandemic on top of the disruption already occurring in these young people's lives due to these developmental processes makes it unsurprising that adolescents were especially impacted by the pandemic, with vulnerable youth being affected disproportionately (Benner and Mistry 2020).

Given young people's comparatively volatile state, our findings need to be considered in a wider context. We do not claim that the learning experiences we describe are likely to have long-term effects. This would require a different research design. However, given that adolescence may also be considered a phase of potential, we think it possible that the time-related experiences students reported may have a longer-term effect, or at least deserve to be considered as valuable learning experiences and thus complement the predominant discourse which focuses on learning

deficits. We believe it to be important from a transformative learning perspective to acknowledge young people's learning experiences related to their everyday experience of time, thus widening the perspective on learning beyond a purely academic understanding (see Illeris 2014).

### **Recommendations for future ESE research**

Our research presents an initial inventory of learning experiences that students have had as a result of the disruption to their daily lives during the pandemic. It thus complements the prevailing narrative of the learning deficits that students accumulated during this period. We see potential in our study for future research in both educational science and ESE.

We were particularly interested in young people's time-related learning experiences. However, several other learning experiences could also be explored. Some statements from our interview participants suggest that they gained skills such as increased self-confidence, or that they became clearer about their own interests and priorities. Future research could therefore continue to address the question of what kinds of non-academic resources and insights the current generation of students developed during the pandemic and how this can be linked to academic learning in school settings.

Furthermore, we identified six contextual factors that had a significant impact on students' experience of the disruption caused by school closures. We see potential for future research to inquire further into the links between students' learning experiences and their individual contexts, in terms of both individual traits and socio-economic and educational conditions.

Finally, a connection can be made here with the concerns of ESE, which is increasingly addressing the question of how to pay attention to individual and collective needs, for example by enabling individuals to find greater harmony between their own and societal rhythms.

### **Limitations**

Concluding this section, we would like to elaborate briefly on two limitations we consider relevant for our study.

First, our findings are mainly based on individuals' self-reports and thus have to be interpreted with caution since the responses are individuals' interpretations rather than objective representations of their experiences (Silverman 2017). Moreover, there is controversy over how far young people's developmental capacities may affect such research since their reflective abilities are not yet fully developed (Schelbe et al. 2015). We do, however, consider young people "as articulate commentators of their social world" (Meloni et al. 2015, p. 107).

Second, we cannot rule out that the interview setting may have influenced participants' responses. We used Zoom rather than an in-person setting, although recent evidence suggests that data quality is not negatively affected by the use of video conference software (Archibald et al. 2019; Jenner and Myers 2019). Moreover,

using Zoom and similar software for qualitative research has become an established research practice during the pandemic (Howlett 2022). The presence of two adult researchers as interviewers may also have affected students' responses, as well as the fact that students who took part in focus groups were randomly assigned to these. Both of these factors might have caused feelings of fear or intimidation while speaking about personal experiences in front of others.

## Conclusion

Unlike much current educational research, which focuses on learning loss during the COVID-19 pandemic, our study shows that there is another perspective. By broadening the focus from academic performance to young people's everyday lives, our results offer insights into how students responded to the disruption of their usual routines by developing new, individual needs-based routines. The COVID-19 crisis has shown that societies are ill-prepared for and vulnerable to large-scale disruptive events such as pandemics. This particular pandemic can be seen as part of another, much larger contemporary crisis: the global environmental crisis, including climate change, both of which have been deemed "wicked problem[s]" (Engler et al. 2021). Our study is therefore relevant to both ESE and general education research and practice, as we believe that multiple lines of connection can be drawn between students' experiences during the pandemic and ESE's concern with helping learners cope with sustainability-related crises.

The perspective of non-academic learning may help to bring together the school functions of socialisation and individualisation alongside that of qualification. By giving students the feedback that learning is more than just academic potential, they can become aware of the resources they bring to the table based on their individual dispositions. We believe that this is highly relevant to the current climate, in which there is a need to equip learners with skills to address the sustainability crisis.

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