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Norwegian students' experiences of homeschooling during the COVID-19 pandemic

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ABSTRACT

Norwegian teachers and school leaders had to organise and provide homeschooling for their students from March to May 2020 due to the COVID-19 pandemic. A survey conducted in May 2020 examined lower secondary school students' experiences of distance learning. How students at different levels of academic achievement (based on grades) experienced homeschooling was compared to comparable findings from a survey conducted on students from the same schools during the autumn of 2018. The findings indicate that students experienced less support and feedback from their teachers during homeschooling, and that teachers gave more written than oral feedback to the students during homeschooling than they do in regular school. Furthermore, there was a tendency of lower efforts and self-efficacy among low-achieving students, which might be difficult to reverse when schools reopen. The findings raise growing concerns about homeschooling leading to a larger gap between high- and low-achieving students in lower secondary school.

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COVID-19; homeschooling; effort; self-efficacy; student–teacher relationship; academic achievement

Introduction

All schools in Norway were locked down 12 March 2020 due to the COVID-19 pandemic. In the following two months, teachers and school leaders had to organise and provide homeschooling for their students. Teachers were not prepared for such an extraordinary situation, even though Norway has been a front-runner when it comes to equipping schools with information and communication technology (ICT) (OECD 2015). A video study on the use of ICT in Norwegian classrooms found that the repertoire of teachers' use of ICT was very limited (Blikstad-Balas and Klette 2020). Likewise, findings from a study conducted in April 2020 indicated that a great majority of teachers in Norway, as well as in the US, did not have any experience with online teaching prior to the crisis and was unsure of how to follow up with the students (Gudmundsdottir and Hathaway 2020). This led to a demanding situation for teachers, who had to learn new ways of teaching, and at the same time make sure to follow up and support each individual student remotely.

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A broad range of research findings indicate that parents' ability to support their children's schooling has an impact on their school achievement (Hill and Tyson 2009; Jeynes 2007). However, neither Norwegian nor Danish parents were prepared for the abrupt change to homeschooling, which required them to support their children's schoolwork while, in the case of many parents, working remotely from home (Frøjd and Larsen 2020; Qvortrup et al. 2020). Due to this extraordinary situation for both teachers and parents, concerns about the inclusion of vulnerable children in the transition to homeschooling were frequently discussed in Norwegian media (Braathen and Sørgerd 2020; Støen, Evertsen-Stanghelle, and Fandrem 2020).

A majority of the schools in Norway reallocated resources during the period of homeschooling to assist teachers in the process of following up vulnerable students, and both teachers and school leaders reported frequent contact with students and their parents, mostly through digital channels (Federici and Vika 2020). Alongside the importance of classroom emotional climate (Danielsen et al. 2009; Reyes et al. 2012), a supportive relationship between teachers and their students seem to be important for students' academic achievement (Hamre and Pianta 2001; Roorda et al. 2011). Likewise, the influence of teachers' feedback on students' self-efficacy and academic achievement are well established (Klassen 2010; Schunk and Pajares 2002). However, preliminary findings from research in progress (Frøjd and Larsen 2020) indicate that more than 70% of the students in lower secondary school communicated with their teachers on a daily basis, while 54% of the students in first to fourth grade had contact with their teachers 2–3 times a week or less. Another Norwegian study found that more than 40% of secondary school students experienced that they did not learn as much during homeschooling as they would have in regular school (Bakken et al. 2020). Feedback and support from their teachers is important for all students. However, extra instructions from their teacher and the ability to ask for help seem to be especially important for low-achieving students with different kinds of learning problems (de Boer and Kuijper 2020). Based on this knowledge, infrequent contact between teachers and the youngest students during the period of homeschooling is of particular concern when it comes to low-achieving students in need of extra support and feedback to manage their schoolwork.

While teachers and school leaders made an extraordinary effort to support their students, few studies have investigated how students experienced homeschooling in Norway or elsewhere. There is limited knowledge of how students experienced remote learning, and how different groups of students experienced support from their teachers. Knowledge about this event will give insight into how different groups of students experience strenuous long-term learning situations such as homeschooling, and indirectly gives an indication of how teachers manage to respond to their needs. The findings of this study will be particularly important if new periods of homeschooling are required, or if remote teaching for some students (e.g. due to medical conditions) will be developed based on the experiences of homeschooling.

In this paper, we present findings from a Norwegian survey to examine students' experiences of remote learning through homeschooling during the two-month school lockdown, and we compare students' experiences of the lockdown with regular schooling based on another survey carried out one and a half years earlier (Nordahl, forthcoming). The students completed the current survey during the period 11 to 25 May 2020, which

coincided with the gradual opening of schools for students in these grades. The students are grouped based on their grades, an indication of academic achievement. While the full survey study includes students in fifth to tenth grade, only students from eighth to tenth grade (lower secondary school) have been included, as grades are introduced at this stage in their schooling.

Academic achievement in the form of self-reported grades is a relatively non-invasive approach when students themselves complete a questionnaire. We do not have any information on special needs of students, but there is reason to assume that the low-achieving students are more likely to struggle with their schoolwork and be in need of more help and support from their teacher than middle and high-achieving students during ordinary schooling (Jönsson 2018). The lockdown during the pandemic will likely cause challenges for most students, but possibly more for some groups, as this paper sets out to address. There three guiding research questions are:

How did low-, middle-, and high-achieving students experience homeschooling?

How did low-, middle-, and high-achieving students consider their effort and self-efficacy during homeschooling compared to regular school?

How did low-, middle-, and high-achieving students experience support and feedback from their teachers during homeschooling compared to regular school?

Method

Participants

The homeschooling participants were 1,755 students in eighth to tenth grade from 93 schools in 21 municipalities in Inland country, Norway, with a response rate of 35.9%. The main purpose of the article is to address how students at three different levels of academic achievement have experienced homeschooling. The survey includes 1,875 students in eighth to tenth grade, but 120 of these did not report their grades and have therefore been excluded from the study, making the sample size 1,755 students. Out of the 1,755 students, 36.6% ($n = 687$) were eighth-graders, 31.6% ($n = 593$) were ninth-graders, 31.7% ($n = 595$) were tenth-graders, 52.6% were girls ($n = 987$), and 47.3% were boys ($n = 886$).

In order to put homeschooling into perspective, the results of the homeschooling survey is compared to comparable items from a survey that was conducted on students from the same schools from mid-October to November 2018. Some of the items in that survey are parallel to the items in the homeschooling survey – the differences reflecting the different nature of the two forms of schooling. To distinguish between the two studies, the study from 2020 is called 'homeschooling' and the one from 2018 is called 'regular school'.

In the regular school survey, 4,885 students in eighth to tenth grade participated, but data on (teacher-reported) grades were missing for ten of them, making the sample size 4,875. Parents gave their consent for 83.9% of the students to participate, while 94.1% of those students completed the survey. Since the two surveys were carried out one and a half years apart, one grade has graduated and a new grade has entered. Nevertheless, a considerable number of students will be the same across the two surveys, but the exact number is not available. While the response rate for the regular school survey was very

Table 1. Students with different academic achievement levels in homeschooling (n = 1,755) and regular school (n = 4,875) surveys.

Survey	Achievement level	n	Mean	SD	Percent
Homeschooling	low	163	2.32	0.44	9.3%
	middle	1,430	4.11	0.61	81.5%
	high	162	5.48	0.22	9.2%
	total	1,755	4.07	0.89	
Regular school	low	866	2.16	0.49	16.7%
	middle	3,685	4.01	0.65	70.9%
	high	324	5.57	0.27	6.2%
	total	4,875	3.78	1.04	

high, the response rate for homeschooling was low. This might be a risk for the representativeness of the sample, but the distribution of respondents based on grade and gender gives no indication of a bias in the sample.

As Table 1 shows, the number of low-achieving students appears to be underrepresented in the homeschooling survey (9.3% compared to 16.7%), and the same survey apparently overrepresents high-achieving students (9.2% compared to 6.2%). This is likely to mostly be caused by the willingness to participate and initiative to share the link on part of parents with higher educational levels, whose children achieve higher grades on average. It is also possible that low-achieving students in the regular school survey were more inclined to participate since it was carried out at school.

Procedure

Data in both surveys were collected using an online questionnaire developed by Centre for Studies of Educational Practice (SePU), Inland Norway University of Applied Sciences. All the schools in the survey are participants in a school improvement project (2016–2021), led by SePU. The aim of the project is that pupils will have an inclusive learning environment and learning outcomes in accordance with their capabilities, and that the quality of teaching shall improve by increasing the school staff's competence. With this aim in mind, the regular school survey was conducted to get information about everyday life at school. The homeschooling study from 2020 is an additional study that the school owners from the same schools as in 2018 wanted to carry out to investigate how the pupils experienced the home school situation.

The regular school survey was administered digitally and completed in school, while the homeschooling survey was completed at home. In the case of the latter survey, parents received information from the school about the survey on May 8. On May 11, an email with a link to the questionnaire was sent to all participating schools, which had been requested to pass on the link to the parents. The parents in turn were asked to give this link to their child, provided that they permitted participation in the survey. Information explaining the purpose and procedure of the study was provided to parents and teachers, who were assured that participants would be anonymous and that participation was voluntary.

Instruments

Several of the items are only included in the homeschooling survey. Factor and reliability analyses were carried out for each of the surveys. The areas in the questionnaire include:

Academic achievement (in both surveys)

Academic achievement levels were made based on the students' grades in the subjects Norwegian, Mathematics and English where 1 is the lowest grade and 6 is the highest. The average of these three grades was used to create achievement groups. This yielded three categories: *low* (mean: 1.00–2.67), *middle* (mean: 3.00–5.00) and *high* (mean: 5.33–6.00). Cronbach's alpha for the homeschooling survey was $\alpha = .77$ and $\alpha = .90$ for regular school. The homeschooling survey was solely directed at the students and used student-reported end-of-term grades, while the regular school survey collected teacher-reported grades.

Effort (only in homeschooling survey)

The seven items were based on the Social Skills Rating System behaviour scale (Gresham and Elliott 1990) and was measured on a 5-point Likert scale (1 = never, 2 = seldom, 3 = sometimes, 4 = often, 5 = almost all the time). The highest score indicates a high degree of concentration and work effort. The factor analysis gave two solutions: *Effort during homeschooling*, with items such as 'It is difficult to get started with schoolwork' and 'I get disturbed by things I see or hear when I have homeschooling' (five items, $\alpha = .84$), and *Effort during homeschooling compared with regular school*, 'I think it is easier to concentrate on schoolwork at home than at school' and 'I work better at home than at school' (two items, $\alpha = .85$).

Support from teachers (in both surveys)

The six items were developed on the basis of the *Classroom Environment Scale* by Moos and Trickett (1974) and was measured on a 4-point Likert scale (1 = completely disagree, 2 = slightly disagree, 3 = slightly agree, 4 = totally agree). A high score indicates high level of support from the teachers. Examples of items: 'I have a good relationship with my teacher (during homeschooling)' and 'The teacher helps me when I can't manage what I am doing on my own'. The factor analysis gave a solution with five items for homeschooling ($\alpha = .82$). The same solution in regular school was $\alpha = .86$. The only difference is that the phrase 'during homeschooling' is not used in the regular school survey.

Feedback from teachers (in both surveys)

The five items were obtained from scales by Hattie and Timperley (2007) and Wiliam (2009), and were measured on a 5-point Likert scale (1 = no, never, 2 = seldom, 3 = sometimes, 4 = often, 5 = every day). Examples of items: 'My teachers talk to me about how I learn' and 'My teachers tells me how I can work to learn more'. A high score indicates a positive experience of feedback. Cronbach's alpha for the homeschooling was $\alpha = .80$ and $\alpha = .86$ for regular school. The items in both surveys are identical.

Self-efficacy (in both surveys)

The four items have been obtained from a scale by Bandura (2006) and was measured on a 4-point Likert scale (1 = completely disagree, 2 = slightly disagree, 3 = slightly agree, 4 = totally agree). Examples of items: 'I try again if I make a mistake' and 'I give up if I find the task difficult'. A high score indicates a high degree of self-efficacy. Cronbach's alpha for the homeschooling was $\alpha = .78$ and $\alpha = .73$ for regular school. The items in both surveys are identical.

Miscellaneous items (only in homeschooling survey)

These items are presented individually since the factor loadings were low. They include the areas *self-motivation* (e.g. 'I think homeschooling is important so that we can continue to learn') and *schoolwork at home* (e.g. 'I miss teaching in school') which were measured on a 4-point Likert scale (1 = completely disagree, 2 = slightly disagree, 3 = slightly agree, 4 = totally agree), and *doing assignments at home* (e.g. 'I can use a computer or tablet at home when I need it'), which was measured on a 4-point Likert scale (1 = no, never, 2 = seldom, 3 = sometimes, 4 = often, 5 = every day).

Missing data

The amount of missing data in homeschooling was generally low, for the continuous variables between 0.4% and 1.5%. The little MCAR test showed that data were missing completely at random. Missing data were replaced at the item level using the expectation maximisation procedure. This interactive procedure used the current best guess of the value within the subscale instead of which was missing (Graham 2009).

Statistics

The present study used a non-experimental cross-sectional data research design. Given the research questions, one-way analysis of variance (ANOVA) is used to determine whether there are any statistically significant differences between the means of two or more independent groups. Cohen's d was used as an expression of the differences between group means, adjusted for the standard deviations. This measure is generally interpreted as small ($d = 0.2$), medium ($d = 0.5$) and large ($d = 0.8$) (Cohen 1988). However, Hattie (2009) problematised Cohen's effect sizes for judging educational outcomes, as small effect sizes might have large effects on some students' learning. Keith (2006) modified these guidelines for school learning as follows: $d < 0.05$ means too small of an effect to be considered meaningful, $d > 0.05$ signifies small but meaningful effect, while $d > 0.10$ signifies moderate effect, and $d > 0.25$ means large effect.

Preliminary analyses were conducted to ensure that assumptions of normality, linearity, homoscedasticity, skewness and kurtosis were not violated. Principal component analysis (PCA) was used to emphasise variation and bring out strong patterns in the dataset. All analyses were carried out in SPSS, version 25.

Table 2. Effort during homeschooling, effort compared with regular school, support from teachers, and feedback from teachers in the homeschooling survey (n = 1,755).

Variable	Achievement level	Mean	SD	Cohen's <i>d</i> compared with total
	Effort during homeschooling	low	3.25 ^a	0.92
	middle	3.45 ^a	0.86	0.03
	high	3.39	0.82	-0.04
	total	3.42 ^{**}	0.86	
Effort during homeschooling compared with regular school	low	2.90	1.33	0.01
	middle	2.90	1.14	0.00
	high	2.91	1.05	0.01
	total	2.90	1.15	
Support from teachers	low	3.19	0.72	-0.16
	middle	3.31	0.63	0.00
	high	3.25	0.60	-0.06
	total	3.29	0.63	
Feedback from teachers	low	3.44 ^{ab}	0.82	0.31
	middle	3.20 ^{bc}	0.75	-0.01
	high	3.03 ^{bc}	0.68	-0.23
	total	3.21 ^{***}	0.76	

Note: Means with the same superscripts are significantly different at the $p < .05$ level (LSD post-hoc comparisons).

** $p < .01$.

*** $p < .001$.

Results

How students with different achievement level assessed homeschooling

Table 2 shows that there are statistically significant differences for two of the variables concerning how students at different achievement levels experience homeschooling. The low-achieving students had a somewhat lower effort during homeschooling compared to the middle achieving students ($d = 0.23$). Feedback from teachers is rated highest by the low achievement group, and lowest by the high achievement group. The difference between the two groups is $d = 0.54$. There is no significant difference between the three groups when it comes to their effort during homeschooling compared to regular school or support from the teachers.

In Table 3, items directly regarding the students' experience of homeschooling are presented. The results show that there are some statistically significant differences between the students at different levels of achievement. Low-achieving students placed a lower emphasis on the need of homeschooling for learning ($d = -0.31$) and they were more frequently unaware of what the teacher would do each day ($d = -0.47$), compared to the two other groups.

There are no statistically significant differences between the three achievement levels when it comes to how much they missed the teaching in school, getting help from the teacher or parents if there were assignments they did not understand, and knowing that they learned what they were supposed to.

Table 3. Miscellaneous items about homeschooling in the homeschooling survey (n = 1,755).

Item	Achievement level	Mean	SD	Cohen's <i>d</i> compared with total
I think homeschooling is important so that we can continue to learn	low	3.30 ^{ab}	0.76	-0.31
	middle	3.52 ^{ac}	0.69	0.01
	high	3.68 ^{bc}	0.63	0.24
	total	3.51 ^{***}	0.69	
I miss teaching in school	low	2.94	1.03	-0.01
	middle	2.95	1.00	0.00
	high	3.01	0.92	0.06
	total	2.95	1.00	
I know that I am learning what I am supposed to	low	3.00	0.85	-0.18
	middle	3.16	0.79	0.02
	high	3.16	0.76	0.02
	total	3.14	0.79	
I know what I am expected to do on each school day	low	3.96 ^a	0.96	-0.47
	middle	4.36 ^a	0.80	0.03
	high	4.49	0.67	0.19
	total	4.34 ^{***}	0.81	
If there are tasks I do not understand, it is easy to get help from a teacher	low	3.38	0.72	0.02
	middle	3.36	0.74	-0.02
	high	3.45	0.72	0.11
	total	3.36	0.74	
If there are tasks I do not understand, it is easy to get help from my parents	low	3.42	0.83	0.01
	middle	3.41	0.80	0.01
	high	3.35	0.89	-0.07
	total	3.41	0.81	
I can use a computer or tablet at home when I need it	low	4.77 ^{ab}	0.58	-0.08
	middle	4.71 ^{ac}	0.64	-0.03
	high	4.83 ^{bc}	0.50	0.16
	total	4.72 ^{***}	0.62	

Note: Means with the same superscripts are significantly different at the $p < .05$ level (LSD post-hoc comparisons).
 *** $p < .001$.

Table 4. Self-efficacy in the homeschooling (n = 1,755) and regular school (n = 4,875) surveys.

Variable	Survey	Achievement level	Mean	SD	Difference in Cohen's <i>d</i> between surveys
Self-efficacy	Homeschooling	low	3.36 ^{ab}	0.77	-0.40
		middle	4.01 ^{ac}	0.69	0.06
		high	4.37 ^{bc}	0.63	-0.01
		total	3.98 ^{***}	0.73	
	Regular school	low	3.64 ^{de}	0.72	
		middle	3.97 ^{df}	0.64	
		high	4.38 ^{ef}	0.48	
		total	3.94 ^{***}	0.67	

Note: Means with the same superscripts are significantly different at the $p < .05$ level (LSD post-hoc comparisons).
 *** $p < .001$.

Comparison of students' experiences in homeschooling and regular school

In order to get a better sense of how the students experienced the homeschooling period in 2020, data from a survey carried out one and a half years earlier have been included for comparison. Some of the items in the two surveys from 2018 and 2020 are parallel.

Table 4 shows how the students at different achievement levels in the two studies rated themselves on self-efficacy. The low-achieving students have a notably lower score in 2020 than in 2018 ($d = -0.40$) when compared to the high-achieving students, and the difference between the two achievement groups is greatest in the homeschooling survey. The results further indicate that the low-achieving

Table 5. Miscellaneous items about school enjoyment and student–teacher relationship in the homeschooling (n = 1,755) and regular school (n = 4,875) surveys.

Survey	Item	Achievement level	Mean	SD	Cohen's <i>d</i> compared with total	Difference in Cohen's <i>d</i>	Cohen's <i>d</i> compared with regular school
Homeschooling	I enjoy homeschooling	low	2.86 ^{ab}	1.11	−0.20	0.02	−0.49
		middle	3.05 ^a	0.90	0.01	−0.02	−0.56
		high	3.12 ^b	0.82	0.09	−0.17	−0.73
		total	3.04 [*]	0.92			
Regular school	I usually enjoy going to school	low	3.32 ^{ab}	0.72	−0.22		
		middle	3.48 ^{ac}	0.62	0.03		
		high	3.63 ^{bc}	0.56	0.26		
		total	3.46 ^{***}	0.64			
Homeschooling	I have a good relationship with my teacher during homeschooling	low	3.17	0.88	0.02	0.12	−0.26
		middle	3.15	0.82	0.00	−0.01	−0.41
		high	3.12	0.81	−0.03	−0.21	−0.65
		total	3.15	0.82			
Regular school	I have a good relationship with my teacher	low	3.38 ^{ab}	0.75	−0.10		
		middle	3.46 ^{ac}	0.68	0.01		
		high	3.58 ^{bc}	0.59	0.18		
		total	3.46 ^{***}	0.69			
Homeschooling	When I have problems or I am sad, I can talk to my teacher even though I am not at school	low	3.01	1.02	−0.12	−0.17	−0.12
		middle	3.15	0.96	0.03	0.04	0.02
		high	3.02	0.96	−0.11	−0.10	−0.12
		total	3.12	0.97			
Regular school	When I have problems or I am sad, I can talk to my teacher	low	3.18	1.00	0.05		
		middle	3.13	0.97	−0.01		
		high	3.13	0.91	−0.01		
		total	3.14	0.97			
Homeschooling	My teacher cares about me during homeschooling	low	3.33 ^a	0.83	−0.21	−0.18	−0.16
		middle	3.51 ^a	0.73	0.03	0.02	0.04
		high	3.41	0.78	−0.09	−0.24	−0.25
		total	3.48 ^{**}	0.75			
Regular school	My teacher cares about me	low	3.46	0.78	−0.03		
		middle	3.48	0.73	0.01		
		high	3.59	0.64	0.15		
		total	3.48	0.73			
Homeschooling	The teacher helps me when I can't manage what I am doing on my own	low	3.33	0.81	−0.15	−0.12	−0.26
		middle	3.45	0.72	0.02	0.03	−0.13
		high	3.42	0.70	−0.02	−0.21	−0.41
		total	3.44	0.73			
Regular school	The teacher helps me when I can't manage what I am doing on my own	low	3.53 ^a	0.72	−0.03		
		middle	3.54 ^b	0.65	−0.01		
		high	3.68 ^{ab}	0.56	0.19		
		total	3.55 ^{**}	0.66			

Note: Means with the same superscripts are significantly different at the $p < .05$ level (LSD post-hoc comparisons).

* $p < .05$.

** $p < .01$.

*** $p < .001$.

students had the lowest rate of self-efficacy in regular school, and that self-efficacy decreased for this group during homeschooling.

In Table 5, the results for some items regarding student–teacher relationship broken down by student achievement levels are presented. With regards to the statements ‘I enjoy homeschooling’ and ‘I usually enjoy school’, the low-achieving students stated that they enjoyed school/homeschooling less in both surveys ($d = -0.20$ and $d = -0.22$), while the high-achieving ones had a higher sense of enjoyment. Compared to regular school, all three groups had a lower sense of enjoyment, but the drop was most marked for the high-

Table 6. Items about feedback in homeschooling (n = 1,755) and regular school (n = 4,875).

Survey	Item	Achievement level	Mean	SD	Cohen's <i>d</i> compared with total	Difference in Cohen's <i>d</i>	Cohen's <i>d</i> compared with regular school
Homeschooling	My teachers give me written feedback on assignments I hand in	low	3.72	0.82	-0.10	-0.17	0.00
		middle	3.81	0.80	0.01	0.04	0.20
		high	3.85	0.71	0.05	-0.06	0.10
		total	3.81	0.80			
Regular school	My teacher gives me written feedback on assignments and homework	low	3.72 ^a	1.11	0.07		
		middle	3.62 ^b	1.06	-0.03		
		high	3.76 ^{ab}	1.03	0.11		
		total	3.65 ^{**}	1.07			
Homeschooling	My teachers give me oral feedback over the phone or Internet (Teams, Showbie, It's Learning etc.)	low	3.39 ^{ab}	1.18	0.31	0.15	-0.27
		middle	3.03 ^{ac}	1.13	-0.01	0.02	-0.44
		high	2.76 ^{bc}	1.05	-0.24	-0.18	-0.70
		total	3.03 ^{***}	1.13			
Regular school	My teachers give me oral feedback while I work on assignments in class	low	3.70 ^{ab}	1.08	0.16		
		middle	3.50 ^a	1.01	-0.03		
		high	3.48 ^b	1.00	-0.06		
		total	3.54 ^{***}	1.02			
Homeschooling	I get feedback from the teachers on my effort	low	3.49 ^{ab}	0.97	0.18	-0.03	-0.28
		middle	3.31 ^{ac}	0.96	0.00	0.05	-0.20
		high	3.14 ^{bc}	0.90	-0.18	-0.19	-0.46
		total	3.31 ^{**}	0.96			
Regular school	I get feedback from my teachers on my effort	low	3.78 ^{ab}	1.09	0.21		
		middle	3.51 ^a	1.02	-0.05		
		high	3.57 ^b	0.98	0.01		
		total	3.56 ^{***}	1.04			
Homeschooling	My teachers talk to me about how I learn	low	3.16 ^{ab}	1.06	0.37	0.04	-0.42
		middle	2.75 ^{ac}	1.04	-0.02	0.05	-0.37
		high	2.54 ^{bc}	0.96	-0.22	-0.10	-0.54
		total	2.77 ^{***}	1.04			
Regular school	My teacher talks to me about how I learn	low	3.62 ^{ab}	1.15	0.33		
		middle	3.16 ^{ac}	1.16	-0.07		
		high	3.10 ^{bc}	1.10	-0.12		
		total	3.24 ^{***}	1.17			
Homeschooling	My teacher tells me how I can work to learn more	low	3.45 ^{ab}	1.01	0.33	0.02	-0.38
		middle	3.09 ^{ac}	1.07	-0.01	0.05	-0.36
		high	2.84 ^{bc}	1.02	-0.24	-0.16	-0.58
		total	3.10 ^{***}	1.07			
Regular school	My teachers tell me how I can work to learn more	low	3.85 ^{ab}	1.07	0.28		
		middle	3.48 ^{ac}	1.10	-0.06		
		high	3.46 ^{bc}	1.10	-0.08		
		total	3.55 ^{***}	1.10			

Note: Means with the same superscripts are significantly different at the $p < .05$ level (LSD post-hoc comparisons).

** $p < .01$.

*** $p < .001$.

achieving students ($d = -0.17$). The standard deviations are considerably higher for all three groups during homeschooling, which suggests that in all three groups, some students' enjoyment was strongly affected by the lockdown. The same tendency of negative effect of homeschooling applies to student-teacher relationship and getting help from the teacher when needed. Homeschooling can thus be seen as lowering the sense of enjoyment and the students' relationship with and help from their teachers, but also lowering the scores of the high-achieving students, with the effect of levelling the three groups. On average, there is no difference in how the students report their teachers

caring about them in the two surveys, yet both high- and low-achieving students scored lower in the homeschooling survey.

Table 6 presents the results of five pairs of items on how the students have experienced feedback from the teachers during homeschooling compared to regular school, both based on achievement and between the surveys. In both surveys, low-achieving students score highest on all aspects of feedback, except written feedback. When the students' experiences from regular and homeschooling are compared, the results show that the students experienced better feedback from the teachers in regular school than homeschooling on all indicators, except written feedback. This drop in feedback during homeschooling is particularly strong for high-achieving students.

Discussion

The data were analysed by dividing the lower secondary school students into groups based on their grades, which yielded the groups low-, middle-, and high-achieving students. Their experiences of homeschooling will be discussed based on the three guiding research questions: (1) *How did low-, middle-, and high-achieving students experience homeschooling?* (2) *How did low-, middle-, and high-achieving students consider their effort and self-efficacy during homeschooling compared to regular school?* (3) *How did low-, middle-, and high-achieving students experience support and feedback from their teachers during homeschooling compared to regular school?*

Students' experiences of homeschooling

The results of this study indicate that all student groups enjoyed regular school more than they did homeschooling, in line with the findings of a survey of Danish students' experiences during homeschooling (Qvortrup et al. 2020). Enjoying school is not just a question of appreciating different subjects and being motivated for learning, it is also important for lower secondary school students to attend school to meet friends and socialise (Danielsen et al. 2009). Apart from lack of contact with friends, it might also be difficult for teachers to provide a sense of belonging, enjoyment and enthusiasm among the students through homeschooling in the same extent as it is through classroom emotional climate (Hamre and Pianta 2001). These factors are not just important for students' well-being, but also for students' academic achievement (Reyes et al. 2012). The low-achieving students participating in this study did not report that homeschooling was important for maintaining progress in learning to the same extent as the high-achieving students. The findings indicate that it was even harder for low-achieving students to maintain engagement and motivation during homeschooling compared to regular school. Decreased motivation and engagement among low-achieving students may lead to a bigger gap between high- and low-achieving students, and it might be difficult to close such a gap when regular school starts again.

Students' effort and self-efficacy during homeschooling compared to regular school

Low-achieving students did not have the same extent of self-efficacy as the high-achieving students, neither in regular school nor during homeschooling. However, the findings show that the differences were greater during homeschooling. Students with high self-efficacy find ways to overcome institutional barriers (Bandura 2011), which might be important for students' ability to adjust to a situation with distance learning. Low-achieving students with low self-efficacy might instead easily be convinced of the futility of their effort, which can negatively influence their academic achievement (Klassen 2010). The findings indicate that low-achieving students did not know what the teacher wanted them to do to the same extent as high-achieving students, and they were not so sure that they learned what they were supposed to learn during homeschooling. It can be harder for teachers during homeschooling to notice students who are insecure of what they were supposed to do or in need of help to solve a school task, which might be crucial for low-achieving students, who are in greater need of clear expectations than other students (Jönsson 2018). Based on studies of parents' experience of the situation with homeschooling (Frøjd and Larsen 2020; Qvortrup et al. 2020), it is not likely that all students have had the opportunity to receive support from their parents. Lack of support from teachers and parents may lead to lower self-efficacy during homeschooling, influencing low-achieving students' ability to maintain positive learning processes (Klassen 2010). If a new period of homeschooling is required, school leaders and teachers might have to find ways of ensuring that all their students understand what they are supposed to do, as well as find better ways to motivate low-achieving students to maintain their effort. Because of the importance for students with different learning problems to be able to ask one's teacher for help (de Boer and Kuijper 2020), lower self-efficacy during homeschooling can influence low-achieving students' ability to maintain positive learning processes.

Support and feedback from teachers during homeschooling compared to regular school

Although teachers and school leaders in Norway had an extra focus on supporting vulnerable students during the period of homeschooling (Federici and Vika 2020), the results indicate that students get more feedback in general from their teachers in regular school than they do during homeschooling, but more written feedback and less oral feedback during homeschooling. High-achieving students report the greatest change in feedback during homeschooling. A possible interpretation is that this group of students receive, or perceive, more feedback during regular school, and that the disruptive effects of homeschooling highlight the loss of feedback.

In regular school, students experience a better relationship with and more support from their teachers. Additional instructions and the ability to ask for help seem to be important for students with different kinds of learning problems (de Boer and Kuijper 2020). Written feedback might not give the same opportunity to ask for further instructions and help as oral feedback affords. The tendencies of more written than oral feedback to low- and middle-achieving students can help explain why students report that they

have learned less during homeschooling than in regular school (Bakken et al. 2020). For low-achieving students, it is crucial to get feedback from their teachers on how they should work with the school tasks (Jönsson 2018). The findings indicate that the students experienced less such feedback during homeschooling, which might influence the learning processes of low-achieving students and students with various forms of learning difficulties in particular.

Conclusion

This study has found that the two-month school lockdown due to the COVID-19 pandemic in Norway adversely affected students in different ways. Neither high-, middle-, nor low-achieving students appreciated homeschooling to the same extent as regular school, and the findings raise growing concerns about all students during homeschooling. However, for low-achieving students, homeschooling led to lower efforts and self-efficacy, which can be difficult to reverse when schools reopen. This can lead to a larger gap between high- and low-achieving students in lower secondary school. If extensive homeschooling will take place in the future, teachers should consider how to maintain the practice of supportive relationships, clear expectations and feedback, and oral feedback in particular. Since teachers and school leaders reported that teachers had had more frequent contact with secondary school students than they had with students in primary school (Federici and Vika 2020), there is a need for further research on whether the findings from this study are also relevant for students in primary school.

Disclosure statement

No potential conflict of interest was reported by the authors.

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