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HYBRID LEARNING DURING THE COVID-19 PANDEMIC – STUDENT PERSPECTIVES ON OPPORTUNITIES AND LIMITATIONS OF HYBRID DISTANCE LEARNING

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ABSTRACT

The Covid-19 pandemic caused far-reaching restrictions for schools and students. For many countries, studies have already investigated the consequences and effects of distance learning during the general school closures at the beginning of the pandemic. In contrast, little research has been done on hybrid distance learning for students who were later quarantined and unable to attend face-to-face classes like their classmates. This study examines students' perspectives on hybrid distance learning during the Covid-19 pandemic by analysing and coding the responses of N = 399 students to open-ended questions from a student questionnaire. The study concludes that students mainly missed social contact and direct learning support during the hybrid distance learning period. On the other hand, the students liked the benefits of being at home and the opportunity to work more independently and flexibly. Based on these results, it is possible to identify how to better deal with similar situations and how to better meet the needs of students in times of crisis.

INTRODUCTION

In order to contain the Covid-19 pandemic, Switzerland, like most countries worldwide, imposed a quarantine obligation on infected persons and direct contacts. The duration of this quarantine usually lasted 10 days in Switzerland (Eidgenössisches Departement des Innern, 2021).

Students in quarantine could not attend school. However, they were still required to participate in education unless they were seriously ill in order to maintain society's educational function (Hummrich, 2020). As a result, hybrid distance learning had to be implemented for these students (Bildungsdirektion Zürich, 2021). In contrast to the general school closures at the beginning of the pandemic (Wacker et al., 2020), students in quarantine learnt from home while the rest of the class attended face-to-face instruction with the teacher in the classroom.

With the start of the containment measures, research projects were quickly set up to gather information about the new and unfamiliar situation (Helm et al., 2021). In the school context, the focus was set on distance learning during the general school closures, specifically learning behaviour and quality of teaching (Böttger & Zierer 2021; Helm et al. 2021; Unger et al., 2022). Less research has been conducted on student well-being and hybrid distance learning in the later stages of the Covid-19 pandemic (Helm et al., 2021; Ravens-Sieberer et al., 2022; Stein & Zimmer, 2022).

This study aims to provide teachers with clues on how to establish hybrid distance learning that is comfortable and effective for students. Although the Covid-19 pandemic seems to have lost its restrictive impact, the likelihood is high that some students will not be able to attend face-to-face classes due to extreme weather conditions, teacher shortages or epidemic outbreaks in the future (Marani et al., 2021). For this reason, and because of the higher proportion of work done outside traditional classroom settings, hybrid teaching-learning formats are also seen as a prospect for post-pandemic education (Letzel-Alt et al., 2023). However, more research is needed, and the advantages and disadvantages need to be weighed in order to incorporate these findings into future forms of teaching (Huber et al., 2023). In addition, the findings can also be used to further develop regular classes.

THEORETICAL AND EMPIRICAL BACKGROUND

The unprecedented far-reaching measures to contain the Covid-19 pandemic caught most school system stakeholders unprepared (Tomasik et al., 2021). One of the containment measures that had a major impact on student's lives in many countries was the closure of schools at the beginning of the pandemic (United Nations, 2020). Similar to the course of the pandemic, containment measures were not linear. The nationwide school closures at the beginning of the pandemic were followed by different arrangements for teaching-learning environments, depending on the country, region, and incidence rate, to which stakeholders had to adapt and not all of which have yet been sufficiently studied.

Due to the lack of studies on hybrid distance learning for quarantined students, the following section presents findings on teaching during the period of general distance learning. Because of the comparable underlying conditions, it is likely that some parallels can be assumed between the two teaching-learning setups. For example, both forms of teaching pose unknown challenges for the actors involved and the teaching is characterised by physical distance between students and teachers.

Quality of distance learning

In German-speaking countries, a low proportion of direct communication between teachers and students was found for teaching during the first period of general school closure (Huber et al., 2020; Unger et al., 2020; Vourikarine et al., 2020). This is relevant insofar as Helm et al. (2021) and Tengler et al. (2020) identified regular direct exchange between all actors involved as the basis for functioning distance learning. Lower level of direct communication led to a high proportion of unstructured independent work (Anger et al., 2020; Wössmann et al., 2020) and resulted in a reduction of students' daily learning time (Huber et al., 2020; Wacker et al., 2020). Difficulties with digital infrastructure and the need to structure learning days largely on their own also made it more difficult for students to learn during the period of general school closures (Garrote et al., 2021; Wacker et al., 2020). This is also reflected in the successively published findings of an at least partial "learning loss" among students (stagnation or decline in performance) from numerous countries (OECD, 2023). Despite the difficulties described, more than half of the students felt that distance learning worked decently (Baier & Kamenowski, 2020; Schwerzmann & Frenzel 2020). Students particularly appreciated the opportunity to work more independently, the higher proportion of practice time and the greater choice of tasks (Holtgrewe et al., 2020).

Well-being of students during the school closure

As mentioned above, students' well-being has been less researched than learning behaviour or student success. Approximately 40% of students reported a great difficulty in understanding the content of lessons during the school closure period, leading to a third of students worrying about their grades or qualifications (Refle et al., 2020; Schreiner et al., 2020). This lower learning success led to lower self-efficacy in learning, which in turn had a negative impact on students' well-being (Märghitan et al., 2017). On the other hand, students experienced higher self-efficacy due to the higher proportion of independent work (Holtgrewe et al., 2020). Students also reported being more motivated and focused when working independently and in a quieter working environment (Garrote et al., 2021). In contrast, the lack of routine and structure of the school day (Huber et al., 2020; Refle et al., 2020) and the lack of social contact (Brand et al., 2021; Garrote et al., 2021) had a negative impact on the well-being of some students. During the period of the Covid-19 pandemic, higher levels of stress and a decrease in subjective quality of life (Magson et al., 2021; Ravens-Sieberer et al., 2022; Romero et al., 2020; Whittle et al., 2020), as well as increases in depression, hyperactivity, and confrontational behaviour

(Döpfner et al., 2021) were found among students. In summary, the pandemic's impact on individual students' well-being remains ambiguous and under-researched.

RESEARCH DESIDERATA

As already mentioned, research on hybrid distance learning is a desideratum. In addition, the impact of the Covid-19 pandemic from students' perspective has not yet been sufficiently researched, especially with regard to students' well-being. This study addresses these desiderata by gathering evidence on which aspects of hybrid distance learning are perceived positively or negatively by students. This evidence will be used for providing teachers with information on which students' needs should be considered in order to establish successful hybrid distance learning. Taking students' needs into account is necessary to realise the full potential of hybrid teaching-learning systems in the future and to establish meaningful teaching in similar situations of crisis. In addition, the findings will be used to gain insight on how to develop regular classroom instructions further.

METHODOLOGICAL APPROACH

Background to the study

This study is part of the research project “Learning from the Impact of Covid-19 on Educational Practice to Expedite Pedagogically Meaningful Digitisation” within the Swiss National Research Programme (NRP) 80 “Covid-19 in Society”, funded by the Swiss National Science Foundation (SNSF, Grant No. 408040_210193). The project investigates the impact of the Covid-19 pandemic on schools and students in Switzerland. Based on the results, a model for better integration of digital media in (distance) learning and guidelines for teachers on how to establish effective teaching settings in comparable situations of distress will be derived.

Survey instrument

The analysed data was collected as part of the student survey “My Corona Diary”. Students from Germany, Austria and Switzerland from different grade levels and school types were asked about their experiences during the Covid-19 pandemic in the form of an online survey using SoSci-Survey (Leiner, 2019). The data were collected between the 5th of April 2022 and the 22nd of July 2022.

The questionnaire consisted mainly of closed-ended questions asking students about their perceptions of the quality of teaching, the perceived support, the perceived sense of stress, their learning behaviour and more. In addition to the closed questions, the questionnaire included the two open-ended questions “What did you like about distance learning? What do you think could stay the same?” and “What did you not like about distance learning?”.

Within the questionnaire, a distinction was made between students who were (1) in quarantine at the time of the survey, or (2) in quarantine within the last 3 months before the survey, or (3) not in quarantine within the last 3 months before the survey.

While the first two groups were asked to rate their current and recent distance learning experiences, respectively, the latter group was asked to rate their experiences retrospectively, focusing on the period of general school closure.

Sample

The present study focuses on the data of students from group (1) and (2) who were in quarantine at the time of the survey or shortly before and reported their experiences during lessons in quarantine, where the rest of the class was taught face-to-face. For this study, the open-ended responses of $N = 399$ students were analysed. The composition of the sample is shown in *Table 1*.

Table 1: Distribution of students across class levels and school type

Country	School type					
	Primary school	Lower secondary school	Higher secondary school	VET School	Other school types	NA
Germany	6	109	179	19	16	4
Switzerland	1	57	2	-	5	-
Austria	-	-	1	-	-	-
Total	7	166	182	19	21	4
	Grade level			Total		
	<i>M</i>	<i>SD</i>				
Germany	10.12	2.17		333		
Switzerland	8.28	0.80		65		
Austria	10	0.00		1		
Total	9.81	2.12		399		

Data analysis

To answer the research question, student responses to the two open-ended questions were coded using quantitative content analysis following Züll and Menold (2019) in MAXQDA (MAXQDA, 1989 – 2021). $N = 382$ students responded to the first question “What did you like about distance learning? What do you think could stay the same?”, and $N = 388$ students responded to the second question, “What did you not like about distance learning?”. Due to limited previous evidence on this topic, the code tree was developed inductively. A separate code tree was created for each item, which was created using randomly selected 30% of the total data set. This code tree was then slightly adapted and communicatively validated (cf. below). The

inductive categorisation resulted in 6 and 8 categories, respectively, for each of the items, with up to 6 subcategories.

Consensus coding (Richards & Hemphill, 2018) was conducted by two coders, therefore the content of the critical codes was discussed to ensure an agreement between the coders. Each sensemaking statement about the perception during hybrid distance learning was categorised as a coding unit. Therefore, individual keywords could be coded as mentioned aspects. Multiple categorisations of a statement into several categories were also possible.

ANALYSIS

In the following, the results of the coding process for each of the two items that were answered by the students are presented.

Aspects of hybrid distance learning that students liked

The students' answers to the first item suggest that, despite the challenges described in relation to teaching during the Covid-19 pandemic, there were also aspects of hybrid distance learning which students liked. The frequency of mention of specific aspects in the responses is shown in *Figure 1*.

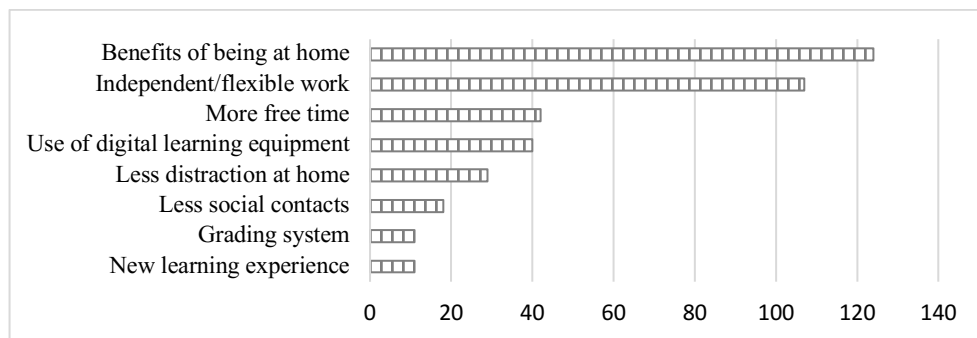


Figure 1: Quantity of mentioned aspects of students on Item 1

The most frequently mentioned aspects that students liked about hybrid distance learning were the benefits of being at home ($n = 124$, e.g., 3229: “I liked being at home. I don’t like being at school because it is a place of stress and pressure for me.”).⁴ Especially the possibility to sleep longer during this time ($n = 94$, e.g., 4060: “That I could sleep in until the last moment”), not having to dress up for school and being able to wear more comfortable clothes ($n = 25$, e.g., 4623: “You didn’t have to ‘dress up’ much because you were without a camera anyway”) and the possibility to eat and drink during lessons ($n = 11$, e.g., 2971: “That you were allowed to eat and drink whenever you wanted”) were mentioned by several students.

The second most frequent type of response, given by $n = 107$ students, referred to the advantages of working more independently and flexibly (e.g., 4557: “That you

⁴ All student quotes were collected in German and translated into English.

can organise your own time, when you work on which tasks”) and therefore also to have better time management when working on tasks ($n = 15$, e.g., 758: “You can organise your own time and work more efficiently, because at school you often just sit around without doing anything. In distance learning, on the other hand, I use the time for learning optimally”).

In third place, $n = 42$ students stated that they liked having more free time during this period (e.g., 2008: “I was able to do the tasks that the teacher gave us in the morning and then I was done. After that I could do other things.”). Furthermore, $n = 40$ students stated that they liked the increased use of digital learning media (e.g., 3025: “I also liked the fact that the apps [Moodle in my case] were introduced. It gave me a much better overview.”). $n = 29$ students also stated that they were able to concentrate better and were less distracted in the quieter working environment at home (e.g., 3063: “I was able to concentrate better than at school because it wasn’t so loud.”).

Aspects of hybrid distance learning that students did not like

Figure 2 shows the number of student responses to aspects of the second open-ended item “What did you not like about distance learning?”.

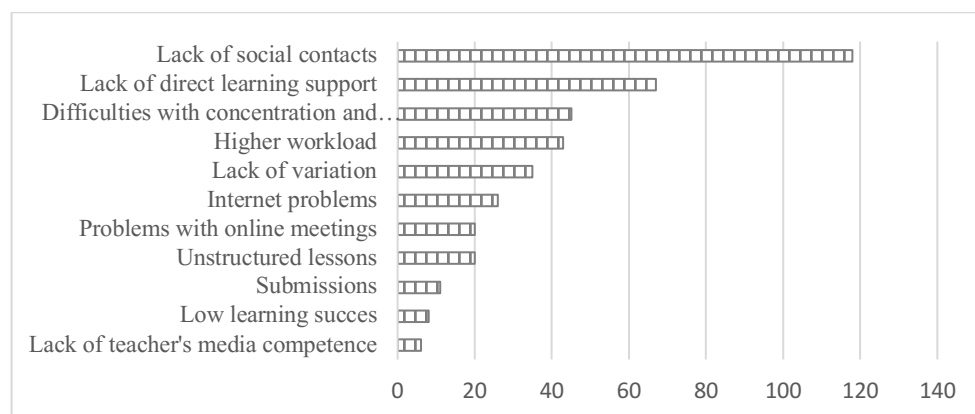


Figure 2: Quantity of mentioned aspects of students on Item 2

The most common aspect that students mentioned as something they did not like was the lack of social contacts during hybrid distance learning ($n = 118$, e.g., 2764: “There was a lack of contact with friends and classmates [...]”).

The second most common negative aspect was the lack of direct learning support ($n = 67$, e.g., 2321: “Sometimes you could hardly get any help from the teachers because you were on your own”). $n = 45$ students stated that they had a much higher workload during this time than under normal conditions (e.g., 3905: “We were always given so much to do. As soon as one task was finished, another one followed immediately [...]”). $n = 43$ students also stated that they did not like the fact that they were more distracted at home (e.g., 1033: “Lack of concentration because I didn’t

have a quiet place”) and that they had difficulties motivating themselves to learn (e.g., 3641: “*You couldn't motivate yourself to learn [...]*”).

That the lack of variety during the quarantine was stressful for them because they had to stay at home all the time, $n = 35$ students stated ($n = 14$, e.g. 2971: “*That you weren't allowed to leave the house [...]*”), that you had to spend a lot of time in front of the screen ($n = 10$) or that you had too little physical activity during this time ($n = 3$). $n = 26$ students also stated that they had problems with their private internet connection or the programmes and platforms they used (e.g., 2875: “*The program crashed for many [students] – class was often interrupted as a result*”). Furthermore, $n = 20$ students stated that the lessons during hybrid distance learning were very unstructured, which they did not like (e.g., 1094: “*[...] at my school, the whole thing seemed very unstructured to me.*”).

DISCUSSION

The measures taken to contain the Covid-19 pandemic had a major impact on the school system and the students. While there have been some studies on learning behaviour and quality of teaching during the general school closures at the beginning of the pandemic in different countries, as presented in this paper, research on hybrid distance learning for students who were quarantined at a later point in the pandemic is largely a desideratum.

This study examined the perspective of quarantined students on hybrid teaching-learning formats. For this purpose, the responses of $N = 399$ students from Germany, Austria and Switzerland to two open-ended questions were analysed: “What did you like about distance learning? What do you think can stay the same?” and “What did you not like about distance learning?”. These students were in quarantine at the time of the survey or within three months prior to the survey.

Among the aspects that students liked about hybrid distance learning, most mentioned the benefits of being at home and, most importantly, the ability to sleep out longer. These findings suggest that for many students, the school building is a place associated with feelings of pressure to perform, which is responsible for negative emotions towards school (Rost & Haferkamp, 2019). Schooling at home may avoid this direct confrontation with negative associations. This is also supported by the findings in this study, that the third most common stated aspect was that students liked having more free time during hybrid distance learning. This suggests that there should be done more to ensure that schools lose these negative connotations. The aspect of sleeping longer also suggests that, under normal circumstances, classes start too early for many students and contradict their biorhythms (Gelfand et al., 2020), which supports a later start of school. In addition, some students reported that they were able to concentrate better at home than at school because there were fewer distractions. For this reason, it may be helpful for some students to be provided with quieter learning spaces for periods of independent work in regular classes without being exposed to distracting stimuli from the rest of the class. In addition, it is crucial that students in hybrid lessons have a place at home

where they can learn undisturbed. Studies have shown that this can significantly predict the task comprehension (Unger et al., 2022).

The second most frequently mentioned factor was that students enjoyed working more independently and flexibly. This suggests that, under normal circumstances, many students would also prefer to have a higher proportion of independent and self-directed learning in the classroom. According to Deci and Ryan's (2000) self-determination theory, this independent work can have a positive effect on students' emotions and motivation to learn and thus have a positive effect on their learning progress and well-being. Two implications can be drawn from this: (1) The findings suggest that independent work in open teaching formats should also be implemented in regular classes. (2) In addition, a form of (hybrid) distance learning should be found in which not all school subjects are transmitted 1:1 according to the timetable into the home learning environment, for example via video conferencing. Instead, based on the individual and independent form of distance learning, tasks should be found which are presented and explained at the beginning and can be discussed at the end, but which above all require a lot of independent work from the students while they are working on them. Constant support in video conferences does not seem to make much sense here (Wacker & Unger, 2021).

Many students welcomed the increased use of digital learning media. While digital learning systems were introduced in countries such as Switzerland before the Covid-19 pandemic (Unger et al., 2023), the German education system has lagged behind other areas of society in terms of digitalisation (Aufenanger & Bigos, 2023). The Covid-19 pandemic was therefore a catalyst that accelerated the digitalisation of the school system (Aufenanger & Bigos, 2023). The findings of this study can therefore be seen as a clear vote in favour of strengthening digitalisation in education.

On the side of aspects that students did not like about hybrid distance learning, most students mentioned a lack of social contact. Therefore, in future hybrid distance learning situations teachers should pay attention to this and give students more opportunities to socialise with their classmates. For example, through digital group work or in "relaxed" plenary video meetings where topics outside of school can be discussed. A lack of contact with classmates leads to a lack of social integration, which, according to Deci and Ryan's (2000) self-determination theory, has a negative impact on motivation, well-being, and learning behaviour.

The lack of learning support criticised by some students suggests that teachers should be available to students during hybrid distance learning. Furthermore, students should be given the opportunity to ask questions – at least several times a day – in order to make hybrid distance learning more productive on their learning progress. Some students also reported that they were less able to concentrate and motivate themselves when studying at home and that they received a significantly higher number of tasks to work on. Since studies of teaching during school closures indicate that the daily proportion of learning time decreased (Huber et al. 2020; Wacker et al. 2020), these findings suggest that students are not used to this type of instruction and

were overwhelmed by learning at home and therefore needed more time to complete their tasks. Accordingly, students should be better prepared for independent work in order to meet their desire for more of it and to enable themselves to have a successful learning experience. However, the subjectively perceived higher workload and the unstructured lessons, which were also criticised by the students, may also be due to the teachers' lack of experience with this form of teaching. Therefore, it is important to better prepare teachers, especially for forms of physically separated teaching, in order to be able to provide more productive teaching in comparable situations in the future. In addition, distance learning should also be integrated into the regular timetable so that both teachers and students can switch quickly when forms of distance learning suddenly become relevant again.

Since students reported having too little physical activity, it is also advisable to integrate short physical exercises in front of the screen within the conducted lessons. Existing, age-appropriate fitness videos can also be used for this purpose.

The available data suggests that there are some parallels between students' perceptions during general school closures and those during hybrid distance learning. For example, during the general school closures, students also reported that they had more difficulties in understanding the content of the lessons (Schreiner et al., 2020) and that the school day was unstructured (Refle et al., 2020). The lack of social contact was also a challenge in both teaching-learning scenarios (Brand et al., 2021; Egger & Huber, 2023; Garrote et al., 2021). On the other hand, students also liked the higher proportion of independent work during the general school closures (Holtgrewe et al., 2020) and some students stated that they were able to concentrate more on their work at home (Garrote et al., 2021). The later start of classes was also seen as a positive aspect by students in both hybrid and general distance learning (Egger & Huber, 2023).

The present study has some limitations that need to be taken into account when evaluating the results. Since the proportion of students in higher grade levels and from Germany (compared to other countries) is comparatively higher than in the population, the sample is not representative of the target group of students. It is also unclear to what extent the students' answers reflect their actual feelings during hybrid distance learning. For example, the two questions that were asked, suggests that students should name both positive and negative aspects of hybrid distance learning, but the answers to the questions cannot be weighed against each other in terms of their overall impact on students' experiences.

This study examined students' perspective on hybrid distance learning in order to gain insight into what went well from the students' point of view and where there were major challenges. As the effects of the Covid-19 pandemic containment measures have not yet been adequately studied, further research is needed to better assess these effects. The results should then be used to improve the learning experience and well-being of students in similar situations in the future. The results of the PISA study in 2022 already provide an indication of the countries in which

students were particularly affected by school closures in terms of learning outcomes (OECD, 2023). However, there is still insufficient and ambiguous evidence on how such effects varied across students and on the impact on students' well-being during this period. Further research is therefore needed to address these research gaps.

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