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Article

Support and Perceptions of Teachers Working with Students with Special Needs during the COVID-19 Pandemic

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Abstract: Teachers serving students with special needs, students from low-income backgrounds, students with disabilities, and students from underrepresented racial/ethnic backgrounds experienced a myriad of challenges due to the COVID-19 pandemic. This study aims to assess whether and to what extent teachers received resources during the pandemic, and to evaluate the impact of this on their perceptions of student academic engagement. Using the American Teacher Panel (ATP) data collected in October 2020, this research found that 41% of teachers working with diverse and marginalized students did not receive any resources tailored specifically for students with special needs. Teacher experiences with resources were clustered into four groups: Most Supported (35%), Least Supported (41%), Moderately Supported A (16%; received support primarily with students with disabilities), and Moderately Supported B (8%; received support primarily with students with racial/ethnic backgrounds). Across the four groups of teachers, teacher groups classified as less supported were more likely to be teaching in more urbanized settings with larger size schools than the other teacher groups. Additionally, they perceived their students as attending less often and being less ready for grade-level coursework than their counterparts. Discussions for school leaders and counselors are outlined to emphasize the importance of teacher support for effective education during the COVID-19 pandemic.

Keywords: students with special needs; resources for teachers; perception of teachers; the COVID-19 pandemic



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1. Introduction

The rapid contagion of the COVID-19 virus resulted in unprecedented disruptions to education systems in the United States and worldwide [1]. At the height of the COVID-19 pandemic, many essential workers were hailed as heroes, including doctors, EMTs, grocery store cashiers, janitors, agricultural workers, truck drivers, and classroom teachers [2]. Teachers, especially, were thrust into the role of serving as frontline responders for children and their families during the social crisis [3]. However, many of them felt unprepared for this role [4,5]. In fact, throughout the pandemic, PK-12 teachers faced numerous challenges, with many risking their lives to teach double the normal number of lessons, as they adapted to teaching both virtually and in person. Additionally, former President Trump and Education Secretary Betsy DeVos mandated that most teachers return to the classroom regardless of their social-emotional status, and chose to withhold federal funding from schools if this mandate was not met [6].

This problematic lack of available resources is especially true for teachers serving students with unique and diverse needs; teachers who witness a myriad of ways in which the pandemic is exacerbating existing inequities and risks. Many students did not receive

access to critical services, such as meals, medical care, disability support services, and mental health services, during the pandemic [7]. The struggles of classroom teachers were many, and varied depending on the unique needs and contexts of the different categories of students. For example, whereas students from low-income backgrounds faced more barriers to the accessibility of remote learning, students of color faced an increase in racial hate crimes during the COVID-19 pandemic [8,9]. Therefore, it is especially important to understand the accessibility of resources for educators serving students with diverse needs during the COVID-19 pandemic so as to be better prepared to address inequities and risks in the future.

To understand the experiences and needs of educators during the pandemic, it is important to be aware that schools are dynamic environments, each with a unique set of circumstances. The capability and flexibility of the teachers to adjust in a crisis are strongly tied to the responsibility of educational systems and the accessibility of helpful resources for teachers [10,11]. Specifically, school characteristics such as the location of school and number of students have been highlighted as important factors in teacher support during the pandemic. For example, previous studies reported the gap in educational practices and resources between urban and rural education systems [12,13]. When teachers served many students at the same time, students in larger classes were also more vulnerable to virus contagion because of the crowding. [3]. Examining the differences in accessible resources across teachers from different school environments may be especially helpful to inform current practice, and to provide insights for future policies.

Teachers' expectations of students' engagement and positive outcomes may be different depending on the adequacy or deficiency of resources. Low expectations of teachers in students' academic engagement not only cause poor academic outcomes in students, but also cause a lack of motivation and a higher level of burnout of teachers. For example, teachers who have low expectations in the engagement of students in school activities are more likely to report burnout and demoralization no matter how much they believe in the effectiveness of activities in students' learning [14]. The treatments of teachers such as these, in addition to a lack of resources, have long been linked to teacher burnout rates [15,16]. Therefore, it is essential to examine the relationship between the accessibility of resources and teachers' perceptions of students' academic engagement, as evidenced during the pandemic.

The purpose of this study is to assess whether and to what extent teachers received different resources based on the demographic background of their students, the location of the school (i.e., rural, town, suburban, or urban), and school size. Additionally, this study examines if and how the expectations toward students' academic performance differ between teachers with and without guidelines. Using a nationally representative sample of teachers in K-12 public schools, three Research Questions were posed.

RQ1. What resources were available to support U.S. teachers working with students with special needs during the COVID-19 pandemic?

RQ2. Did access to resources to support students with special needs vary by school characteristics (school district and sizes)?

RQ3. Did access to resources to support students with special needs impact teachers' perceptions of students' academic engagement (attendance and grade-level preparedness)?

2. Method

2.1. Participants

This study used the 2020 American Teacher Panel (ATP) COVID-19 Response Survey 2 from the RAND American Educator Panels project [17]. The survey process and questions were reviewed and approved by the RAND Corporation's Human Subjects Protection Committee, and data were collected in October 2020 [18]. The complete dataset consists of a nationally representative weighted sample of 1000 teachers in the K-12 U.S. public schools, created using random sampling. As the current study aims to examine common

experiences from teachers from across the country who worked with students with special needs during the pandemic, this dataset is appropriate for our use.

From the original data of ATP, we included educators who worked with at least one category of students from the following groups: students with mild or moderate disabilities, students with severe disabilities, English language learners, students from different racial/ethnic groups, students affected by poverty, and students experiencing homelessness. As a result, the 412 teachers from the ATP survey were selected and included in this study. In other words, all 412 teachers were directly teaching at least one type of the six student categories during the academic year of 2020–2021.

2.2. Variables

The variables used in this study included the degree to which teachers received resources, school characteristics (i.e., urbanicity, school size), and the teachers' perceptions of the students' academic readiness and engagement (i.e., perception of the percentage of students in attendance, perception of the degree to which students are on grade-level).

Resources: Teachers were asked to answer whether they had received any type of resources to help them address the needs of their specific student categories, including students with mild or moderate disabilities, students with severe disabilities, English language learners, students from different racial/ethnic groups (i.e., BIPOC (Black, Indigenous, People of Color) students), students affected by poverty, and students experiencing homelessness. First, teachers were asked to indicate which of the six categories of students they were serving at the point of the survey. Second, teachers were then asked to indicate whether they "received adequate resources (from any source in your school system)" for the students they serve. Using these two responses, a final variable was created, with 0 indicating a deficiency of resources when teachers served students in at least one of the six categories listed above, but did not receive any resources for that category; and 1 indicating an adequacy of resources when teachers who served students in at least one of the six categories also received any resources for that category, or in situations when teachers did not serve a category, so they did not report receiving resources.

School Characteristics: School characteristics, such as urbanicity and school size, were provided from the Common Core of Data (CCD), which is the educational data collected on public schools by the U.S. Department of Education. The school's level of urbanicity was presented with a four-point ordinal scale, which included Rural (1), Town (2), Suburban (3), and Urban (4). School size was presented with a three-point ordinal scale, which included Small (1), Medium (2), and Large (3). Schools with less than 400 students were coded as small schools, schools with from 400 to 799 students were coded as medium schools, and schools with more than 799 students were coded as large schools.

Student Engagement: Two indicators were used to assess teacher perceptions of student engagement. School attendance was measured by the question of "Approximately what percentage of your students are typically present (whether remote or in-person) each school day this school year (2020–2021)?" Teachers were asked to answer the percentage as a numeric format between 0 to 100. Grade-level preparedness refers to the degree to which teachers perceived their students as being ready to engage in grade-level learning expectations for this year in comparison to last year, and was measured by the question of "How prepared are the majority of your students to participate in grade-level work this school year (2020–2021), relative to their preparedness at this time last year?". This variable was coded with three scales as the following: "−2 = Significantly less prepared than last year"; "−1 = Somewhat less prepared than last year"; "0 = More prepared than or about the same as last year".

2.3. Plan for Analysis

The data were analyzed in three steps. In step 1 (Research Question 1), Latent Class Analysis (LCA) using Mplus 7 [19] was used to examine whether teachers are classified into different clusters based on whether they were provided resources for each category

of students (types of accessible resources). To identify the number of latent class cluster patterns, LCA uses statistical model fit criteria, including the Akaike information criterion (AIC), Bayesian information criterion (BIC), sample-size-adjusted Bayesian information criterion (SSABIC), entropy, and adjusted Lo–Mendell–Rubin likelihood ratio test (Adj.LRT). AIC, BIC, and SSABIC are used to calculate whether a model overfits the data, with lower scores indicating a better fit [20]. Adj. LRT provides statistical significance in whether a model with N (e.g., 5) number of cluster classes is significantly different from a model with N-1 (e.g., 4) number of cluster classes. If there is no significant difference between the models (e.g., 5 vs. 4), then the N-1 cluster (e.g., 4) is recommended as the final model [21].

In step 2 (Research Question 2), multinomial logistic regression was used to examine whether the types of accessible resources, which are identified from step 1, vary based on school characteristics—level of urbanicity and school size. Multinomial logistic regression predicts the odds of receiving resources based on cluster patterns, as well as school characteristics.

In Step 3 (Research Question 3), multivariate analysis of variance (MANOVA) was used to assess whether the types of accessible resources for teachers predict teacher perceptions of school attendance rates and grade-level preparedness. The Scheffe post-hoc test was used to examine the mean differences between groups. Both step 2 and step 3 were performed using SPSS Statistics 27.

3. Results

3.1. Patterns of the Pandemic Resources for Students with Needs

The results of the LCA model fit comparisons are presented in Table 1. A total of four latent clusters were considered the most optimal solution. Three of the information criteria indicators—AIC, BIC, and SSABIC—indicated a better fit as the number of latent groups progressively increased from the 2 to 4 cluster pattern solution. The “better fit” is indicated by observing progressively lower observed scores for each increase in the number of clusters until the 5-cluster model, when all three indicators showed increased scores.

Table 1. Model Fit Criteria by the Number of Latent Groups.

Number of Latent Groups	AIC	BIC	SSABIC	Adj.LRT
2	2344.545	2396.818	2355.567	0.000
3	2209.688	2290.109	2226.640	0.011
4	2171.313	2279.881	2194.200	0.049
5	2175.980	2312.695	2204.805	0.522

Adj-LRT indicated that the four-groups model was significantly different from, and was, therefore, a better solution than the three-groups and two-groups model ($p < 0.05$). The five-groups model was not significantly different from the four-groups model ($p = 0.52$). Therefore, the four-group model was deemed to be the optimal model for explaining the patterns in resource accessibility for serving the six student populations.

The patterns of four latent clusters, with respect to the levels of support with resources received by the student populations served, can be found in Figure 1. The first cluster consisted of 35% of the teacher sample ($n = 144$), who reported the most resources across all student populations, and are, therefore, referred to as *Most Supported*.

The second cluster consisted of 41% of the teacher sample ($n = 169$), which is also the largest of the four cluster patterns. These teachers reported receiving the lowest number of resources compared to the other clusters across all six student populations, and are, therefore, referred to as *Least Supported*.

The third cluster pattern consisted of 16% of the teacher sample ($n = 66$), who received higher support and resources for serving students with disabilities, and is referred to as *Moderately Supported Group A*. These educators reported receiving more resources for students with mild/moderate and severe disabilities, and English learner students, compared

to other groups of students, such as students from low-income backgrounds or students experiencing homelessness.

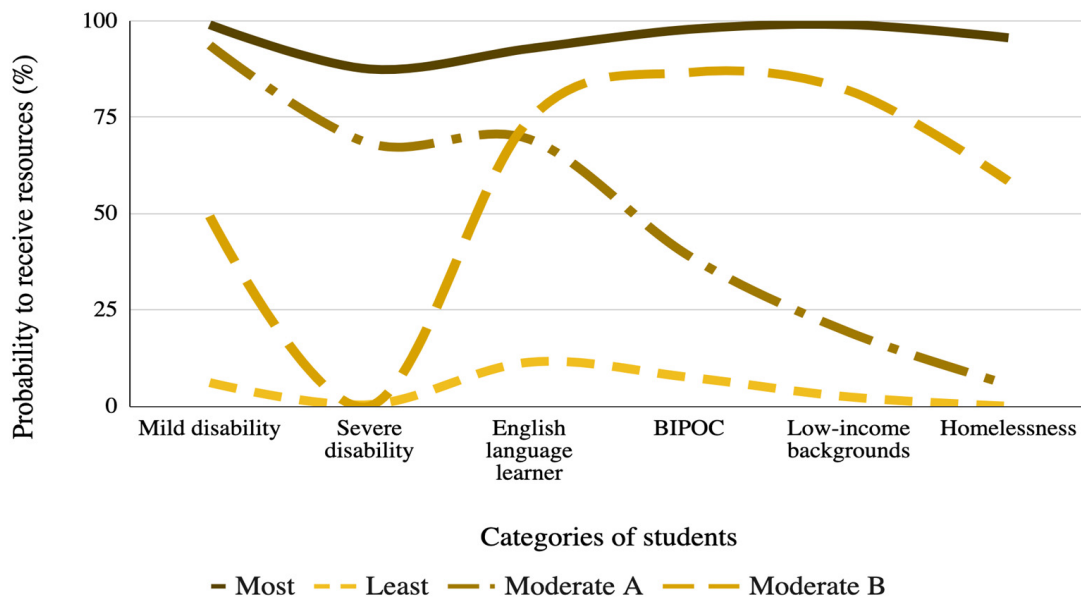


Figure 1. Latent Patterns of Teacher Resources for Students with Diverse Needs.

The fourth cluster, which is referred to as *Moderately Supported Group B*, consisted of the smallest overall number of teachers (8%; n = 33) who reported higher access to resources for serving BIPOC students, students from low-income backgrounds, and students who are experiencing homelessness, but relatively lower access for students with mild/moderate and severe disabilities.

3.2. Patterns of Resources and School Characteristics

Table 2 shows whether the levels of urbanicity and the size of the school are related to the four cluster patterns. The *Most Supported Cluster* was used as the reference group in this analysis. In comparison to the teachers classified as *Most Supported*, the teachers who were teaching in more urbanized districts were more likely to be classified as *Least Supported* (B = 0.21, p = 0.001), *Moderately Supported A* (B = 0.09, p = 0.001), or *Moderately Supported B* (B = 0.49, p = 0.001). Moreover, in comparison to teachers classified as *Most Supported*, teachers who were teaching in larger size schools were more likely to be in classified as *Least Supported* (B = 0.14, p = 0.001), *Moderately Supported A* (B = 0.31, p = 0.001), or *Moderately Supported B* (B = 0.40, p = 0.001). The overall result from step 2 shows that teachers received different types of resources based on the school size and location.

Table 2. Multinomial Logistic Regression.

		B	SE	Exp (B)	95% CI
Least supported	Intercept	−0.80 ***	0.01		
	Urbanicity	0.21 ***	0.00	1.234	[1.229–1.239]
	School size	0.14 ***	0.00	1.156	[1.149–1.163]
Moderate supported A	Intercept	−1.80 ***	0.01		
	Urbanicity	0.09 ***	0.00	1.091	[1.085–1.097]
	School size	0.31 ***	0.00	1.360	[1.349–1.371]
Moderate supported B	Intercept	−3.87 ***	0.02		
	Urbanicity	0.49 ***	0.00	1.234	[1.229–1.239]
	School size	0.40 ***	0.01	1.156	[1.149–1.163]

Note: Reference group—Most Supported; *** p < 0.001.

3.3. Patterns of Resources and Teachers' Perception in Students' Engagement

In order to compare differences in the teachers' perception of students' academic engagement during the pandemic, a one-way MANOVA was conducted with cluster patterns serving as the independent variable and teachers' perceptions of students' attendance and grade-level preparedness serving as the dependent variables. The results indicated significant differences between the clusters with respect to the perceptions of attendance ($F(3, 1,096,391) = 1350.33, p < 0.001, \eta^2 = 0.004$) and the perceptions of grade-level preparedness ($F(3, 1,096,391) = 15,112.31, p < 0.001, \eta^2 = 0.040$).

For perceptions of attendance, post-hoc analyses indicated significant differences between the four clusters, with teachers in the *Moderately Supported A* cluster ($M = 84.92, SD = 15.73$) reporting higher expectations in student attendance than teachers in the *Most Supported* cluster ($M = 84.49, SD = 16.68$; mean difference = 0.43, $CI = (0.28, 0.56), p < 0.001$), *Moderately Supported B* cluster ($M = 83.11, SD = 16.33$; mean difference = 1.81, $CI = (1.61, 2.01), p < 0.001$), and *Least Supported* cluster ($M = 82.45, SD = 18.57$; mean difference = 2.47, $CI = (2.32, 2.60), p < 0.001$). Teachers in the *Most Supported* cluster also reported higher expectations in student attendance than teachers in the *Moderately Supported B* cluster (mean difference = 1.38, $CI = (1.21, 1.57), p < 0.001$) and *Least Supported* cluster (mean difference = 2.04, $CI = (1.93, 2.14), p < 0.001$). Moreover, teachers in the *Moderately Supported B* cluster reported higher expectations in student attendance than teachers in the *Least Supported* cluster (mean difference = 0.66, $CI = (0.47, 0.83), p < 0.001$).

For the perception in grade-level preparedness, post-hoc analyses indicated significant differences between the four clusters. Teachers in the *Most Supported* cluster ($M = -0.86, SD = 0.79$) perceived their students as having higher grade-level preparedness than teachers in the *Moderately Supported A* cluster ($M = -0.94, SD = 0.82$; mean difference = 0.08; $CI = (0.07, 0.09), p < 0.001$), *Moderately Supported B* cluster ($M = -1.03, SD = 0.74$; mean difference = 0.17, $CI = (0.16, 0.17), p < 0.001$), and *Least Supported* cluster ($M = -1.22, SD = 0.78$; mean difference = 0.36, $CI = (0.35, 0.36), p < 0.001$). Teachers in the *Moderately Supported A* cluster also reported higher expectations in grade-level preparedness than teachers in the *Moderately Supported B* cluster (mean difference = 0.08, $CI = (0.07, 0.09), p < 0.001$) and *Least Supported* cluster (mean difference = 0.28, $CI = (0.27, 0.28), p < 0.001$). Teachers in the *Moderately Supported B* cluster reported higher expectations in grade-level preparedness than teachers in the *Least Supported* cluster (mean difference = 0.19, $CI = (0.18, 0.20), p < 0.001$). To sum up, the overall result from step 3 shows that when teachers received more diverse types of resources, they were more likely to have positive expectations of student academic involvement.

4. Discussion

This study aims to answer whether the resources tailored for students with special needs were accessible to teachers working with those students, whether there was a gap in accessibility amongst schools, and whether the differences in resource accessibility predicted teachers' perceptions of students' academic engagement during the pandemic. The result from the first analysis for Research Question 1 shows that resources tailored for students with special needs were provided to teachers to some extent, but they were not provided to all teachers. It is alarming that 41% of teachers (*Least Supported*) reported that they had not received any of the resources they needed for supporting students with special needs, as of October 2020. Considering the transition to remote learning in school began in March 2020, this finding implies that teachers may have struggled to support students with special needs during the transitional period of the pandemic because of the lack of resources.

In regards to Research Question 2, the results indicated that differences in the accessibility of resources for teachers to support students with special needs were strongly related to the location and size of the school. During the COVID-19 pandemic, low resource accessibility was more commonly reported by teachers in urbanized and large-sized schools rather than by teachers in rural and small-sized schools. Communities with high population rates

can be more vulnerable during the pandemic [3], and teachers in these communities may have struggled in supporting diverse students more than usual. These results align with previous findings that educators working in urban settings experience different struggles from those working in rural settings during times of crisis [22].

The results from Research Question 3 indicate that teachers classified in the lower support groups reported significantly lower expectations in student engagement for both attendance and grade-level preparedness compared to the other groups. This finding suggests that in the future, when supporting teachers during a crisis, it will be important to carefully consider the level of resources provided to support student engagement and motivation. For instance, Ref. [23] created a free-access web-based guide that teachers and school psychologists can use to better support the school engagement of students. This guide provides resources to educators for encouraging students' academic engagement by providing strategies for supporting students in developing their own self-care plans, in their social-emotional learning, and by providing resources for their families.

4.1. Implications

To provide need-based and context-sensitive guidelines for teachers during the COVID-19 pandemic, it is especially important to have an understanding of the nature of emergency remote learning [24]. According to Ref. [24], schools need to approach emergency remote learning differently than they would for traditional online learning. Traditional online learning is designed with a deeper consideration of contents, the long-term expectations of pedagogy, and the roles of instructors and students in a virtual environment. However, emergency remote learning occurs within a short period due to the urgent needs caused by an unexpected crisis, and, thus, is carried out with significantly less consideration for the aforementioned factors. Though emergency remote learning requires new teaching models, many communities struggled with the technological aspect of remote learning, as it quickly became apparent that not all communities have the same technological and internet access or the financial resources needed to invest in technology [25]; that is, emergency remote learning has to be facilitated flexibly with the awareness of the struggles educators are facing, and should provide guidelines with consideration of the context of the crisis [24]. In the same vein, the National Council of Teachers of Mathematics [26] advises that districts provide guidelines to teachers that enable them to effectively adapt to the disruptions of remote and hybrid teaching models. These guidelines aimed to support teachers to modify their curriculum and adopt new pedagogical strategies as they design emergency remote instruction practices [26,27].

Another interesting and important finding of this study is in regards to the teachers who are classified as *Moderately Supported A*. They served high numbers of students with disabilities, and reported the highest engagement rates related to attendance rates compared with the other teacher groups. One possible reason for this is that their students may have received more personalized learning, such as smaller-sized in-person or one-on-one classes compared to students in other categories. Each community faces different issues, and the resources they need are different based on their issues. The Commerce Independent School District in Texas, for example, provided teachers working with students with disabilities two-day workshops designed for supporting this specific category of students [28]. The workshop aimed to increase the self-efficacy of teachers to provide quality services to students with disabilities within a remote learning environment. These professional development opportunities enabled teachers to effectively document and monitor student IEP progress despite school closures. In order to be continually successful, the resources provided to teachers must be sensitive to the characteristics of each student with different needs and their various contexts during the pandemic.

A strength of rural education systems identified in the current study was also observed in previous research [28]. Teachers from schools in rural areas had closer connections with students, families, and the school district [28]. School districts in a rural locality, and with strong connections within the community, were more likely to provide students

with special needs adequate services compared to those in an urban locality during the pandemic. In the rural district in Texas, which has diverse student populations (nearly half of the students in the district are BIPOC students or have low-income backgrounds), schools responded to the crisis by increasing communication, collaborating creatively, and providing additional professional development [28]. The teachers were able to maintain strong lines of communication with their students and families during the pandemic. Therefore, the communication and collaboration across varied key stakeholders, including parents, teachers, and school leaders, are the keys to address the sudden changes brought about by the pandemic [13].

In an effort to support teachers and promote self-efficacy and skills to encourage students' active participation and engagement, the Marblehead School District in Massachusetts employed the Collaborative on Academic, Social, and Emotional Learning (CASEL) model [29]. A team of district psychologists, counselors, and social workers provided resources to design and implement a professional development workshop for educators. Teachers were divided into small groups that regularly met with a district team member to identify ways to integrate professional development program activities into their remote learning curriculum [30]. Additionally, the team added mental health resources for teachers to prevent their possible burnout and demoralization, which can be caused by low expectations about student engagement and achievement [14]. In the same vein, the American Psychological Association also shared a report titled *The Great Unknown: 10 Tips for Dealing with the Stress of Uncertainty* [31]. This report provides a range of self-care strategies for teachers, as well as students and parents, for dealing with major social crises such as COVID-19.

4.2. Limitations

Although the findings of this study provide useful information about teacher resources during the pandemic, this study is not without its limitations. All of the variables were measured using a limited number of items; although, using the weighted secondary data is helpful to acquire generalizable results and conclusions. Survey questions developed by the American Educator Panels [18] only included one item per variable, which means that it was not possible to assess their reliability and validity. Additionally, the perceptions of teachers with respect to attendance and grade-level learning were used in this study for illustrating the relation between pandemic support and students' academic engagement. These variables are subjective perceptions of teachers, and may not reflect actual academic engagement with respect to changes in attendance and grade-level preparedness. Therefore, the results should be carefully interpreted in light of this. As another limitation, the data used in this study were de-identified data, which does not include the private information of the participants, such as sex, race, or years of teaching. It is important to be aware that there might be individual differences between individuals, and it might affect the clustering of different latent groups. Therefore, future research needs to validate how the research questions will be answered by the characteristics of teachers. Additionally, another limitation of this research is that the term "resources" was not conceptualized for teachers engaged in this survey. The term resources can mean a host of things for each teacher, including, but not limited to, physical items, such as books, pens/pencils, computers, backpacks, and textbooks, for their students, to more technological resources, such as internet access or access to electricity [32]. Teachers might have also needed resources to support their personal lives, such as childcare, parental care, and so forth [32]. As such, it is difficult to ascertain what exactly the teachers in this data set understood the word "resources" to mean. Thus, it is recommended to expand the current findings with consideration of the subjective understanding of teachers about resources in future research.

4.3. Conclusion

The COVID-19 pandemic continues to be an unprecedented global event. This study found that many teachers (41%) did not receive access to resources needed to redesign the

content and delivery of their course materials, especially teachers working in more highly urban settings and working in schools with larger numbers of students. This inequity in resource allocation and management continues to exacerbate the existing risk factors that keep students from achieving all that they can in school. Critical services provided for students by schools, such as meals, medical care, educational and developmental disability support, and mental health services, fell by the wayside during the pandemic. The lack of resources for teacher support was one more deficit in the lives of these students during this time. Teachers who did not receive any or adequate resources for their students reported being less prepared to address the learning needs of their students, which contributed to teachers experiencing their students becoming more disengaged over the course of the pandemic. This is unfortunate because student engagement is critical for the educational, as well as social–emotional, outcomes of the students in and out of school.

The availability of teacher resources is an issue that is not often addressed and is often overlooked in policies. It leads to a gradual, but consistent, decline in the resources available to teachers and students, especially those teachers who teach students who are members of marginalized communities such as those mentioned above. The findings from this study support the often-overlooked claim that teachers without (or with reduced) resources report lower student engagement in both attendance and grade-level preparedness, leading to the increased possibility of students falling behind and falling into the dreaded achievement gap. This finding is supported by the knowledge that students in the achievement gap tend to be members of the aforementioned marginalized groups. Ergo, there is a clear connection between the chances of being successful in school and the amount and type of support available to these students and their teachers.

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