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ORIGINAL ARTICLE

Teacher stress in the era of COVID-19: A changed learning environment?

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Abstract
Impacts of COVID-19 have required teachers to rapidly adapt their teaching practices. This is especially the case when schools experience lockdowns and face-to-face learning is replaced with online learning. In this mixed methods study, pre-COVID teacher stressors associated with school climate and learning environments were explored in a national network of 48 independent Australian schools, following an examination of these stressors during and after the 2020 school lockdowns which occurred in response to the first wave of the pandemic. Open-ended survey questions revealed the primary issues of concern for teachers were workload, time management, well-being/mental health, concern for students, quality of learning, parents and school leadership. Likert-scale survey questions revealed four main clusters of stressors based on the trend in stress levels before COVID-19 to after the school lockdowns. Typically, stress levels were highest during school lockdowns. Analysis of the quantitative data reflected more positivity than was evident in the qualitative results, with teachers reporting more favourable perceptions about their schools' leadership than has been identified in other COVID-19-related studies. Overall, this study reveals teachers' perspectives on the stressors they face in response to the COVID-19 pandemic, and as such, provides insight into areas where teacher well-being needs to be better managed.

Keywords Learning environments · COVID-19 · Teacher stress · Online learning · Education

1 Introduction

For many years, the study of classroom and school learning environments has been recognised as being complex due to the many measurable variables that impact them (Fraser, 2012, 2014). Parallel to the study of learning environments has been the work invested in studying school climates. Cohen et al. (2009) suggest that a combination of factors contribute to a school climate including: the safety or perceived safety on offer at the school; the nature of the relationships between all parties at the school; and the physical environment

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at the school. Because each of these factors has a social and a physical impact, it is reasonable to accept the premise that the recent and ongoing situations arising from the COVID-19 pandemic would have an impact on school climate and classroom learning environments. This study reports teacher perceptions of changing conditions and stress levels before, during and after COVID-19-related school lockdowns.

This mixed methods study aimed to establish teacher perceptions of the impact of COVID-19 on literature-identified teacher stressors and was designed to inform practices within a national system of 48 independent Australian schools. The stressors identified in the literature included, firstly, those from pre-COVID-19 studies and secondly, a collection of research published during 2020–2021 that identified newly identified—stressors for teachers, especially those associated with COVID-19 school lockdowns. The two lists were compiled and teachers in the Adventist Schools Australia (ASA) schools were asked to report on the impact these stressors had on their school's climate and learning environments. The teacher stressors identified from literature published before and during COVID-19 were used to develop two online questionnaires that were administered to the teachers in the 48 schools targeted in this study.

2 Background

The literature informing this study falls into two categories: (1) research identifying teacher stressors before the events of 2020 associated with the pandemic; and (2) research undertaken during 2020 that was specifically related to school climate and learning in the early phase of the pandemic. 'Teacher stress' is the major construct for this study.

2.1 Teacher stressors prior to the COVID-19 pandemic

Teacher stress has been thoroughly researched over the years, with our team locating 46 areas of teacher stress identified in the literature prior to 2020. Some of these stressors, outlined below, have been identified in several studies, while others have been identified only once. The stressor for teachers that has been most reported is classroom management or issues related to discipline (Aldrup et al., 2018; Alhija, 2015; Ferguson et al., 2017; Hanif et al., 2011; Mackenzie, 2007; Pang, 2012; Skaalvik & Skaalvik, 2017; Spilt et al., 2011; Yu et al., 2016). Teacher workload was also cited multiple times by the same authors who reported classroom management as a major source of stress. Based on past research, the career stage of teachers also appears to influence the type of stress that is most relevant to them. While Clement (2017) comments that new teachers worry about surviving, mid-career teachers worry about work/life balance, and well-experienced teachers worry about keeping up with changes and innovations. Many of these issues, despite the experience level of teachers, are associated with teachers' workloads.

Other teacher stressors that are well-represented in the literature include that of managing relationships with colleagues and administrators (Alhija, 2015; Ferguson et al., 2017; Mackenzie, 2007); trying to work with students who are unmotivated. (Center & Steventon, 2001; Richards, 2012; Skaalvik & Skaalvik, 2017); and issues surrounding the teachers' emotional status including negative emotional states, low self-efficacy, low levels of life satisfaction and low teacher well-being (Bower & Carroll, 2017; Bullough et al., 2012; Spilt et al., 2011). Many of these teacher stressors are also associated with social and emotional issues that impact school climate and learning environments.

A number of other teacher stressors that have been identified, but not reported as often, include issues associated with facilities and resources, pressure from government and community, poor school administration (Sabin, 2015); not enough support or mentoring (Spilt et al., 2011); frequent changes and being evaluated by others (Alhija, 2015); pay rates, school environment, status in society, accountability (Hanif et al., 2011; Richards, 2012); and number of meetings, frequently changing schedules, concerns about legal requirements and school politics (Center & Steventon, 2001). These issues can be categorised as relating to school climate more than classroom learning environments.

Furthermore, teacher stress is likely to have a profound impact on the classroom learning environment (also referred to in this article and previous research as *the learning environment*) and the overall school climate (Skaalvik & Skaalvik, 2017). Indeed, the teachers' emotional state and stress levels typically affect the performance of the teacher in creating positive learning environments conducive to quality learning (Spilt et al., 2011). As such, learning environment scales that have been developed to measure student and teacher perceptions of their classroom environment include items that align with scales directly impacted by teacher input, attitude, energy and motivation. For example, the often-used WIHIC (What is happening in my classroom?) (Fraser et al., 1996) scales include student cohesiveness, student participation and involvement, emphasis on inquiry learning and investigation, task orientation, cooperation among the cohort, and whether the teacher is practising equity in the classroom. Therefore, in these scales, the teacher is viewed as the main contributing entity affecting the way in which students assess their learning environment in each of these scales.

2.2 Teacher stressors since the COVID-19 pandemic

During 2020, several studies were published that found and described teacher stressors as a result of the COVID-19 pandemic and the subsequent school lockdowns. These stressors ranged from issues that were directly relevant to individual teachers (Melnick & Darling-Hammond, 2020; Viner et al., 2020), to genuine concerns about student learning (Zhang et al., 2020), and apprehensions about what the school climate may look like for teachers after school lockdowns were lifted. For example, one study showed that teachers were stressed about what the future held for schools, teachers and learning after lockdown, and that teachers were fearful about the impact of school closures on the community (Melnick & Darling-Hammond, 2020). Furthermore, issues were identified from the emerging COVID-19 literature that indirectly impacted teachers because of their students' experiences (Cluver et al., 2020; Nicola et al., 2020; Zhang et al., 2020).

One issue that was found to be stressful for individual teachers during the time leading up to the 2020 school lockdowns was a heightened concern for the older staff in schools, including principals, given the initial medical information about the COVID-19 virus presenting an increased health risk for those in older age groups (Bailey & Schurz, 2020). Furthermore, of concern to all staff was the mental health of staff and students (Lee, 2020), and the changing management practices during the COVID-19 school lockdowns (Viner et al., 2020). Other concerns reported in the literature included the stress, behaviour and mood of students with additional learning needs, such as those with attention deficit hyperactivity disorder (Zhang et al., 2020).

Challenges associated with COVID-19 were reported as also being stressful for teachers based on their genuine care about the learning of students (Burgess & Sievertsen, 2020). Teachers were concerned about the learning gap between students from different

socio-economic backgrounds (Nicola et al., 2020; Van Lancker & Parolin, 2020) and the impact of lockdowns on equality of assessment (Burgess & Sievertsen, 2020). Teachers expressed concern about their students coping with increased domestic disputes and the subsequent impact on their learning (Cluver et al., 2020). Teachers were also stressed about the amount of change they were undergoing and their unsure futures.

Overall, recent post-COVID-19 research indicates that teachers are concerned about, and challenged by, a wide range of issues that affect them as individuals, the school as a whole, and the quality of student learning and assessment.

3 Method

Using a mixed methods approach, this study explored the experiences of teachers in 48 independent schools in Australia during 2020–2021 with a particular focus on the stressors that impacted their school climate and learning environment. The researchers began by reviewing past literature on teacher stressors and consulted school leaders to establish baseline information about the reported stressors that impacted teachers before and during the COVID-19 pandemic. Next, the views of the teachers themselves were gathered through two online surveys (Table 1). The investigation was guided by the overall research question: *What are teachers' perceptions surrounding the impacts of COVID-19 on their school climate and learning environments?*

4 Data collection and analysis

Based on the teacher stressors identified during Phases 1 and 2 of the study, Phase 3 comprised two online surveys developed to gather data from teachers about how they viewed these stressors and how the stressors had impacted issues associated with their school's climate and learning environments, including their teaching roles, their students and students' learning, their school leaders and the school. The whole cohort of approximately 1200 primary and secondary teachers in the 48 ASA schools across Australia were invited to complete these online surveys.

Phase 1 of the study sought to compile an exhaustive bibliography of research on teacher stress purposely divided into two sections—teacher stressors identified pre-COVID-19 and teacher stressors because of the COVID-19 lockdowns. In Phase 2 of the study, the collection of stressors identified in the literature was sent out to principals and school system executives from the 48 ASA schools across Australia to seek their input to identify the areas they would find informative for their practice. These identified issues were used to inform the development of the surveys that made up Phase 3 of the study.

To reduce the participants' survey fatigue, we divided Phase 3 into two surveys, each of manageable length, instead of administering one extended survey. Survey 1 was made up of 25 items where participants were asked to place a Likert-style value on their levels of stress before, during and after school lockdowns. These stressors were based on the pre-COVID-19 literature on teacher stressors. The second survey was a 12-question survey where teachers answered YES/NO to questions around their school's response to COVID-19 and their views on the future in their school as a teacher. These questions revolved around the care of teachers (particularly older teachers) and students, the impact on student learning, integrity of assessments during lockdown, attitude of parents, mental health of teachers and students,

Table 1 Data collection instruments

Phase	Phase of the study	Data gathered and analysed
1	**Literature review** to identify stressors that impact teachers in schools before and during the COVID-19 pandemic	Teacher stressors from previously published and current literature
2	**Consultation with school leaders** to collect their view of the stressors identified in the literature	Feedback from school leaders about teacher stressors identified from published literature
3	**Survey development**, based on findings of Stages 1–2 **Survey administration** to the sample teachers	Survey 1: Twenty-six Likert-style questions with a place for free response to each item Survey 2: Twelve Yes/No survey questions with a place for free response to each item

differing impact of COVID-19 based on student socio-economic level, performance of school management, and what the future looks like. Teachers were invited to provide an extended comment at the end of both surveys to share their additional ideas about the stressors listed, and they were also invited to provide a comment along with their responses to each Likert-style item on the second survey.

In total, 356 participants completed the first survey, which accounted for 30% of the population. Responses to the twenty-six questions were analysed using quantitative analysis software (SPSS, Version 26) to generate descriptive statistics (i.e., means and standard errors) after the Likert-items were converted to numeric scores where 1 = no stress, 2 = mid stress, 3 = major stress and 4 = extreme stress. Support for the use of parametric statistics to analyse Likert data, as used in this study, is well supported in the literature (Carifio & Perla, 2008; Norman, 2010; Sullivan & Artino Jr, 2013). Paired-sampled t-tests were conducted to determine if, for each stressor, differences in the level of stress occurred before, during or after the COVID-19 school lockdown. A total of 317 participants responded to the second survey, which accounted for 26% of the population. Given that the topic of the surveys was 'teacher stress' as a result of the COVID-19 lockdowns, and the surveys could be seen as one more stressor to add to their load, we were not surprised that only 26–30% of the population responded. While the responses received would be typical of the population, the response rate is a limitation to the study.

Qualitative data gathered from the teachers' extended responses to the two surveys were collated and analysed thematically using qualitative analysis software (NVivo, Version 11). The purpose of these analyses was to: (1) determine the stressors experienced by teachers due to COVID-19 (Fig. 6); and (2) gain an understanding of the teachers' experiences and observations of the impacts of COVID-19 at the school and classroom level (Table 3).

In total, 96 teachers provided open-ended responses on the first survey and 279 teachers provided open-ended responses on the second survey. A matrix system that utilised a combination of deductive coding (using pre-determined research question) and inductive coding (to identify emergent codes and themes) was used to categorise and analyse the qualitative data (Stuckey, 2015) from both surveys in Phase 3. Firstly, the data were categorised according to their alignment to the study's research question and individual questions in the data collection instruments were used to further categorise the data. Next, the data were analysed inductively by adopting the following steps:

1. Memoing to capture initial observations of the data (Robson & McCartan, 2016);
2. Developing a coding matrix (Miles & Huberman, 2013) to collate and categorise (code) the data using emergent themes and research questions as organising categories;
3. Identifying the dominant themes and sub-themes in the data in relation to the study's research questions;
4. Collapsing similar codes, identifying strong, medium and weak codes and removing codes with low levels of evidence;
5. Determining relationships between the remaining dominant themes and sub-themes; and
6. Developing a thematic map (Figs. 5 and 6 and Table 3) to reflect the essence of the data's meaning, as represented by the participants' responses to the open-ended survey items.

5 Quantitative results

Levels of stress before and after the COVID-19 school lockdowns for all 26 stressors generally fell within Likert scores of 1 and 2 corresponding to no stress and mild stress, respectively (Figs. 1 and 3). During school lockdowns, stress levels for nine stressors remained below a value of 2 (i.e., below mild stress), while fourteen recorded mean values between 2 and 2.5, and the remaining three being below a value of 3 (i.e., below major stress).

Overall, stressors fell into one of four main clusters depending on how stress levels shifted before, during and after the school lockdowns. The first cluster included eight stressors that significantly increased during the school lockdown, and significantly reduced after it, but remained significantly higher than before the lockdown (Fig. 1a, all *t*-test comparisons $p < 0.05$). Examples included 'time management', 'class administration requirements' and 'changing curriculum requirements'. The second cluster, consisting of seven stressors, displayed a similar significant increase in stress levels during the school lockdown but levels lowered, or returned to similar levels, after the lockdown compared to

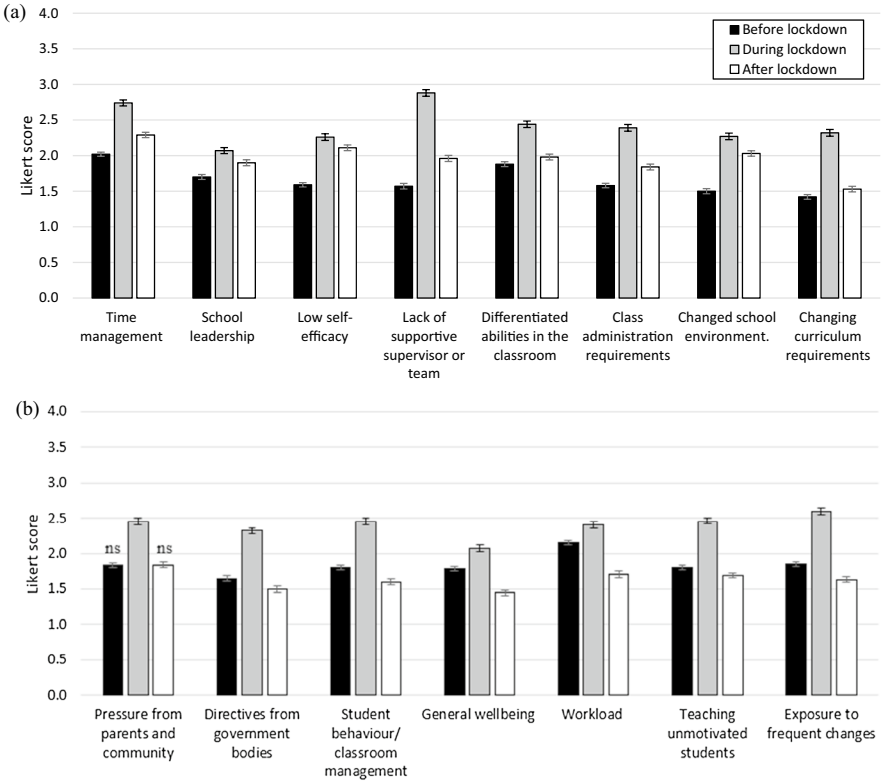

Fig. 1 Levels of teacher stress for stressors that were highest during the COVID-19 lockdown and, compared to before the lockdown, either increased (**a**) or remained the same/decreased (**b**). Likert scores are derived from 1 = no stress, 2 = mid stress, 3 = major stress and 4 = extreme stress. Paired t-tests that were not significant are displayed as 'ns'. Standard error bars shown

before (Fig. 1b, all but one t-test comparison being $p < 0.05$). Examples included 'directives from government bodies', 'general well-being' and 'workload'.

For both cluster one and cluster two, major or extreme stress was most frequently reported during the school lockdown with at least one-third of respondents revealing major/extreme stress during this time for all cluster one and cluster two stressors except 'school leadership' and 'general well-being' (Fig. 2). For some of these stressors during lockdown over half of the respondents experienced major/extreme stress, including 'time management' (60.4%), 'lack of supportive supervisor or team' (68.5%) and 'exposure to frequent changes' (52.5%). Generally, major/extreme stress before and after the school lockdown was reported for these stressors in less than 20%, and often less than 10% of respondents (Fig. 2).

A third cluster, representing eight stressors, demonstrated a sustained and significant increase in stress levels from before the school lockdown to after (Fig. 3a, all but three t-test comparisons being $p < 0.05$). Examples belonging to this cluster included 'negative emotive state', 'interactions with students' and 'employment security'. The number of respondents in this cluster reporting major/extreme levels of stress

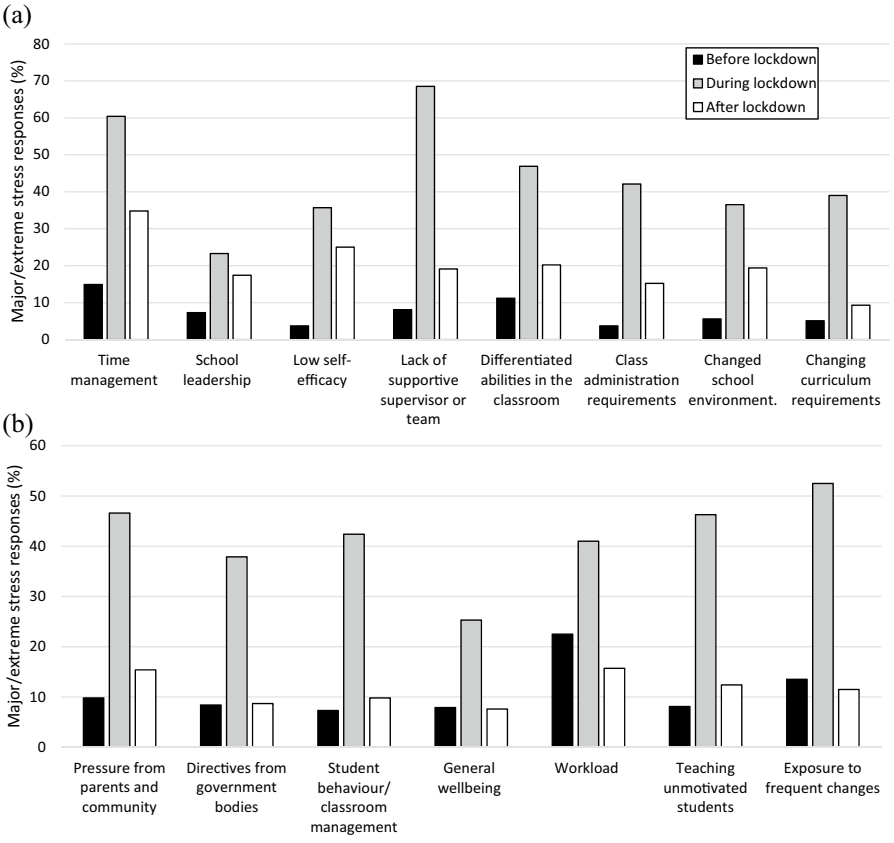

Fig. 2 Percentage of respondents choosing major or extreme stress levels for stressors that were highest during the COVID-19 lockdown and, compared to before the lockdown, either increased (**a**) or remained the same/decreased (**b**)

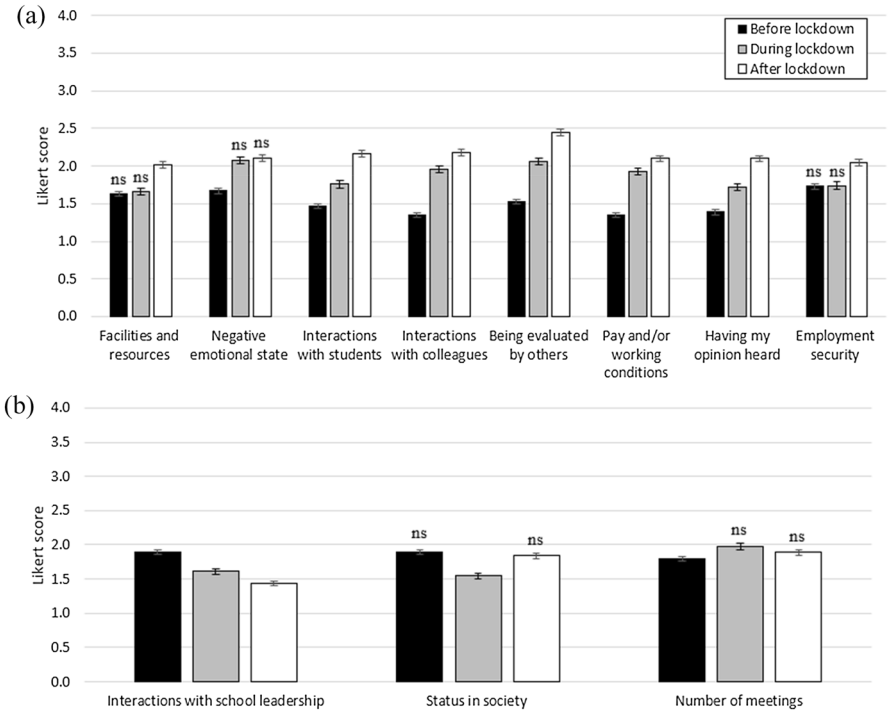

Fig. 3 Levels of teacher stress for stressors that were highest after the COVID-19 lockdown (**a**) or showed trends unlike other stressors (**b**). Likert scores are derived from 1 = no stress, 2 = mid stress, 3 = major stress and 4 = extreme stress. Paired *t*-tests that were not significant are displayed as 'ns'. Standard error bars shown

typically rose from less than 5% to around 25% after the school lockdown (Fig. 4a). Interestingly, the stressor that rated as having the highest level of stress after the school lockdown was 'being evaluated by others' with nearly 45% of respondents reporting major or extreme stress at this time.

The fourth cluster, consisting of only three stressors, comprised stressors that either showed directional shifts to having less stress (i.e., 'interactions with school leadership') or demonstrated minimal shifts in stress levels (i.e., 'status in society', 'number of meetings') (Fig. 3b). The number of respondents reporting major/extreme levels of stress was typically low (i.e., less than 15%) for each of these stresses from before to after the school lockdown with the exception of 'number of meetings' which rose to 25.0% during the school lockdown (Fig. 4b).

When asked to respond to various questions related to the impacts of COVID-19 on staff, students and the school, there were a high number of 'yes' responses provided (Table 2). Of highest agreeance was that the school's management team handled the COVID-19 situation well (91%), the school displayed a heightened level of care and concern for students (90%), and COVID-19 has impacted teacher and student mental health (88% and 86% responded with 'yes', respectively). The only question that less than half of respondents agreed with was 'Did your school find it difficult to ensure

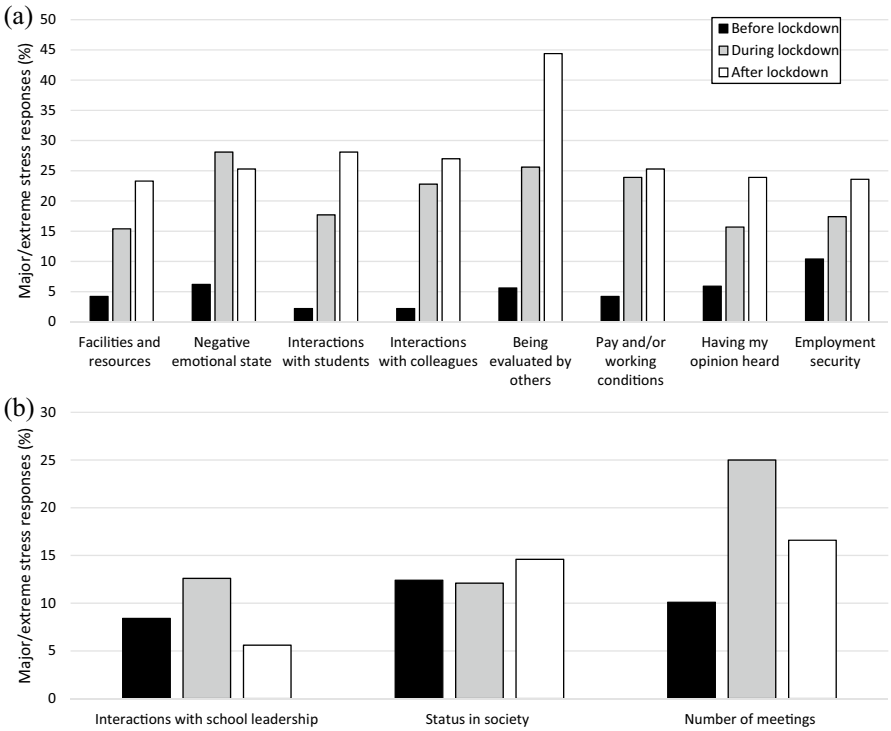

Fig. 4 Percentage of respondents choosing major or extreme stress levels for stressors that were highest after the COVID-19 lockdown (**a**) or showed trends unlike other stressors (**b**)

integrity of assessments during lockdown (e.g. plagiarism)?', with only 47% responding with 'yes'.

6 Qualitative results

Qualitative data were gathered from teachers' extended responses to the two online surveys in Phase 3 of the study. The analysis of these data was driven by the need to identify the stressors experienced by teachers and the intention to gain insight into their observations of the impact of COVID-19 on students, learning, parents, the school and school leaders. The teachers' responses to the open-ended survey questions were initially analysed according to their relevance to the study's research question and topics reflected in the survey questions, and then the data were inductively analysed to determine the emergent themes present in the data pool. A matrix analysis tool was developed to combine the results of both levels of analysis.

The teachers' views of the stressors they encountered in their day-to-day work during the COVID-19 school lockdowns, as reflected in their responses to the first survey, indicated they were particularly focused on four main areas, represented as themes in leadership, technology, workload and support (Fig. 5). These major themes were closely interconnected, and the participants' comments often referred to the interdependent nature

Table 2 Percentage of respondents choosing 'Yes' to various questions related to their COVID-19 school lockdown (n = 317 respondents)

Question	'Yes'
Staff-related	
Do you believe that teacher mental health has been impacted by COVID-19?	88%
Has your school displayed a heightened level of care and concern for the staff members?	77%
Has your school displayed a heightened level of care and concern for the older staff members?	58%
Student-related	
Has your school displayed a heightened level of care and concern for students?	90%
Do you believe that student mental health has been impacted by COVID-19?	86%
Do you believe your school's response had an impact on the quality of student learning?	81%
Were you made aware of any frustrations parents experienced during lockdown with regard to the education of their children?	81%
Did you notice any differences in how COVID-19 impacted the educational experiences of students from different socio-economic households?	68%
School-related	
Do you feel your school's management team has handled the COVID-19 situation well?	91%
Are there likely to be any permanent or ongoing changes at your school as a result of COVID-19?	71%
Did the school environment change after students returned to school from the lockdown?	69%
Did your school find it difficult to ensure integrity of assessments during lockdown (e.g. plagiarism)?	47%

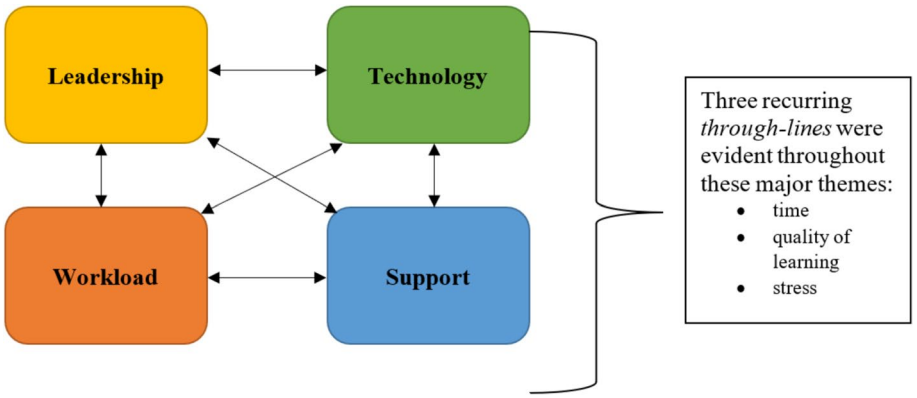

Fig. 5 Thematic map of teachers' responses to the first survey

of issues. For example, teachers felt supported by their school leaders to improve their skills in the facilitation of remote learning using online technologies, but they also recognised the workload implications of these changes. Additionally, workload implications were mentioned in conjunction with school leaders' changing expectations. The need for technological support was also related to the teacher's workloads, and this was recognised as a challenge by school leaders.

Across the four dominant themes, three underlying commonalities were represented as *through-lines of concern*: 1) time; 2) quality of learning; and 3) stress associated with

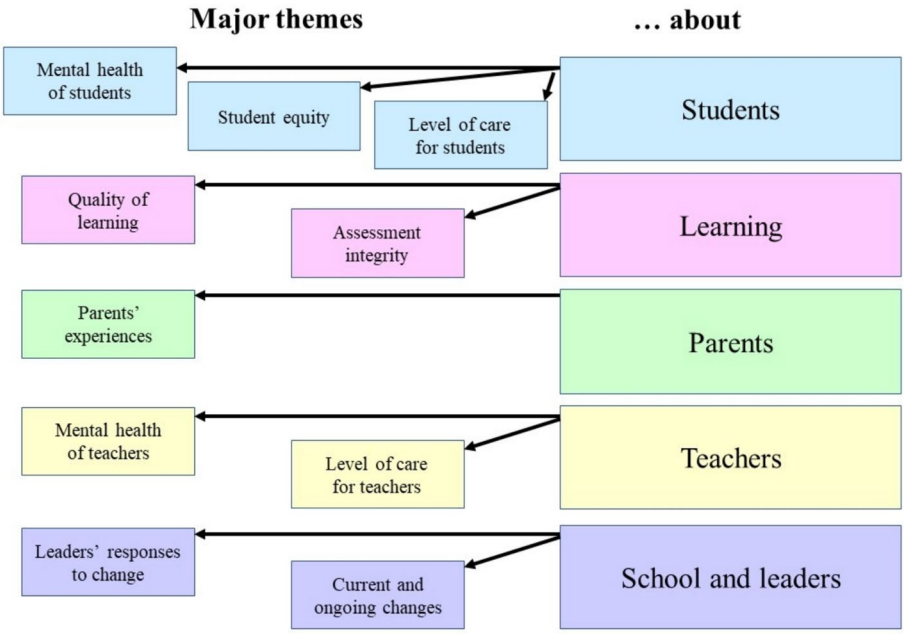

Fig. 6 Thematic map of teachers' responses to the second survey

varied demands. These commonalities, evident in each of the themes, illustrated the teachers' ongoing concerns about the consequences of COVID-19 school lockdowns and how these consequences affected many aspects of their work. For example, while teachers' comments were positively slanted overall, they frequently mentioned how a lack of time impacted their work and the school's operations—thus reflecting issues associated with their specific classroom learning environments as well as the school climate overall. The teachers' focus on time was an underlying concern across the four themes, with teachers referring to problems such as "unrealistic timeframes", "a lack of time", "much longer work hours" and "not enough time". The teachers' comments were also characterised by commentary about the competing demands of their roles, frequently mentioning how their roles involved others including their school leaders, their colleagues, their students and the parents of their students—reflecting both school climate and learning environment issues. They typically expressed this concern by noting the challenges they faced that were particularly stressful:

> "The majority of stresses during the COVID lockdown was around trying to get students to engage in their work and put the same effort in as what is expected in the classroom."
> "The second biggest stress is the ever-increasing admin load that teachers face because of compliance issues."
> "There was a lot of undeserved stress and anxiety caused by parents who were unnecessarily rude, condescending and belittling."

And, through many of their commentaries, the teachers' concern for the quality of their students' learning was an ever-present tension, especially in relation to engaging students in meaningful ways:

Table 3 Thematic map of participants' responses to the second survey showing levels of the school community and emerging themes that teachers expressed concern about or acknowledgement of

	Major themes	Sub-themes	Illustrative quotations
Students	Level of care demonstrated by the school—for students	General support	"Implementation of well-being programs."
		Following health guidelines	"COVID safe, QR code, cleaning resources, and signs in classrooms."
		Learning-focused support	"When students were not engaging in online learning during this time, teachers and key staff members contacted the families to lend support where they could."
	Student equity	Lack of technology resulted in lack of engagement	"Lower socio-economic households often had lesser access to technology and WiFi." "Low socio-economic and more rural students struggled with internet issues more often."
		Varied parent abilities	"Low levels of schooling/education of parents meant they found it harder to assist their child." "ESL was also a greater challenge as parents weren't able to help identify task requirements, and it was harder to check in and see how families were coping when there was a language barrier."
		Sibling issues	"Students with more siblings found it harder to concentrate in their home environment." "Some families with essential working parents/guardians were often asked to babysit younger siblings, which makes it difficult to engage in online learning."
	Mental health—Students	Students not able to socialise	"Kids not socialising face-to-face during the tender years of adolescence is never going to be a positive for mental health."
		Student anxiety and depression	"Lots of kids developed or displayed anxiety." "Lots of uncertainty made students restless and unsettled."

Table 3 (continued)

	Major themes	Sub-themes	Illustrative quotations
Learning	Quality of learning	Learning continued	"Many things were tried to be implemented to make sure student learning continued during COVID and are now a permanent fixture at our school, should COVID hit again." "I don't believe students have fallen behind. Some students thrived and ALL teachers agree that we need to implement a program to support learners to become independent."
		Mixed	"Some students did well during Zoom lessons, however, some students did not attend. This meant that these students were behind on content, which impacted the student's quality of learning."
	Assessment integrity	Fairness	"Difficult to conduct fair assessments." "It was hard to tell how much input parents had in students work."
		Plagiarism	"School uses Google Classroom which has a plagiarism checker and students were aware of this."
Parents	Parents' experiences	Competing demands	"Many parents were frustrated with the situation—be it due to competing demands between children's study and their own work."
		Motivating children	"Parents were also frustrated with trying to engage and motivate their students online."
		Lack of technology	"We were amazed at the number of families without personal computers."

Table 3 (continued)

	Major themes	Sub-themes	Illustrative quotations
Teachers	Mental health—Teachers	High expectations and workload pressures	"We were expected to work 3×times as hard (in person, online and attending additional meetings), be a support for students plus care for our own families and mental health."
		Stress, anxiety, illness	"Stress related illness, fatigue-feeling drained, constantly aware to keep everyone safe."
	Level of care demonstrated by the school—for teachers	General support	"There has been a focus on teaching staff about well-being and how to respond to workplace stresses."
			"Very supportive during the pandemic both in and out of the workforce."
		Understanding	"A greater understanding and empathy towards staff workload, well-being and safety in the workplace."

Table 3 (continued)

	Major themes	Sub-themes	Illustrative quotations
School and leaders	Leaders' responses to change	Clear communication	"Frequent and regular communication as well as realistic expectations from teachers." "Communication was clear and many parents expressed appreciation for the calm and regular correspondence."
		Support	"They provided great support and strategies for teachers and students." "They did the best they could for a rapidly changing situation."
	Current and ongoing changes	Use of technology and different ways of teaching	"Many technological changes that worked well online will be permanently adopted, particularly in the upper years, due to the greater independence these practices offered our students." "More student-centred learning to allow more voice and choice." "Less assessing with rich assessment tasks."
		Hygiene, social distancing, procedures around checking in, dropping off and picking up children	"Many of our normal routines and activities were not allowed to run or be held and this impacted on our students and their well-being." "Hygiene, low tolerance of unwell children at school." "Hopefully parents stay off campus in the afternoon until after the bell goes. It has been significantly less distracting for students for the last 20 min of every day to not have parents outside the classroom in the lunch shed talking."

"The hardest thing about online schooling was motivating unmotivated students."
"We did find that it was harder to motivate students in this lockdown."

While data gathered during the first survey revealed teachers' views about leadership, technology, workload and support, the teachers' responses to the items in the second survey further illustrated their views on the impact of COVID-19 on their school's climate and on classroom learning environments. Thematically, their responses were largely expressed as concerns or acknowledgements of the issues encountered by themselves as teachers, as well as issues reported by colleagues, students, school leaders and students' parents (Fig. 6). These findings illustrated that the teachers were aware of wider school issues as well as issues that impacted classroom learning environments, and that they viewed these issues from multiple perspectives. Table 3 provides evidence, drawn from some illustrative teacher-participant quotations, along with a breakdown of the thematic categories of their responses. Overall, their concerns and acknowledgements were related to varied levels of the school community including students and student learning, parents and teachers, as well as at the leadership level of the school.

While our results illustrated teachers' awareness of school-wide, leadership and classroom-focused issues, Table 3 reflects how teachers' views about students and their learning during the COVID-19 school lockdown dominated their thinking. They were also aware of the impact on parents, their fellow colleagues and their school leaders. Teachers were understandably focused primarily on their students and the quality of their students' learning, but the range of their comments reflected their awareness of the impacts of school lockdowns across the entire school community, well beyond their immediate locus of control. In turn, their awareness levels were wide-ranging, as expressed in their comments about physical and mental health, government guidelines, in-school procedures and the role of technology.

7 Discussion

Throughout this study we particularly focused on investigating stressors related to school climate and the learning environment, as reflected by teachers' views about stressors that impact their work and well-being. Although COVID-19 has resulted in major disruptions to all aspects of school learning environments, this project has intentionally focused on one cohort (i.e., teachers) and, consequently, the findings have contributed to our knowledge of how COVID-19 specifically impacted this cohort within ASA schools in Australia. We acknowledge that this study was conducted within only one school system, but the research has drawn upon the experiences of over three hundred primary and secondary teachers across the 48 ASA schools in Australia.

The teachers were very open about reporting on the sources of their stress. While a more negatively slanted commentary from teachers was evident in the qualitative data, the results of this study, especially those that emerged from an analysis of the quantitative data, indicate that teachers viewed these stressors in a more positive manner than we expected, based on our interpretation of previously published literature on teacher stressors (e.g., Burgess & Sievertsen, 2020; Cluver et al., 2020; Melnick & Darling-Hammond, 2020; Van Lancker & Parolin, 2020; Viner, et al., 2020). This finding implies that, for the ASA school system, there were a number of support systems already in place that supported the teachers and students during the uncertain COVID-19 period.

Teacher stressors associated with traditional classroom management or discipline problems, reported in pre-COVID-19 times (e.g., Aldrup et al., 2018; Alhija, 2015; Ferguson et al., 2017), also appeared as stressors in this study, but teachers explained classroom management issues mostly in relation to online learning environments which were developed in response to school lockdowns. Predictably, increased workload, due to increased demand for online teaching and learning, has been reported by other researchers during the COVID-19 era (Billett et al., 2022). This is not surprising given that information technology equipment and teachers' skills in the use of online teaching and learning technologies needed to be revised and upgraded during this period. Our findings illustrate that the management of student learning is vastly different when it is shifted to an online mode. Similarly, teacher workload, which was reported as a stressor pre-COVID-19 (Clement, 2017), was identified as a stressor during and after COVID-19 lockdowns (Dabrowski, 2020), but in more specific terms than reported in previous literature. For example, workload and time management issues were reported as stressors within the quantitative data, and the connected theme of time, in association with workload, was reported in the qualitative data. Furthermore, the qualitative data from our study revealed many aspects of the increase in teachers' workload was attributed to the additional time required to learn about new technologies and to complete administrative compliance processes. In our qualitative data, the need for support, especially in the form of professional development, was typically noted alongside comments about workload. These nuanced and specific revelations about teachers' workload further contribute to the way in which workload issues are examined in current educational literature.

One aspect of our results was somewhat contrary to results reported in previous studies, namely the issue of school leadership. The teachers' views expressed about their school leaders were positive overall and complimentary when compared to similar studies that reported the stress associated with management of relationships with colleagues and administrators within other schools (Alhija, 2015; Ferguson et al., 2017; Mackenzie, 2007).

While relationship-based stressors were not articulated by teachers using the same terms evident in pre-COVID-19 literature (e.g., Alhija, 2015; Mackenzie, 2007), they did identify associated issues as stressors, including mental health, interactions with students, and pressures from parents and the community, and they attributed the presence of these stressors as negatively affecting teachers' well-being. This outcome of our study also aligns with stressors that have been reported in other more recent school-based research (e.g., Cluver et al., 2020; Lee, 2020; Zhang et al., 2020) in which personal, mental, social and emotional stressors have been reported as affecting school climate and their learning environments. In recent research, teachers have reported being concerned about student engagement and the quality of student learning (e.g., Burgess & Sievertsen, 2020; Nicola et al., 2020; Van Lancker & Parolin, 2020). Adding to these student-focused concerns, our study showed that teachers displayed a heightened level of care and concern for students, including concern for their well-being as well as concern for their academic progress. In this respect, teachers' concern for students became a stressor for them within the school and learning environment. Overall, our quantitative data revealed a pattern to the way in which teachers responded to stress before, during and after school lockdowns. Subsequently, these findings contribute to our knowledge of the comparison of teacher stress levels before and during the COVID-19 lockdowns, such as the study by Lacomba-Trejo et al. (2022).

While, as expected, stressors tended to increase during the school lockdowns, the level of stress experienced by teachers did not necessarily decrease to pre-COVID-19 levels when the lockdowns finished. However, is it important to note that, although stressors increased at times during lockdown, the changes were quite minimal overall, and most levels of stress

were not extreme. Some of the themes that were most dominant in the qualitative data were also featured in the quantitative data—including workload, time management, school leadership, well-being and issues related to continual changes and responding to government directives. For many stressors, when stress levels before and after lockdown were compared there was little difference. For other stressors, the stress experienced by teachers during lockdown was extreme and these stress levels remained higher after lockdown than they were before, impacting teachers' well-being as reported by Dabrowski (2020). In other cases, surprisingly, some stress levels reduced after lockdown to levels lower than before lockdown. These three response clusters, and the addition of a fourth where little to no change occurred in teacher stress levels, provide an interesting opportunity for future studies, particularly if they were to target reasons for these trends. Such studies would help those in school leadership to identify successes in their response to the COVID-19 pandemic as well as reasons behind continued teacher stress.

8 Conclusion

This study has revealed that the stressors experienced by teachers in relation to their school's climate and learning environments during COVID-19 were wide-ranging and encompassed issues that extended from classroom- and student-focused concerns through to issues at the school-wide, community and government levels. In particular, the main sources of stress for teachers were associated with a combination of complex issues, including their students' well-being and progress, and their own well-being, and the need to facilitate a high quality of learning for their students while also following school-led and government-enforced changes prompted by the pandemic response to COVID-19.

This study revealed that many teachers commented on the increased use of online learning technologies, spurred on by the sudden introduction of remote learning triggered by the necessity to keep school staff and students at home. More investigation is required to determine how these technologies influenced the quality of student learning, teaching approaches and the overall school's learning environment. A range of views were also uncovered about how changed learning environments, due to the COVID-19 pandemic, impacted the mental health of school leaders, teachers and students—both negatively *and* positively. Additional research is recommended to determine the depth and consequences of such impacts.

Future research directions arising from this study could include investigations into further impacts of extended COVID-19 lockdowns, the effects of COVID-19 on other school systems or in other countries, and perceptions of COVID-19 and its impacts based on the views of students, parents or school leaders. Focusing on the actual impacts of the pandemic on schools, student learning and teacher retention, as opposed to perceived impacts, could be investigated from the lens of teachers' experiences during the 2020–2021 lockdowns.

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Declarations

Conflict of interest None of the listed authors have a conflict of interest.

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