RELATIONSHIPS OF GENERATIONAL COHORTS, TEACHER TECHNOLOGY INTEGRATION EFFICACY AND TEACHER BURNOUT

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The purpose of this study was to investigate the intricate relationships between generational cohorts, teacher efficacy of technology integration, and teacher burnout in the post-COVID-19 pandemic context. Surveys which included Likert-type scale measurements and open-ended questions were collected from 172 teachers in a rural district of a southeastern state in the United States. Employing descriptive and correlational analyses, the study identified significant correlations between teacher burnout and technology integration efficacy. Although generational differences on teacher burnout and teacher technology integration efficacy were not confirmed with the findings, the themed analysis of the open-ended survey responses provided evidence to support the need to differentiate strategies for curbing teacher burnout by various generational cohorts. This research contributed to the understanding of the evolving landscape of education technology and its psychological impacts, offering insights that may inform professional development and support systems for educators navigating a post-pandemic educational environment.

Keywords: teacher burnout, generational cohorts, teacher efficacy

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BACKGROUND

Teacher stress, burnout, and attrition increased dramatically due to the impact of the COVID-19 pandemic (Chang et al., 2022; Jakubowski & Sitko-Dominik, 2021; Pressley, 2021). One of the stressors was due to the heightened needs to transform teaching delivery methods in the online or digital platforms. The pandemic accelerated the use of technology in the classroom due to the sudden needs of pivoting and adapting the online or hybrid modes of delivery due to the needs of social distancing which required teachers to develop new skills in technology integration and digital communication (Tawfik et al., 2021). Many teachers struggled to keep pace with the demands of a dual approach to teaching (Li et al., 2021) and experienced burnout at higher levels (Tawfik et al., 2021).

Moreover, the variability in students' access to technology and the internet exacerbated the stress for teachers (Fernández-Batanero et al., 2021). Designing lessons that cater to diverse technological resources and ensuring equitable learning experiences for all students could be a daunting task (Marshall et al., 2020). The digital divide, where some students may lack consistent access to devices or a reliable Internet connection, forces educators to navigate a landscape of unequal educational opportunities. Marshall et al. (2020) explained that balancing the needs of students with varying levels of technological access requires additional effort and creativity, contributing to the overall stress experienced by teachers. These different changes and extra demands required to meet student needs have led to more teachers experiencing burnout (Chang et al., 2022). Even though teacher burnout has been extensively studied in the past decades, the COVID-19 pandemic and the post-pandemic era have added a new layer of complexity of this issue which warrants further investigation.

PURPOSE OF THE STUDY

The purpose of the study was to investigate the relationships between generational groups, teacher efficacy in technology integration, and teacher burnout during the post-pandemic context. The present study was conducted right after the COVID-19 pandemic context in which most teachers have experienced a transition from virtual online instruction during the pandemic back to either blended or traditional face-to-face learning. The study aimed to understand teachers' professional attributes such as their sense of efficacy in the adoption of various technological strategies in this context. Furthermore, it sought to understand how different generational cohorts of teachers may have experienced burnout in the aftermath of the global pandemic, as highlighted in previous research.

The present study aimed to answer the following research questions: Is there any significant difference in teachers' feelings of burnout or their sense of efficacy in technology integration among various generational groups? What are the correlations between different components of technology integration efficacy and teacher burnout? What are the instructional supports teachers recommended to mitigate against teacher burnout post COVID-19 pandemic?

THEORETICAL FRAMEWORK AND LITERATURE REVIEW

Overview of Generational cohort theory

Zemeke et al. (1999) and Kupperschmidt (2000) suggested that a generational cohort of individuals have unique characteristics that are distinctly different from other generations. Most cohort theories assume members of the same generations have similar group personality coming from a shared historical and social frame of reference because of the time period of their formal development (Alwin & McCammon, 2007).

Generations are defined by the time period that people are born in. Within the teacher workforce, Köstepen (2023) defined that individuals born from 1945 to 1961 are known as the Baby boomers. Born after World War II, this group was the largest group of individuals born in the United States since the inception of the country. They currently represent the smallest group of individuals in the workforce but are the largest group among retirees. Next, the group born from 1961 to 1980 is known as Generation X. This group of individuals was the last group to be educated before the integration of technology. Generation Y (or *Millennials*) includes individuals who were born from 1980 to 1995. This generation represents the largest group in the business sector. Generation Y represents the transitional group where technology integration became a part of their educational process. Finally, the youngest group that is currently entering the business sector is Generation Z. These individuals were born from 1995 to 2012.

Generational teaching habits and preferences

Diverse generational perspectives may shape how individuals view the ideal classroom setting. Teachers who represent different generations such as Baby boomers, Generation X, Generation Y, Generation Z, and Millennials may formulate different teaching methods due to their own educational backgrounds.

Baby boomers, who grew up during a time of substantial societal and educational change, often carry a nostalgic sentiment towards the traditional classroom, as Köstepen (2023) ex-

plained. Baby boomer teachers were educated via a traditional teacher-led pencil-paper method in which the Socratic method was more prevalent, where the teacher led the conversation and students were passive recipients. They may value the structure and formality of traditional teaching methods, appreciating the authority of the teacher at the front of the classroom and the established routines. Baby boomer teachers, who entered the profession during an era marked by traditionalism and authority, often employed a didactic approach to teaching (Okros, 2020). Their intention was rooted in the transmission of knowledge, and their teaching styles leaned towards direct instruction and structured classrooms. This generation emphasised discipline, rote learning, and a clear hierarchy between the teacher and students (Roberts, 2019).

Generation X teachers, influenced by societal shifts towards individualism and technological advancements, brought a more pragmatic and adaptable approach to pedagogy. Intent on fostering critical thinking skills, Generation X educators embraced a variety of teaching styles (Roberts, 2019). Generation X teachers may appreciate aspects of traditional education, such as direct instruction, but also seek flexibility and a departure from rigid structures (Bugnos et al., 2022). They were early adopters of technology, incorporating multimedia resources and interactive activities into their classrooms. Their teaching intention often revolved around preparing students for a rapidly changing world by promoting independent thinking and problem-solving (Okros, 2020).

Generation Y (Millennial) teachers exhibit a more pronounced shift in their views of the traditional classroom. Tawfik et al. (2021) explained that Millennials, often characterised by their tech fluency and collaborative mindset, may perceive the traditional classroom as less engaging and more hierarchical. They may value interactive and hands-on learning experiences, seeking a departure from rote memorisation. Millennial teachers, who began entering the profession in the 21st century, introduced a student-centric pedagogy with a strong emphasis on collaboration and inclusivity. Their intention is often centred on creating interactive and engaging learning environments that cater to diverse learning styles (Roberts, 2019). Millennial teachers commonly employ a mix of technology-based tools, group activities, and project-based learning to enhance student participation and foster a sense of ownership in the learning process. This generation is also characterised by a more flexible and personalised approach, accommodating the individual needs and interests of students (Okros, 2020).

Generation Z, having grown up in a digital age, often views the traditional classroom as less relevant to their dynamic and

interconnected world. Antoni (2020) found that they may prioritise technology integration, collaboration, and experiential learning over the traditional lecture-based model. Intent on leveraging technology to its fullest potential, Generation Z teachers often prioritise digital literacy and emphasise project-based learning that connects classroom content with real-world applications (Roberts, 2019). Their teaching styles incorporate social media platforms, online collaboration tools, and a strong emphasis on global perspectives to prepare students for an interconnected world.

Many Baby boomers and Generation Xers believe in a teamwork approach where they are working for the betterment of organisation. Generation X tends to prefer a more autonomous work environment, categorised by independence, freedom, and flexibility (Lester, 2012). This group of teachers is interested in learning and self-improvement, so their goal is to develop opportunities where they can help students and the teaching profession as a whole. They are intrinsically motivated to see the teaching profession grow (Bugnos et al., 2022). However, Generation Xers are not necessarily equipped to use technology and preferred face-to-face interactions and a traditional classroom setting (Zemeke et al., 1999).

Generation Y and Millennials tend to believe in a collaborative approach but require more coaching and redirections in the work environment (Gerhardt et al., 2021). This generation of teachers feels their work should be meaningful (Zopiatis et al., 2012). This group, unlike previous generations, have a strong technology background and have been educated mostly with technology and have strong relationships with technology in their teaching style (Zopiatis et al., 2012). This group requires a great deal of feedback when it comes to their job performance (Bugnos et al., 2022). This could be linked to their use of technology growing up, when some electronic assessments provided instant feedback (Alkire et al., 2020).

Each generation tends to react differently to different programmes or policies that are implemented by an organisation, which determines the likelihood of retention. For example, Chan and Tsi (2023) stated that the younger generations of educators (i.e. Gen Z) have their own unique characteristics of communication, social/cultural understandings, and use of technology that make them very distinct in their interactions with colleagues and students. Due to changing technological advancements, this generation of educators approaches the traditional classroom in a very different way as they have found methods of leveraging technology to increase engagement with their students in the digital space.

Hernandez-de-Menéndez et al. (2020) concluded that generational differences can be attributed to the distinct char-

acteristics of teachers based on their upbringing and development associated with their experiences of historical events. For example, Generation Y or Millennial teachers have developed during a time of great technological expansion and feel that this is an integral part of teaching and learning. Isaacs et al. (2020) explained that this group of educators is characterised by a collaborative mindset where technology is the leading aspect of the educational process. This mindset may have led to a higher burnout rate among Millennial teachers when they returned to the traditional model of instruction after COVID-19 (Szymkowiak et al., 2021).

Definition and theoretical foundation of teacher burnout

Burnout is a psychological term used to describe a condition of emotional, mental, and physical exhaustion caused by prolonged or intense stress. Maslach et al. (1996) defined teacher burnout as encompassing three dimensions: emotional exhaustion, depersonalisation/cynicism, and a sense of personal accomplishment.

Emotional exhaustion is at the core of the burnout experience, reflecting a depletion of emotional resources and a sense of being emotionally drained. This component highlights the strain teachers often feel due to the intense emotional demands of their work, including managing student needs, dealing with challenging behaviours, and navigating complex interpersonal relationships within the educational environment.

Depersonalisation, the second component, involves developing a negative and detached attitude towards one's students and colleagues. Teachers experiencing depersonalisation may adopt a cynical or impersonal approach to their interactions, which can further erode the quality of relationships within the school community. This distancing is often a coping mechanism, albeit maladaptive, in response to the emotional exhaustion experienced in the first stage of burnout (Chang, 2009).

Reduced personal accomplishment, the third component, reflects a decline in the teacher's perceived competence and successful achievement in their work. Teachers experiencing this component of burnout may feel a diminished sense of efficacy, struggling to make a positive impact or feeling unfulfilled in their professional roles. This can further contribute to a negative cycle of burnout, as the diminished sense of accomplishment can feed back into emotional exhaustion and depersonalisation.

Burnout has been found to affect teachers, students, and schools in a variety of ways by producing lower achievement scores, hostile school environments, and a negative school culture (Chang, 2009). Teacher burnout has exacerbated since

the COVID-19 pandemic, and it has affected teachers' job satisfaction (Flack et al., 2020).

Teacher burnout in the context of the COVID-19 pandemic

As the pandemic caused by COVID-19 added additional stress for teachers, Marshall et al. (2020) found that most of the stress and anxiety teachers experienced came from the shift to online teaching. While this shift to technology-based teaching has been beneficial for many students, it has also had a detrimental effect on teachers, leading to burnout and anxiety. This anxiety is driven by the lack of familiarity and expertise with technology, the additional workload of transitioning to online teaching, and the uncertainty of the future due to the pandemic. Skaalvik and Skaalvik (2020) also suggested that factors such as changing health policies, personal health concerns, and lack of consistent support from administrators led to decreased morale and exhaustion.

As the pandemic continued, stress among teachers increased due to returning to face-to-face instruction. Pressley (2021) reported that the stress levels of teachers have increased because of the escalated relationship between teachers and students' parents. As instruction returns to the traditional face-to-face learning model, parents are more in contact with teachers following from the increased communication fostered by the online model during the COVID-19 pandemic. Li et al. (2020) explained that the online learning process has increased the communication between teachers and parents and changed parent involvement in the learning process, thus making parents more involved in both online and face-to-face settings. Students' parents have increased their communication with their children's teachers because of the increased concerns for student learning gaps in the transitions.

Zamarro et al. (2021) noted that teachers experienced increased levels of anxiety during the pandemic because of the change in the instructional environment where online learning became the major instructional model. The sudden shift to technology-based teaching required educators to adapt to new technologies and learn new skills quickly. This change in instructional delivery resulted in increased workloads, as educators had to design and deliver digital content, engage with students remotely, and provide feedback on assignments. The additional workload led to high levels of stress and burnout among educators (Weißenfels et al., 2022). Online teaching requires reliable technology, including devices, software, and stable Internet connections. Technical difficulties caused frustration and anxiety for educators, who were under pressure to deliver quality content and engage students despite the challenges. These issues also caused disruptions to class schedules, leading to further stress (Asbury et al., 2020).

Teacher efficacy in technology integration in the post-pandemic context

During the transition to fully remote learning when schools were closed due to the COVID-19 pandemic, teacher efficacy in online teaching became a critical factor in determining student success. Dolighan and Owen (2021) noted that teacher efficacy in this context refers to a teacher's belief in their ability to effectively facilitate learning and achieve desired educational outcomes in an online environment. Teachers faced unprecedented challenges, needing to adapt instructional methods, utilise new technologies, and maintain student engagement while navigating the limitations of remote instruction. Those with high levels of efficacy demonstrated resilience and innovation by effectively leveraging digital tools, fostering virtual classroom communities, and providing meaningful feedback to students. Conversely, teachers experiencing lower efficacy may have struggled with feelings of uncertainty, stress, and difficulty in maintaining student motivation and participation. Overall, teacher efficacy played a pivotal role in shaping the quality of online learning experiences during this period of remote schooling (Dolighan & Owen, 2021).

METHODS

The present study was conducted with a descriptive correlational design by using surveys to examine the relationship between teachers of different generational grouping, their technology integration efficacy regarding instructional delivery models, and teacher burnout levels.

Participants and settings

After obtaining the university's Institutional Review Board approvals, online surveys were sent to all teachers in one rural school district in the southeast region of the United States. The school district has 27,000 students enrolled (50% African American, 25% Hispanic, and 20% Caucasian; 51% students are considered economically disadvantaged) and 2,024 certified teachers. We sent out the study information to school principals through the district office communications department. The school principals were asked to disseminate the survey to all teachers. The email announcement detailed the purpose of the study and informed potential participants that the entire process was voluntary and anonymous, including a link for participants to complete the online survey on Qualtrics (a university licensed online survey platform). In the present study, only completed surveys were included in the analyses. The complete sample contains 172 teachers with a

majority of teaching specialty courses such as music and physical education (n = 114, 66%), and others teaching core content subjects, including math, science, reading, literature, and social studies (n = 58, 34%). The majority of teachers are Generation X (n = 90, 52%), covering birth years from 1965 to 1980, followed by Millennials (n = 52, 30%). The least groups were Baby boomers (n=16, 9%) and Generation Z (n =12, 7%).

Instrumentation

This study adopted the MBI-ES (Maslach et al., 1996) and Browne's Technology Integration Confidence Scale to determine teacher burnout, and efficacy related to technology integration (Browne, 2011). Additionally, the survey contained open-ended questions that asked participants to provide their input regarding desired instructional support in order to curb their feelings of burnout.

Teacher burnout measure: MBI-ES. The complete version of the Maslach Burnout Inventory – Educator Survey (MBI-ES, Maslach et al., 1996) contains 22 items that measured three dimensions: emotional exhaustion, depersonalisation, and personal accomplishment. These items are measured in frequency on a 5-point Likert scale, with 1 being never and 5 being always. Cronbach's alpha in this study was $\alpha = 0.75$ and for each subscale as follows: emotional exhaustion $\alpha = 0.83$ (e.g., *I feel emotionally drained by my work*), depersonalisation $\alpha = 0.77$ (e.g., *I have become more callous towards people since I took this job*), and personal accomplishment $\alpha = 0.76$ (e.g., *I have accomplished many worthwhile things in this job*).

Measures of teachers' sense of efficacy in technology integration. To measure teacher efficacy in technology integration, the study adopted Browne's (2011) Technology Integration Confidence Scale. This scale delves into the intricate realm of teachers' beliefs in their capacity to affect student outcomes with regard to technology integration. The present study adopted the third version of Technology Integration Confidence Scale which has six subcomponents: technological proficiency, $\alpha = 0.83$ (e.g., *Your district is rolling out a new technology to support blended-learning models with professional development? How confident are you that you can effectively learn the new technology and adapt to blended-learning during the in-service demonstration or professional development?*); pedagogical integration, $\alpha = 0.72$ (e.g., *Your district is focusing on the integration of diversity into the curriculum. The Internet has been suggested as a way to expose students to a wide range of cultures and viewpoints. How confident are you that you can use technology to affirm diversity in your classrooms?*), adaptability and problem solving, $\alpha = 0.89$ (e.g.,

Your district is rolling out a new technology to support blended-learning models with professional development? How confident are you that you can effectively learn the new technology and adapt to blended-learning during the in-service demonstration or professional development?), impact on student engagement and learning, α = 0.82 (e.g., *To what extent does your confidence in technology's effectiveness as an educational tool contribute to student engagement*?), professional development regarding technology literacy and digital citizenship, and ethical and safe usage, α = 0.88 (e.g., *Technology can help students accomplish tasks, well or badly. For example, students can use Artificial Intelligence (AI) programs to help complete assignments. How confident are you that you can model and teach ethical and legal use of technology*?). Overall Cronbach's alpha reliability for the Technology Integration Confidence Scale is 0.92.

Open-ended questions. To solicit teachers' perceptions regarding strategies to mitigate burnout or stress, the following questions were included at the end of the survey: "What suggestions do you have regarding instructional supports that a school district can use to help combat teacher burnout since the COVID-19 pandemic? What suggestions do you have to help improve the instructional practices in your classroom with technology integration in the new era of teaching after the COVID-19 pandemic? What suggestion do you have regarding how the school district can support teachers at different stages in their career with teacher burnout?"

Data analysis approaches

Kruskal-Wallis H tests were conducted to examine the significant difference between teacher burnout as well as the levels of efficacy in teachers by their generational cohort. Pearson's correlation was used to determine whether there are significant correlations between burnout dimensions, emotional exhaustion, depersonalisation, and personal accomplishment related to technology efficacy.

To answer the last research question, "What are the instructional supports that teachers perceive would mitigate against teacher burnout post COVID-19 pandemic?", themed analyses were used to categorise the suggestions that teachers provided on the open-ended question regarding instructional support. We examined each response and assigned a relevant code to the segments of text to identify key themes and concepts. We examined systematic coded data to look for connections, variations, and recurring themes. This approach ensured a comprehensive understanding of the participants' perspectives on professional development which can combat teacher burnout.

RESULTS

Teacher burnout by generational groups

The descriptive statistics of teacher burnout by the generational groups are presented in Table 1. Although the Baby boomers tend to report lower levels of emotional exhaustion and depersonalisation with higher levels of personal accomplishments, the results of the Kruskal-Wallis H test showed there are no statistically significant differences between the burnout levels among teachers from different generational groups.

TABLE 1 Descriptive statistics and Kruskal-Wallis H test results of teacher burnout by generational groups

Category	Generation	*M*	*SD*	*N*	Kruskal-Wallis H test χ^2	*p*
Emotional exhaustion	Baby boomers (1946-1964)	3.02	0.782	16	3.561	0.313
	Generation X (1965-1980)	3.51	0.878	90		
	Millennials (1981-1994)	3.46	0.884	52		
	Generation Z (1995-2012)	3.50	0.711	21		
Depersonalisation	Baby boomers (1946-1964)	1.87	0.492	16	2.243	0.524
	Generation X (1965-1980)	2.09	0.650	90		
	Millennials (1981-1994)	2.09	0.613	52		
	Generation Z (1995-2012)	2.20	0.560	21		
Personal accomplishment	Baby boomers (1946-1964)	3.95	0.596	16	1.414	0.702
	Generation X (1965-1980)	3.75	0.496	90		
	Millennials (1981-1994)	3.75	0.431	52		
	Generation Z (1995-2012)	3.64	0.685	21		

Technology integration teacher efficacy by generational groups

Table 2 outlines the descriptive statistics by generation cohort and the categories of technology integration efficacy measured by Browne's Technology Integrations Confidence Scale. The Baby boomers tend to report higher levels of technology integration teacher efficacy, however, the Kruskal-Wallis H test indicated that there was not a significant difference between the generational cohorts for all constructs or variances for teachers' technology integration efficacy.

Correlations among technology integration teacher efficacy and burnout

Table 3 listed the results of Pearson correlation analysis among the six domains of technology integration teacher efficacy and the three dimensions of teacher burnout. Within technology-integration teacher efficacy domains, all six domains were significantly and positively correlated with one another ($p < 0.05$). The strongest associations were observed between technological proficiency and adaptability and problem solving ($r = 0.79, p < 0.001$) and between technological proficiency and pedagogical integration ($r = 0.73, p < 0.001$). Moderate to strong

correlations also emerged between professional development and pedagogical integration ($r = 0.68$, $p < 0.001$), and professional development and adaptability & problem solving ($r = 0.65$, $p < 0.001$). These results indicated that when teachers report higher efficacy in one of the domains in technology integration, they also tend to report higher efficacy across other domains.

TABLE 2
Descriptive statistics and Kruskal-Wallis H test results of technology integration efficacy

Category	Generation	*M*	*SD*	*N*	Kruskal-Wallis H test χ^2	*p*
Technological proficiency	Baby boomers	7.28	1.07	16	2.84	0.51
	Generation X	6.53	1.76	90		
	Millennials	6.84	1.06	52		
	Generation Z	6.70	1.23	12		
Pedagogical integration	Baby boomers	6.58	1.51	16	4.70	0.31
	Generation X	6.02	1.61	90		
	Millennials	6.25	1.38	52		
	Generation Z	5.63	1.52	12		
Adaptability & problem solving	Baby boomers	7.31	1.23	16	3.51	0.47
	Generation X	6.67	1.62	90		
	Millennials	7.18	1.05	52		
	Generation Z	6.58	1.41	12		
Impact on student engagement & learning	Baby boomers	6.62	2.12	16	2.10	0.71
	Generation X	6.20	2.18	90		
	Millennials	6.26	1.52	52		
	Generation Z	6.25	2.13	12		
Professional development	Baby boomers	6.59	1.71	16	3.52	0.47
	Generation X	5.99	1.77	90		
	Millennials	6.25	1.65	52		
	Generation Z	5.50	1.96	12		
Ethical and safe use	Baby boomers	6.75	1.57	16	2.43	0.65
	Generation X	6.75	2.12	90		
	Millennials	6.59	1.25	52		
	Generation Z	6.54	1.32	12		

		1	2	3	4	5	6	7	8	9
1	Technological proficiency	1								
2	Pedagogical integration	0.73**								
3	Adaptability & problem solving	0.79**	0.68**							
4	Impact on student engagement & learning	0.52**	0.58**	0.50**						
5	Professional development	0.61**	0.68**	0.65**	0.62**					
6	Ethical and safe use	0.54**	0.42**	0.57**	0.66**	0.49**				
7	Emotional exhaustion	-0.07	-0.11	-0.01	-0.26**	-0.20**	-0.17*			
8	Depersonalisation	-0.09	-0.12	-0.14	-0.29**	-0.24**	-0.32**	0.58**		
9	Personal accomplishment	0.26**	0.27**	0.28**	0.40**	0.34**	0.30**	-0.35**	-0.50**	

TABLE 3
Correlations matrix between domains in technology integration efficacy and burnout

** Correlation is significant at the 0.01 level (2-tailed),
* Correlation is significant at the 0.05 level (2-tailed).

Technology integration teacher efficacy and emotional exhaustion. Correlations between technology efficacy and emotional ex-

haustion were generally weak and negative. Significant negative relationships were found between emotional exhaustion and impact on student engagement and learning ($r = –0.26$, $p < 0.01$); professional development ($r = –0.20$, $p < 0.01$); and ethical and safe use ($r = –0.17$, $p < 0.05$). Other efficacy domains were not significantly associated with emotional exhaustion ($p > 0.05$).

Technology integration teacher efficacy and depersonalisation. Depersonalisation demonstrated weak to moderate negative correlations with several technology efficacy domains. Significant associations emerged with impact on student engagement & learning ($r = –0.29$, $p < 0.001$); professional development ($r = –0.24$, $p < 0.01$); and ethical and safe use ($r = –0.32$, $p < 0.01$). Other correlations were negative but non-significant. These findings indicate that teachers who feel more confident using technology to support learning and to ensure safe and ethical practices are less likely to experience depersonalisation.

Technology integration teacher efficacy and personal accomplishments. All six efficacy domains were significantly and positively associated with personal accomplishment ($p < 0.01$). The strongest correlations were found with impact on student engagement and learning ($r = 0.40$, $p < 0.001$); professional development ($r = 0.34$, $p < 0.001$); and ethical and safe use ($r = 0.30$, $p < 0.001$). These results suggest that higher levels of teacher technology integration efficacy are consistently related to a stronger sense of accomplishment in one's work.

Emerged themes from open-ended questions

From the qualitative analysis of the open-ended questions in the survey, the participants identified suggestions that could combat the challenges of heightened levels of stress and burnout in the post-pandemic era. Notably, 97% of participants engaged with all questions, offering a range of suggestions aimed at mitigating teacher burnout. The responses varied significantly in length, with some participants providing detailed explanations and others opting for succinct bullet points.

As shown in Table 4, roughly 40% of the survey participants noted that one of the major ways of combating teacher burnout is increasing compensation. Among these 40% of participants, Generation X and Y stated this 60% more frequently than Baby boomers and Generation Z. Increasing teacher pay is a powerful career incentive to retain and attract qualified educators, and those in the middle of their careers found this to have more of an impact in fighting burnout. Although teacher compensation is not what the researcher perceives as an

instructional support, teachers in the survey did perceive it as an instructional support. One participant stated, "increase salary and for my profession specifically, have evaluation support and/or therapy support to decrease SLP administrative duties (paperwork) and/or to decrease the amount of brain energy we burn from constantly switching tasks." Many teachers work tirelessly, often going above and beyond their job descriptions, yet their salaries may not reflect the value of their contributions. Another participant also shared the same sentiment by explaining, "pay commensurate with appreciation, incentive pay, higher salaries, more release of financial stipends when grants and endowments are provided by the government" could decrease burnout. By offering competitive compensation packages, schools can demonstrate their appreciation for teachers' dedication and professionalism as suggested by the participants. Higher pay not only acknowledges the importance of educators but also alleviates financial stress, allowing teachers to focus more on their students' needs and less on their own economic burdens.

Roughly 30% of participants concluded that professional development can help combat teacher burnout. Additionally, 18% of the participants believed reducing workload could mitigate teachers' feelings of burnout. Interestingly, 80% of Generation Z respondents accounted for these 18% of teachers who believed the work-life balance is crucial in reducing burnout compared to other generational groups. One participant stated,

> *one factor that can assist school districts in addressing teacher burnout is to reduce the time constraints for teachers to cover the curriculum. Numerous students require extra time for specific topics, yet teachers often feel pressured to rush through these topics in order to stay on schedule. As a result, some students fall behind while teachers worry about maintaining a pace that does not align with the students' capabilities*.

This statement addresses the increased workload that many educators feel contribute to teacher burnout. The pandemic forced educators to adapt rapidly to new teaching modalities, often resulting in longer hours and heightened levels of stress. Schools can implement measures such as streamlined administrative tasks, better utilisation of technology, and realistic expectations for lesson planning and grading. By prioritising efficiency and work-life balance, teachers in the study stated that they can reclaim precious time for self-care, rejuvenation, and personal pursuits outside of the classroom, especially among Generation X, which represented 51% of the total survey participant population.

Out of the participants, 13% stated that one crucial element is providing robust social-emotional support systems for teachers. Several participants suggested that schools should establish peer support groups, counselling services, and mental health resources tailored to educators' needs. This can be done by fostering a culture of empathy and understanding. As one participant stated, "teacher burnout needs to be combated in ways such as self-care, mental health days, lightening the load on teachers, time, etc." where teachers can feel more supported and better equipped to navigate the emotional toll of their work. This was one of the items suggested by teachers which was found in the data.

TABLE 4
Open-ended question data coding analysis with direct quotes supporting the findings

Suggestion topic	N (%)	Respondent quotes
Compensation	70 (40)	"Higher pay to keep well experienced teachers from leaving the district. Continue to employ/keep highly valued and experienced teachers from leaving the district as well as hiring more educators."
		"Increase salary and for my profession specifically, have evaluation support and/or therapy support to decrease SLP administrative duties (paperwork) and/or to decrease the amount of brain energy we burn from constantly switching tasks."
Professional development	51 (30)	"Relevant PD opportunities that are interesting; provide time & space for students to step away when feeling frustrated in the classroom."
		"Provide relevant PD that applies to the teacher's ability instead of courses that basic level teachers are required to participate in."
Decreased workload	32 (18)	"Teachers have a lot on their plates. There isn't anything that I can think of that is an "instructional support" that is going to combat teacher burnout. Education is ever-changing and there's always something new to learn. We have the support needed when it comes to new programmes and things that are implemented. What is needed is time, less on our plates, etc. Maybe adding in one paraprofessional per grade level would help? Someone to make copies, file papers, do the simple things that take time away from us."
Teacher social emotional supports	22 (13)	"Provide adequate planning time and team building activities. I feel some of this has been lost since 2020. I do not feel as connected to my colleagues as I did before 2020."
		"Ongoing professional development about SEL for administrators, teachers and students, and how to infuse it into instruction AND practices for teachers as well. Professional development about and implementation of restorative practices in the classroom and in schools in general."

Note. These were the four major recurring subjects for this question.

DISCUSSION AND CONCLUSIONS

Generational cohorts and teacher burnout

The first question investigated if there is any difference in teachers' feelings of burnout among various generational groups. The hypothesis was developed based on the work of Tawfik et al. (2021), who supported the idea that generational grouping affected the job performance of individuals. Our results did not indicate there were any significant differences across generational groupings in the sample. Burnout levels appear to be similar across all the generation groups based on the data. Although contradictory to the hypothesis, the results mirror recent findings from previous studies from Mikušková (2023) and Gill (2022). Mikušková argued that motivational factors related to teacher competencies did not exhibit significant generational differences in teacher burnout. The findings echo Mikušková's results, revealing that teachers across various generational cohorts hold similar beliefs concerning professional performance and perceptions of burnout. Mikušková further explored how professional competence influences motivation across different generations, establishing intrinsic connections between professional competence and motivational levels. This insight reinforces the notion that variations in generational experiences may not significantly impact teachers' feelings of motivation or burnout.

Similarly, Gill (2022) found no significant differences in job satisfaction among various generational groups of teachers. This finding is pertinent to the discussion of teacher burnout, as job satisfaction is closely related to how teachers experience burnout. Additionally, Gill explained that generational differences did not significantly affect perceptions of support, which is an important factor in mitigating teacher burnout. Overall, these studies collectively suggest that generational differences have limited impact on key aspects of teaching such as motivation, job satisfaction, and burnout.

Generational cohorts and teacher technology integration efficacy

The results indicate that there were no significant differences on teachers' technology integration efficacy based on generational cohorts. Our results echo a few previous findings (Culp-Roche et al., 2020; Woods et al., 2021) that there were no significant generational differences in attitudes towards technology integration among faculty members. Furthermore, despite generational variations in overall attitudes, Culp-Roche et al. (2020) found that faculty across age groups exhibited similar levels of comfort with technology when it was perceived as beneficial for enhancing student skills and easing teaching res-

ponsibilities. Faculty members were more likely to embrace technology if they believed it could improve educational outcomes and reduce their teaching workload. This indicates that the perceived utility of technology, rather than generational factors, may be a more influential determinant of technology adoption in educational settings. This underscores the complexity of technology adoption, suggesting that factors beyond generational differences, such as gender, may also play a critical role in shaping technology efficacy.

Correlations between teacher burnout and technology integration efficacy

The Pearson correlations demonstrated several significant correlations between various components of teachers' technology efficacy and burnout dimensions. One of the most salient findings is the negative correlations between emotional exhaustion and several subcomponents of technology integration efficacy, including teachers' use of technology for student engagement and professional development. Teachers who felt less efficacious in integrating technology for student engagement were more likely to report emotional exhaustion. Martin et al. (2012) explained how teachers' instructional practices, whether good or bad, have an effect on student engagement. In addition, negative correlations were found between emotional exhaustion and technology integration efficacy related to professional development and ethical use. Duncan (2022) explained that teachers need a sense of competence and security when understanding technology integration in their instructional practices. Teachers who perceive they are able to use technology appropriately feel more personally accomplished and experience less emotional exhaustion (Ertmer & Ottenbriet-Leftwich, 2010).

The results revealed a positive correlation between pedagogical integration and technology proficiency. This demonstrates that educators who possess higher levels of technological skills tend to be able to apply technology to their teaching practice, which may reduce the amount of emotional exhaustion that is experienced (Baker et al., 2021). These teachers can see positive results in their instructional practices related to their technology skills. Baker et al. (2021) explained how using technology effectively can reduce work stress, which may lead to decreased feelings of burnout. Further analysis revealed a significantly high positive correlation between adaptability and problem solving and pedagogical integration, which suggests that educators who are more adaptable are also better equipped to solve problems. This enhances their ability to integrate diverse pedagogical approaches. This integration not

only improves the learning experience for students but also fosters a more dynamic and responsive educational environment. By recognising the importance of adaptability in pedagogical practices, teachers can prioritise instructional strategies. This is done through effective professional development. Duncan (2020) explained that teachers who receive timely and effective support with technology experience lower levels of frustration, which can lead to a decreased likelihood of burnout.

Teacher recommended strategies to mitigate burnout

Teachers believed that increasing compensation, providing relevant professional development, reducing workload, and providing emotional support would be helpful strategies to mitigate teacher burnout. Increasing teacher pay is a powerful career incentive to retain and attract qualified educators. In the U.S., teacher compensation is considerably lower than in many other professions. By offering competitive compensation packages, respondents suggested that schools can demonstrate their appreciation for teachers' dedication and professionalism. Higher pay not only acknowledges the importance of educators but also alleviates financial stress, allowing teachers to focus more on their students' needs and less on their own economic burdens (Will & Sawchuk, 2018).

The pandemic forced educators to adapt rapidly to new teaching modalities, often resulting in longer hours and heightened levels of stress. Teachers in the study suggested a more robust professional learning model. Professional learning training provides teachers with opportunities to collaborate and connect with their peers, fostering a sense of community and shared purpose. These collaborative environments allow teachers to share experiences, strategies, and solutions to common challenges, thereby reducing feelings of isolation and burnout and maintaining morale and resilience in the face of the daily pressures of teaching. This empowerment can lead to increased motivation and a greater sense of control over their professional lives. When teachers feel that they have a say in their development and can pursue areas that genuinely interest them, they are more likely to stay engaged and committed to their work, thereby reducing the risk of burnout (Chang et al., 2022).

Some respondents reported that reducing teacher workloads and addressing the administrative and bureaucratic burdens that contribute significantly to teacher burnout is essential. Teachers often face overwhelming workloads, including excessive paperwork, standardised testing requirements, and administrative tasks that detract from their primary role of educating students (Pressley, 2021). Pressley (2021) explained how organisational changes that streamline administrative proces-

ses and reduce unnecessary paperwork can free up valuable time for teachers to focus on instructional planning and student engagement. Implementing supportive policies such as flexible scheduling, adequate planning time, and reducing class sizes can also alleviate stress and promote a healthier work environment. Schools can implement measures such as streamlined administrative tasks, better utilisation of technology, and realistic expectations for lesson planning and grading. By prioritising efficiency and work-life balance, teachers in this study stated that they can reclaim precious time for self-care, rejuvenation, and personal pursuits outside of the classroom.

Finally, many participants suggested the need of providing robust social-emotional support systems for teachers. One major suggestion is that schools should establish peer support groups, counselling services, and mental health resources tailored to educators' needs. This can be done by fostering a culture of empathy and understanding, where teachers can feel more supported and better equipped to navigate the emotional toll of their work. Ultimately, addressing teacher burnout requires a holistic approach that acknowledges the interconnectedness of social, emotional, and professional factors.

Limitations

There are several limitations that may hinder the generalisability of the study results. First of all, sample bias might exist due to the nature of the voluntary survey method. It is likely that teachers with high levels of burnout would have been less likely to participate in the study than those with low levels of burnout. Secondly, the sample is from one single rural district in one state in the U.S.A. which does not represent many other populations in other contexts. Third, due to the unbalanced generation groups in the district, the sample also demonstrated an unbalanced group size for different generational groups. Finally, due to the unbalanced sample size, non-parametric tests were used in the study which may somewhat limit the statistical power.

CONCLUSION

In conclusion, as schools emerge from the challenges of the pandemic, investing in the well-being of teachers is not only essential for their sake but also for the resilience and success of our education system as a whole. However, we did not find significant cohort differences on teacher burnout and technology integration efficacy due to a limited sample from one single school district. Our findings contributed to the existing body of literature by identifying some significant correlations between teacher burnout and technology integration efficacy, specifically in the post-pandemic context. Our qualitative find-

ings provided valuable insights into teachers' voices regarding strategies to mitigate burnout and enhance instructional effectiveness in a post-pandemic educational landscape. By providing robust social-emotional support networks, increasing teacher pay, and lessening workloads, schools can create environments where educators feel valued, empowered, and motivated to continue making a positive impact on students' lives as explained in the suggestions provided by research participants (Corbett et al., 2022).

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Odnosi između generacijskih kohorti, učinkovitosti nastavnika u integriranju tehnologije i sagorijevanja nastavnika

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Svrha ove studije bila je istražiti složene odnose između generacijskih kohorti, učinkovitosti nastavnika u integriranju tehnologije i njihova sagorijevanja u kontekstu nakon COVID-19 pandemije. Ankete koje su uključivale mjerenja Likertovom skalom i otvorena pitanja prikupljene su od 172 nastavnika u 'Title-I' ruralnom okrugu (koji prima financijsku pomoć zbog većeg broja učenika nižega imovinskog stanja) jedne od jugoistočnih država SAD-a. Primjenom deskriptivne i korelacijske analize, studija je utvrdila značajne povezanosti između sagorijevanja nastavnika i njihove učinkovitosti u integriranju tehnologije. Iako generacijske razlike u sagorijevanju nastavnika i njihovu učinkovitom integriranju tehnologije nisu potvrđene nalazima, tematska analiza odgovora na otvorena pitanja upućuje na potrebu za

razlikovanjem strategija kojima razne generacijske kohorte mogu spriječiti sagorijevanje nastavnika. Ovo istraživanje pridonijelo je razumijevanju promjenjivog okruženja obrazovne tehnologije i njezinih psiholoških utjecaja, nudeći uvide s ciljem unaprjeđenja sustava profesionalnog razvoja i podrške edukatorima u postpandemijskom obrazovnom vremenu.

Ključne riječi: sagorijevanje nastavnika, generacijske kohorte, učinkovitost nastavnika