CJLT RCAT
Canadian Journal of Learning and Technology
La Revue canadienne de l'apprentissage et de la technologie

Volume 50 (4) Special Issue 2024

Online Teaching During COVID-19: An Analysis of Changing Self-Efficacy Beliefs

Enseignement en ligne pendant la COVID-19 : une analyse de l'évolution des perceptions en matière d'auto-efficacité

Julia Forgie, *Victoria College, University of Toronto, Canada*
Marguerite Wang, *Ontario Institute for Studies in Education, University of Toronto, Canada*
Lisa Ain Dack, *Ontario Institute for Studies in Education, University of Toronto, Canada*
Miranda Schreiber, *University of Toronto, Canada*

Abstract

This quantitative study investigated teachers' self-efficacy for teaching online compared to teaching in-person during the COVID-19 pandemic. Teacher self-efficacy is a significant predictor of both teacher practice and student outcomes. During the pandemic, teachers were forced to suddenly shift their teaching online and as a result, many new challenges were faced. Teachers from three teaching contexts (public, private, and virtual public schools) in Ontario, Canada completed the Ohio State Teacher Efficacy Scale (OSTES) and questionnaires measuring online teaching experience and training in May–June 2020 (phase 1) and again one year later, in May–June 2021 (phase 2). Results indicated that while the perceived self-efficacy of teachers improved over the course of the study, specifically in classroom management and student engagement, their perceived self-efficacy did not reach the levels reported for self-efficacy for in-person teaching, highlighting the persisting limitations educators experience in online learning environments. Additionally, efficacy for instructional strategies had not significantly increased by phase 2, indicating a particular need of targeted instruction for future teacher education programs. These results offer insights into the kind of experience and tools teacher education programs can extend to enhance teacher preparedness, and the conditions that best encourage improvements in self-efficacy for in-service teachers.

Keywords: COVID-19, online teaching, professional development, teaching efficacy

Résumé

Cette étude quantitative s'est intéressée à l'auto-efficacité des enseignants relativement à l'enseignement en ligne par rapport à l'enseignement en personne pendant la pandémie de COVID-19. L'auto-efficacité est un facteur déterminant de la pratique de l'enseignant et des résultats observés chez les élèves. Pendant la pandémie,

les enseignants ont été contraints de passer subitement à l'enseignement en ligne et ont par conséquent dû surmonter de nombreux nouveaux obstacles. Des enseignants appartenant à trois environnements d'enseignement (écoles publiques, privées et publiques virtuelles) en Ontario, au Canada, ont répondu au questionnaire *Ohio State Teacher Efficacy Scale* (OSTES) ainsi qu'à d'autres questionnaires permettant d'évaluer l'expérience et la formation en matière d'enseignement en ligne en mai-juin 2020 (phase 1), puis un an plus tard, en mai-juin 2021 (phase 2). Les résultats indiquent que si l'auto-efficacité perçue des enseignants s'est améliorée au cours de l'étude, notamment en ce qui concerne la gestion de la classe et la participation des élèves, elle n'a pas atteint les niveaux constatés dans le cas de l'enseignement en personne. Ces données mettent en évidence le fait que les éducateurs sont toujours confrontés à des difficultés dans le cadre de l'enseignement en ligne. Par ailleurs, l'efficacité des stratégies d'enseignement n'avait pas augmenté de manière significative lors de la phase 2, ce qui laisse à penser que les programmes de formation des enseignants devront mettre en place un apprentissage à cet effet. Ces résultats donnent un aperçu du type d'expérience et d'outils que les programmes de formation des enseignants pourraient offrir pour améliorer la préparation des enseignants, et des conditions qui favorisent le plus l'amélioration de l'auto-efficacité des enseignants en exercice.

Mots-clés : COVID-19, développement professionnel, efficacité de l'enseignement, enseignement en ligne

Introduction

Teacher efficacy refers to teachers' beliefs about their ability to help students learn or to bring about desired outcomes for students (Bandura, 1977). Previous research has established teacher efficacy as a significant predictor of both teacher practice and student outcomes. High levels of teaching efficacy are associated with positive effects on student educational experience and performance (Allinder, 1994; Tschannen-Moren & Woolfolk Hoy, 2001). For instance, teachers with higher levels of self-efficacy are more willing to implement diverse teaching strategies to support student success (Allinder, 1994; Carleton et al., 2008; Guskey, 1988). While existing literature has documented the inherent challenges and promise of online education in K–12 settings, relatively little scholarship has compared how teachers experience online learning with how they perceive in-person learning, especially in the context of the sudden, forced transition to emergency remote teaching (ERT) necessitated by the pandemic. For instance, one of the potential discrepancies between online and in-person teaching during COVID-19 identified by Teo et al. (2021) was the use of technology to emulate in-person teaching or re-create the in-person classroom experience. Tools and strategies used in in-person teaching are not entirely transferable online and trying to emulate teaching in-person in a virtual classroom can affect teachers' perceptions of their ability to engage students and plan lessons. Furthermore, the unprecedented nature of the transition to online teaching in a time marked by great uncertainty may have heightened these effects among teachers who have not previously taught in this modality. Many teachers were suddenly required to learn how to navigate a new virtual classroom and select resources with limited support from school boards. This paper examines whether Ontario teachers' levels of self-efficacy at the start of the transition into online teaching improved as they gained more experience and how they differ from their perceptions of self-efficacy teaching in-person. The results of this inquiry offer meaningful data for teacher education programs seeking to prepare preservice educators for delivering curricula online and highlight potential gaps and areas of focus in post-COVID-19 teacher education programs in Canada.

Literature Review

Emergency Remote Teaching

In the spring of 2020, the modality of in-person teaching suddenly shifted online due to increasing pandemic-related public health concerns. For the remainder of the school year, ERT was enacted (Schlesselman, 2020). Emergency remote teaching is defined as "a temporary shift of instructional delivery to an alternate delivery mode due to crisis circumstances" (Hodges et al., 2020, para. 13). The adoption of online learning in a situation of emergency represents not only a need, but has also stimulated experts, policymakers, teachers, and learners to search for new online pedagogies and instructional methods (Ferri et al., 2020). Ferri and colleagues (2020) concluded that ERT has given a significant boost to online learning, opening new opportunities and reflections for the educational system. Despite ERT allowing students to continue their studies amid a global pandemic, there is also evidence that it produced significant loss in educational achievement (Eyles et al., 2020). Additionally, ERT makes it harder to support students with special needs in their learning activities (Ferri et al., 2020).

Online learning is a form of distance education that is intentional and carefully designed to create a meaningful virtual learning experience. Teachers prepare well in advance for their online classes and use pedagogical approaches for assessment, engagement, and instruction that is specific to the virtual learning environment (Pryor et al., 2020; Schultz & De Mers, 2020). In contrast, the shift to ERT is temporary due to crisis circumstances (Hodges et al., 2020), where teachers and instructors work under stressful circumstances with little to no knowledge on when the crisis will end (Affouneh et al., 2020). Thus, in ERT, the goal is not to re-create a vigorous educational ecosystem but to provide temporary access to instruction in a way that is reliable and easily accessible during a time of crisis—such as the spring 2020 lockdown.

Significance of Teacher Efficacy

Research on teacher efficacy illustrates the relationship between teacher practice and student outcomes. Teachers with a higher sense of efficacy are more likely to try different instructional approaches until students are successful (Allinder, 1994); they tend to invest more effort in their teaching, be more enthusiastic, and persist more in the face of challenges and with students who are struggling (Tschannen-Moran & Woolfolk Hoy, 2001). Teaching efficacy also relates to student outcomes such as student achievement (Gibson & Dembo, 1984; Muijs & Reynolds, 2002), motivation (Ashton & Webb, 1986), and students' own sense of efficacy (Tschannen-Moran & Woolfolk Hoy, 2001). Additionally, there is evidence that teachers with higher levels of efficacy are more positive about implementing instructional innovation and trying new teaching methods and technologies (Allinder, 1994; Carleton et al., 2008; Guskey, 1988). In contrast, teachers with lower self-efficacy are more likely to persist with ineffective instruction (Soodak & Podell, 1993) or to use controlling instructional management methods, which can lead to stressful student behaviour and the teacher's reduced sense of personal accomplishment (Martin et al., 2012).

Research on Online Teaching Efficacy

Studies exploring teaching efficacy are mainly centred around in-person contexts, and research in teaching efficacy in online education is still relatively new, particularly in a Canadian K–12 context. There is some research on teaching efficacy in the context of online instruction, though much of it examines postsecondary instructors. For instance, research shows that postsecondary instructors' self-efficacy generally increases with experience teaching online (Gosselin et al., 2016; Horvitz et al., 2015; Northcote et al., 2015). Gosselin et al. (2016) used online teachers' self-efficacy to develop a professional development program and found that teachers' prior experience had an impact on their self-efficacy for teaching online. Similarly, Horvitz et al. (2015) examined postsecondary instructors' self-efficacy for online teaching and found that those with more experience teaching online had higher levels of self-efficacy in online teaching. Furthermore, self-efficacy in nurse educators correlates with number of experiences teaching online and is especially higher for those who have had supportive preparatory experiences (Robinia & Anderson, 2010).

There is also some research representing elementary and high school teachers; despite a negative relationship between years of teaching experience and self-efficacy in the four areas of Technological Pedagogical Content Knowledge-Web, experiences of web-related pedagogical practice correlated positively with self-efficacy in these areas (Lee & Tsai, 2010). Regarding teachers' technology use in classrooms, Chen (2010) found that self-efficacy for teaching with technology had the most significant effect on using technology in the classroom. This finding implies that teachers who have lower levels of self-efficacy in technology may be less likely to try new technologies and use them to support their teaching. Furthermore, this notion is supported with studies indicating that successful past experiences and encounters with technology in teaching increased teachers' self-efficacy for using technology in their classrooms (Moore-Hayes, 2011; Wang et al., 2004).

Zee and Koomen (2016) concluded that a major challenge to teacher self-efficacy research is examining the complex and comprehensive nature of the teacher self-efficacy construct. This is because a large proportion of empirical studies failed to use more complex, multidimensional measures (Klassen et al., 2011; Zee & Koomen, 2016). The current study attempts to explore the complex and nuanced nature of teaching efficacy by assessing teaching efficacy across three dimensions: instructional strategies, classroom management, and student engagement.

Comparing In-Person to Online Teacher Efficacy

While there is a fair amount of research on efficacy for in-person teaching and a small amount on efficacy for online teaching, little research compares teacher efficacy for in-person teaching to online instruction. Zagorski (2011) made this comparison by obtaining responses from first- and second-grade online teachers who had taught in both an in-person and online modality. A modified Ohio State Teacher Efficacy Scale (OSTES) was administered to the teachers, and results uncovered that teachers felt more isolated teaching online than in-person and that these feelings of isolation were associated with lower self-efficacy than teaching in-person (Zagorski, 2011). However, it is unclear how Zagorski's study measured efficacy for in-person teaching and whether it was directly comparable to efficacy for online teaching. Dreon et al. (2018) found focus group participants' reported classroom management

was perceived to be easier for online instruction than for face-to-face instruction. However, this study only measured efficacy for online teaching, not for in-person teaching. Lin and Zheng (2015) found that teachers of a Chinese language course considered classroom management to be easier online than in person, possibly in part due to students' being more motivated to learn a foreign language online. Importantly, none of these studies were conducted with teachers who were suddenly required to move their teaching online, with little time for preparation or planning, demonstrating a further need for more research.

Online Teacher Efficacy During COVID-19

Online teaching during COVID-19, also referred to in the literature as ERT, presented a unique challenge due to the emergency context and the speed and suddenness of the transition into an online environment. Consequently, both teachers and school boards had little time to prepare for the new modality and provide adequate support, which may have impacted teacher efficacy. There are few studies that have investigated teachers' online efficacy during COVID-19. In the context of COVID-19 ERT, it was found that teachers' general self-efficacy decreased (Cataudella et al., 2021; Pressley & Ha, 2021; Yenen & Çarkit, 2021). Similarly, Ma and colleagues (2021) found that teachers reported lower self-efficacy at the beginning of online teaching. However, online teaching efficacy levels increased after the COVID-19 pandemic concluded (Baroudi & Shaya, 2022; Ma et al., 2021).

A significant predictor of teacher self-efficacy during remote instruction during COVID-19 relates to the remote learning modalities schools were employing. Teachers working at schools that used online instruction alone reported the highest levels of self-efficacy in the Teachers' Sense of Efficacy Scale (TSES), while teachers who taught in schools that supported online instruction with instructional packets reported the second highest levels of overall TSES (Marshall et al., 2022). Finally, teachers that only delivered instruction through hard-copy materials provided to students reported the lowest levels of self-efficacy (Marshall et al., 2022). Thus, it is clear that support for online teaching affects teaching self-efficacy.

Dolighan and Owen (2021) looked at self-efficacy perceptions for online teaching in the context of the early stages of COVID-19. In this study, secondary teachers in southern Ontario completed a modified version of the Michigan Nurse Educators Sense of Efficacy for Online Teaching with subscales for student engagement, classroom management, online instruction, and use of computers. Results demonstrated that neither years of experience teaching in-person nor number of online teaching experiences correlates with efficacy for online teaching. Furthermore, DeCoito and Estaiteyeh (2022) found that experienced teachers faced challenges in online teaching due to lack of readiness and lack of required technological skills, thereby impacting their self-efficacy.

These results differ from previous work which showed that online teaching experience was positively correlated with self-efficacy (Gosselin et al., 2016; Horvitz et al., 2015; Northcote et al., 2015), pointing to the emergency context of COVID-19 as a possible explanation for these differences, and thus warranting further exploration and comparison of teachers' online versus in-person teaching efficacy during COVID-19. Research by Bandura (1994) also found that highly emotional situations marked by stress can diminish self-efficacy. Furthermore, Teo et al. (2021) described some of the

potential discrepancies between online and in-person teaching during COVID-19; one being the use of technology to emulate the in-person classroom experience even if in-person teaching tools may not be entirely transferable online. This mismatch may be due to inexperience implementing online pedagogies as well as time constraints in training teachers by school administrations caused by the sudden shift to online learning and thus, could also have an impact on self-efficacy. Additionally, individuals in the field of K–12 distance, online, and blended learning mentioned that teachers need to explore ways to reach students at a distance without relying on the Internet. Interviewees also mentioned the importance of using video, synchronous and asynchronous, to interact with students (Barbour, 2020). Similarly, Cardullo et al. (2021) concluded that K–12 teachers faced challenges with Internet connection, student engagement, and lack of interaction which reduced their self-efficacy. Thus, low-tech alternatives to online learning and an emphasis on the use of tools such as video should be considered to enhance K–12 online teaching.

Research Questions

A comparative analysis was performed to examine the differences between Ontario K–12 teachers' self-reported efficacy before (in-person teaching), immediately following (phase 1), and one year after (phase 2) the transition to online education prompted by the COVID-19 pandemic. Further analysis examining implications in teaching efficacy based on teaching context (public, private, virtual public schools) was also explored. To capture these unique concerns, the following research questions were investigated:

1. What are teachers' levels of perceived self-efficacy for classroom management, student engagement, and instructional strategies (for in-person, as well as for online teaching)? Are there any differences in the aforementioned areas of self-efficacy for online teaching based on time and experience (differences between phase 1 and phase 2)?
2. What are teachers' instructional practices in relation to teaching in an online format? This question was related to the amount of time teachers were spending planning and implementing different formats of online instruction.
3. Are there any differences in self-efficacy across virtual, public, and private school teachers? Can differences in terms of online learning experience and training across these three groups reveal any potential implications for future teacher education programs?

Methods

Research Design

The following quantitative study employed online surveys and rating scales to measure teaching efficacy in both the in-person and online teaching context. Private school teachers were recruited from private and independent schools, and public and virtual school teachers were recruited using social media and were members of teaching-focused groups on Facebook. Online surveys and recruitment were determined to be the most effective way of collecting data due to the social distancing measures

enacted in the province at that time as well as the urgent nature of the study. Quantitative surveys were necessary to examine gaps in teachers' efficacy in online teaching throughout the duration of the pandemic and how training and time may have influenced this process.

Participants

Teachers from three teaching contexts (public, independent/private, and virtual public school teachers) in Ontario, Canada were recruited to participate in two phases of the study. In this study, *virtual teachers* refers to public school teachers in Ontario who were assigned to virtual schools during the COVID-19 pandemic and taught online for the entirety of the pandemic, offering a virtual option for students regardless of lockdown status. These teachers therefore presumably accrued more experience in online teaching than other teachers, potentially offering insights into the central research interests of this study. No participants reported having previous experience teaching online prior to the start of the COVID-19 pandemic.

Participants were recruited from two main pools: (a) private and independent schools that had previously given administrative approval for this study; and (b) members of teaching-focused groups (e.g., Ontario Kindergarten Teachers, Ontario Grade 3 Teachers, and Ontario Grade 12 English Teachers) on Facebook, with the group's administrative approval. As virtual teachers were from public schools, they were also recruited from the Facebook groups. All teachers surveyed were in good standing with the Ontario College of Teachers. In phase 1, which took place during the early stages of the pandemic in 2020, 372 K–12 teachers participated. Phase 2, which took place early in 2021, invited the same participants to complete the second phase of the study, with 104 teachers returning. Table 1 depicts the demographic characteristics of participants across the three teaching contexts in phase 1.

Table 1

Demographic Characteristics of Participants Across Teaching Contexts in Phase 1

Baseline characteristic	Public school teachers		Private school teachers		Virtual school teachers	
	n = 141	%	*n* = 101	%	*n* = 130	%
Gender						
Female	131	92.91	85	84.16	120	92.31
Male	9	6.38	16	15.84	9	6.92
Nonbinary	1	0.71	0	0	1	0.77
Missing	0	0	0	0	0	0
Age						
20–29	22	15.60	18	17.82	29	22.31
30–39	61	43.26	33	32.67	47	36.15
40–49	49	34.75	25	24.75	41	31.54
50–59	9	6.38	17	16.83	12	9.23

Baseline characteristic	Public school teachers		Private school teachers		Virtual school teachers	
	n = 141	%	*n* = 101	%	*n* = 130	%
60–69	0	0	8	7.92	1	0.77
Missing	0	0	0	0	0	0
Languages spoken						
Only English	89	63.12	61	60.40	90	69.23
English & other language(s)	52	36.88	40	39.60	36	27.69
Missing	0	0	0	0	4	3.08
Education						
Undergraduate	20	14.18	14	13.86	28	21.54
Graduate	121	85.82	87	86.14	101	77.69
Missing	0	0	0	0	1	0.77
Tech-related AQs						
None	116	82.27	88	87.13	107	82.31
Librarian AQ	10	7.09	3	7.09	10	7.69
Technology AQ	15	10.64	10	10.64	13	10
Missing	0	0	0	0	0	0
Grades Taught						
Kindergarten	27	19.15	16	15.84	16	12.31
Grade 1	25	81.56	9	8.91	17	13.07
Grade 2	24	17.03	10	9.90	15	11.54
Grade 3	22	15.60	14	13.86	18	13.85
Grade 4	27	19.15	8	7.92	15	11.54
Grade 5	27	19.15	13	12.87	31	23.85
Grade 6	29	20.57	10	9.90	27	20.77
Grade 7	30	21.28	18	17.82	16	12.31
Grade 8	25	17.73	19	18.81	21	16.15
Grade 9	20	14.18	36	35.64	4	3.08
Grade 10	21	14.89	42	41.58	2	1.54
Grade 11	21	14.89	47	46.54	3	2.31
Grade 12	21	14.89	41	40.59	3	2.31

Note. AQ = additional qualification.

Procedure

This study took place in two phases; during phase 1 in 2020, early in their transition to online learning, 372 teachers completed the online OSTES twice; once while reflecting on their online teaching practices and once while reflecting on their in-person teaching practices, prior to the pandemic. A demographic and background survey was conducted alongside the scales. During phase 2 in early 2021, the teachers completed the online OSTES once more, this time considering their online teaching practices only. The demographic survey was administered again at this time to capture a sense of change in teaching practices and placement over time. Phase 2 surveyed 104 returning teachers. By phase 2, all teachers had taught online for, at minimum, a substantial portion of the 2020–2021 school year and thus had gained additional online teaching experience.

Materials

Measure of Demographic Background and Training for Online Teaching

Teachers completed an online survey where they provided demographic information and reported the total number of hours spent engaging in both technical and pedagogical training for online learning. For this research study, *technical training* refers to training related to the use of technology and *pedagogical training* refers to training that targets the pedagogy of teaching online. Additionally, participants reported the number of hours in which they engaged in real-time synchronous online instruction on applications such as Zoom and asynchronous online instruction which assigned tasks to be completed independently.

The Ohio State Teacher Efficacy Scale

Participants' teaching efficacy was measured using the OSTES, a 24-item self-assessment aimed at evaluating teachers' perceptions of their own ability to engage in various instructional activities (Tschannen-Moran & Woolfolk Hoy, 2001). For each item, participants rated the extent to which they could engage in a particular teaching-related activity on a 9-point scale. The scale is divided into three sub-scales: efficacy for instructional strategies, efficacy for classroom management, and efficacy for student engagement, which have internal reliability of .91, .90, and .87, respectively. Table 2 depicts some sample items for each of the subscales.

Table 2

Sample Items From the Ohio State Teacher Efficacy Subscales

Subscale	Example	Sample items
Efficacy for instructional strategies	Instruction and explanation of curriculum content; gauging student understanding, and assessment practices.	Item 7: How well can you respond to difficult questions from your students? Item 20: To what extent can you provide an alternative explanation or example when students are confused?

Subscale	Example	Sample items
Efficacy for classroom management	Setting expectations, managing challenging behaviours, and establishing rules and routines.	Item 5: To what extent can you make your expectations clear about student behaviour? Item 15: How much can you do to calm a student who is disruptive or noisy?
Efficacy for student engagement	Ability and strategies to keep students motivated and interested, helping students value learning.	Item 1: How much can you do to get through to the most difficult students? Item 4: How much can you do to help your students value learning?

Data Analysis

Quantitative data analysis was performed using SPSS (Version 28). Firstly, to assess changes in teachers' self-efficacy beliefs from phase 1 to phase 2, paired *t*-tests were conducted for each of the OSTES subscales. Secondly, paired *t*-tests were conducted to analyze differences in teachers' pedagogical and technical training from phase 1 to phase 2. Analysis of variance (ANOVA) and post hoc tests were also conducted to examine differences in teaching efficacy, online teaching experience, and training across the three teaching groups (public, private, virtual) for in-person and online (phase 1 and phase 2) teaching contexts. To determine the internal consistency of the OSTES, a reliability analysis was conducted using Cronbach's alpha. Table 3 presents the results of the reliability analysis conducted on the three iterations (in-person, phase 1, and phase 2) of the OSTES survey employed in the present study. As depicted in Table 3, the reliability of the three scales was above 0.80 for all three timepoints of the OSTES survey, which reflects a good level of internal consistency.

Table 3

Internal Consistency Reliability of Scales

Composite	Cronbach's alpha		
	Phase 1	Phase 2	In-person
Instructional strategies	0.858	0.875	0.933
Classroom management	0.909	0.990	0.920
Student engagement	0.859	0.863	0.852

Results

Paired *t*-tests were conducted for each subscale to compare teachers' efficacy at phase 1 and phase 2 with in-person teaching efficacy. In phase 1, teachers' self-efficacy for instructional strategies, classroom management, and student engagement were all significantly greater for in-person teaching than online (Table 4), suggesting that teachers had lower self-efficacy beliefs when first moving to an

online teaching modality. The effect size, Cohen's *d*, was above 0.80 for all scales, indicating a large effect.

Table 4

Teacher Self-Efficacy Scores In-Person Versus Phase 1

Scale	In-person		Phase 1 online		*t*	*df*	*d*
	M	*SD*	*M*	*SD*			
Instructional strategies*	7.89	1.07	6.23	1.36	1.69	323	1.15
Classroom management*	7.56	1.12	6.31	1.71	-10.16	285	0.87
Student engagement*	7.45	0.98	5.66	1.36	-20.29	326	1.44

* $p < .001$.

Similarly, in phase 2, teachers' self-efficacy for instructional strategies, classroom management, and student engagement were significantly greater for in-person teaching than online (Table 5). The effect size, Cohen's *d*, was above 0.50 for all scales, indicating a moderate to large effect.

Table 5

Teacher Self-Efficacy Scores In-Person Versus Phase 2

Scale	In-person		Phase 2 online		*t*	*df*	*d*
	M	*SD*	*M*	*SD*			
Instructional strategies*	8.01	1.12	6.43	1.39	8.60	91	0.90
Classroom management*	7.91	1.01	6.70	1.51	6.07	89	0.64
Student engagement*	7.62	0.86	5.40	1.41	20.67	205	1.12

* $p < .001$.

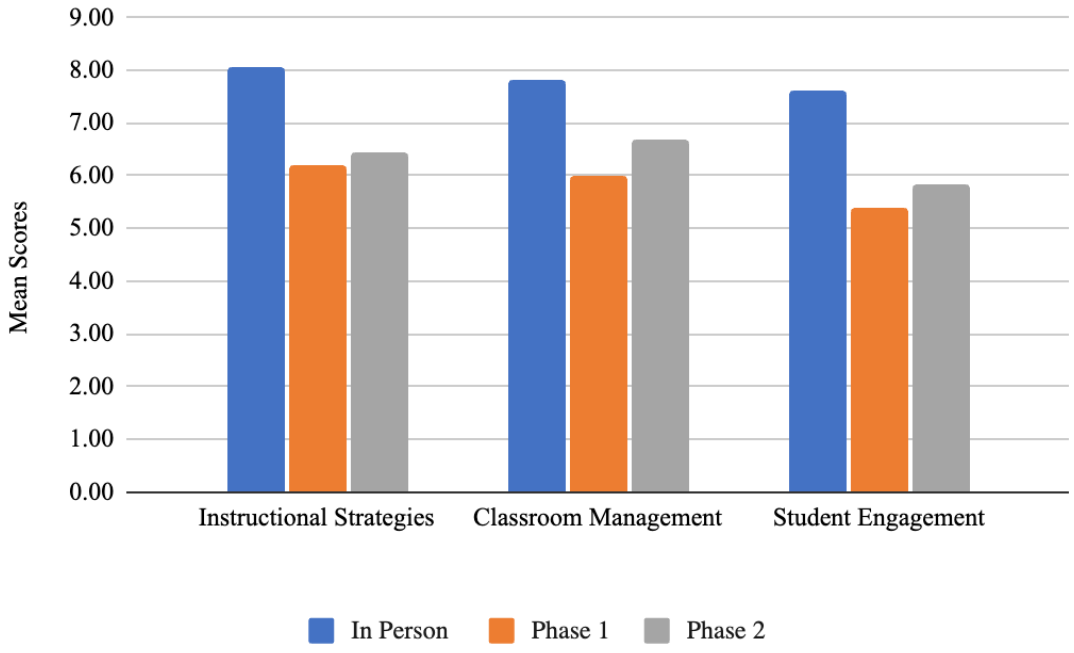
With respect to self-efficacy and time during online teaching, paired *t*-tests were conducted for each subscale to compare phase 1 and phase 2. Teachers reported significantly greater self-efficacy for classroom management in phase 2 ($M = 6.83$, $SD = 1.34$) than in phase 1 ($M = 6.16$, $SD = 1.74$), $t(83) = -3.33$, $p < .01$. The effect size, Cohen's *d*, was 0.36, indicating a small effect. Similarly, self-efficacy for student engagement was significantly greater at phase 2 ($M = 5.85$, $SD = 1.34$) than at phase 1 ($M = 5.38$, $SD = 1.32$), $t(102) = -4.06$, $p < .001$, $d = 0.40$. The effect size, Cohen's *d*, was 0.40, indicating a

small effect. Although teachers' efficacy scores for instructional strategies (M = 6.27, SD = 1.28) also increased by phase 2 (M = 6.47, SD = 1.36), the difference failed to reach statistical significance.

Figure 1 depicts how teachers had lower self-efficacy beliefs when first shifting to an online teaching modality (phase 1), but self-efficacy increased after several months of online teaching experience (phase 2). However, self-efficacy scores still failed to reach in-person levels even after several months of online teaching experience.

Figure 1

Mean Efficacy Scores (Max = 9) of In-Person, Online at Phase 1, and Online at Phase 2



Instruction Modalities

To examine the impact of time (phase 1 and phase 2) on online instruction experience, paired t-tests were conducted. Teachers reported engaging in significantly more hours of synchronous instruction at phase 2 (M = 24.60, SD = 48.29) compared to phase 1 (M = 6.37, SD = 6.70), $t(98) = -3.72$, $p < .001$. The effect size, Cohen's d, was 0.37, indicating a small effect. Although having decreased, asynchronous instruction was not significantly different between phase 1 and phase 2. The modality of instruction implemented in Ontario schools following the abrupt transition to online learning in March 2020 was largely directed by individual school districts, and in many cases by individual schools and teachers. As such, at phase 1, there was great variability in terms of the amount of time spent implementing asynchronous and synchronous instruction, with asynchronous instruction being the primary modality for many schools. However, by phase 2, districts had implemented instructional guidelines for synchronous instruction such that all teachers were required to implement a minimum number of synchronous instructional minutes per day, depending on the grade and/or subject.

Training

To compare teachers' reported technical and pedagogical training hours across phase 1 and phase 2, paired *t*-tests were conducted. Teachers had had significantly more technical training in online teaching by phase 2 ($M = 26.40$, $SD = 55.51$) compared to phase 1 ($M = 9.50$, $SD = 17.45$), $t(102) = -3.51$, $p = .001$. The effect size, Cohen's *d*, was 0.34, indicating a small effect. Teachers also reported significantly more pedagogical training for online teaching in phase 2 ($M = 17.55$, $SD = 54.36$) compared to phase 1 ($M = 4.45$, $SD = 9.55$), $t(98) = -2.42$, $p < .05$. The effect size, Cohen's *d*, was 0.24, indicating a small effect. However, no significant correlation between hours of training and teaching efficacy was observed, suggesting that the improvements in teachers' self-efficacy across phase 1 and phase 2 might be more effectively explained by other factors such as increased online teaching experience.

Differences Across Groups in Phase 1

Self-Efficacy

An ANOVA was performed to investigate any differences in self-efficacy for online teaching between groups of teachers. Post-hoc test results showed that in phase 1, virtual and private school teachers reported significantly higher self-efficacy for online teaching across all three OSTES subscales compared to public school teachers (Table 6). The effect size, eta squared (η2), was above 0.06 for all scales, indicating a medium to large effect.

Table 6

Teacher Self-Efficacy Scores for Public, Private, and Virtual Teachers During Phase 1

Scale		Public		Private		Virtual		*F*	η^2
		M	*SD*	*M*	*SD*	*M*	*SD*		
Instructional strategies*	Phase 1	5.80	1.40	6.76	1.23	6.36	1.33	15.78	0.079
	In-person	8.08	0.96	8.08	1.00	7.56	1.13	9.45	0.055
Classroom management*	Phase 1	5.42	1.89	6.72	1.67	6.79	1.23	25.59	0.137
	In-person	7.99	0.83	7.76	1.12	7.17	1.14	19.88	0.109
Student engagement*	Phase 1	4.99	1.38	6.06	1.26	6.10	1.14	32.50	0.151
	In-person	7.61	0.84	7.65	0.88	7.17	1.11	8.92	0.052

*$p < .001$.

For in-person teaching, post-hoc tests revealed that private and public school teachers reported significantly higher self-efficacy across all three OSTES subscales compared to virtual school teachers. The effect size, eta squared (η^2), was above 0.01 for all scales, indicating a small to medium effect.

Comparisons among teachers based on grades and subjects taught were explored but no significant differences were found. This result is not surprising as online teaching in an ERT setting is extremely different from in-person modalities, and the challenges of the two differ. Furthermore, these challenges may persist regardless of the grade levels and subjects teachers taught.

Instruction Modalities and Training

There was a significant effect of teaching context on synchronous teaching experience, $F(2,358) = 199.14$, $\eta^2 = 0.53$, $p < .001$. The effect size, eta squared (η^2), was 0.53, indicating a large effect. Post-hoc comparisons revealed that virtual school teachers had significantly more synchronous teaching experience ($M = 20.79$, $SD = 8.53$) than private ($M = 10.16$, $SD = 7.84$) and public school teachers, ($M = 3.56$, $SD = 4.29$). This result is expected since virtual school teachers spent the entirety of the pandemic teaching online and remained so regardless of lockdown status. These teachers therefore gained more experience in online teaching than other teachers. Interestingly, although private school teachers spent significantly more time teaching synchronously compared to public school teachers, when it came to time spent implementing asynchronous learning, public school teachers spent significantly more time ($M = 19.75$, $SD = 13.90$) than private school ($M = 11.19$, $SD = 12.02$) and also virtual school teachers ($M = 7.42$, $SD = 7.24$), $F(2,358) = 40.33$, $p < .001$. The effect size, eta squared (η^2), was 0.18, indicating a large effect.

There was a significant effect of teaching context on technical and pedagogical training. Post-hoc comparisons revealed that virtual school teachers received significantly more technical training ($M = 20.41$, $SD = 26.87$) than both public ($M = 8.20$, $SD = 12.55$) and private school teachers ($M = 8.82$, $SD = 17.10$), $F(2,369) = 15.47$, $p < .001$. The effect size, eta squared (η^2), was 0.077, indicating a medium effect. Virtual school teachers also received more pedagogical training ($M = 17.15$, $SD = 39.43$) than public ($M = 4.93$, $SD = 9.10$) and private school teachers ($M = 4.47$, $SD = 6.97$), $F(2, 358) = 10.64$, $p < .001$. The effect size, eta squared (η^2), was 0.056, indicating a small effect.

Discussion

This study offers insight into the promise and challenges of online education, revealing a narrative of positive—though perhaps insufficient—improvement in the perceived self-efficacy of teachers in Ontario, who were forced to suddenly adapt to virtual teaching in the context of an unprecedented disruption. The study results also present consequential information for teacher education, illustrating how teachers gained expertise, comfort, and efficacy in administering curricula online with the passage of time. The data collected conveys the increasing confidence and capability of teachers to engage students, manage classrooms, and deliver instruction in an unusual and difficult situation. Nevertheless, even as phase 2 teaching efficacy exceeded self-reported efficacy in phase 1, phase 2 results continue to lag behind perceived self-efficacy of in-person teaching, demonstrating the persisting limitations educators experience in online learning environments. This result is contrary to

previous studies regarding online classroom management, where teachers found that classroom management was easier online (Dreon et al., 2018; Lin & Zheng, 2015). Lin and Zheng (2015) found that classroom management among language teachers was easier online than in-person as there was less time wasted establishing rules which allowed teachers to focus more on teaching. However, it should be noted that these teachers worked in a virtual school prior to the pandemic. This difference emphasizes the extent of the impacts of a sudden and abrupt shift into online teaching on teachers' self-efficacy. This sudden shift to online teaching, characterized by ERT in the spring of 2020, significantly impacted teachers' self-efficacy as teachers' lack of preparedness for online teaching caused their overall self-efficacy to decrease (Cataudella et al., 2021; Pressley & Ha, 2021; Yenen & Çarkit, 2021). The backdrop of a global pandemic may have also impacted teacher outcomes in classroom management. Such teachers may have found it more challenging to manage their classrooms when circumstances were out of their control.

Teachers' self-efficacy beliefs increased significantly in the domains of classroom management and student engagement with the passage of time, however, efficacy for instructional strategies had not significantly increased by phase 2. Hours of training was not correlated with teaching efficacy which suggests that over time, the experience gained teaching online improved teachers' self-efficacy beliefs rather than any technical or pedagogical training. While no significant association was found between teacher training and self-efficacy, there seemed to be a positive association between increased experience and higher self-reported rates of efficacy, as over time, the experience teachers gained from teaching online may have improved their feelings of self-efficacy. These results are somewhat corroborated by previous studies. Lee and Tsai (2010) found a positive correlation between experiences of web-related pedagogical practice and self-efficacy in these areas. Robinia and Anderson (2010) found that self-efficacy in nurse educators was related to the number of experiences teaching online. The more time teachers spend teaching online, the greater their efficacy was in managing their classrooms. Studies have shown that self-efficacy for online teaching increased following the COVID-19 experience, as teachers were no longer experiencing the challenges and negative effect tied to ERT (Baroudi & Shaya, 2022). Horvitz et al. (2015) found that "semesters taught online" was a significant predictor for higher levels of efficacy in classroom management, but not for instructional strategies or student engagement (p. 312). Skills in classroom management and student engagement may be more easily gained with the passage of time whereas instructional strategies may require more targeted interventions that address specific competencies. Another contributing factor to higher efficacy may have been the standardization of time dedicated to synchronous learning which had been implemented in Ontario by phase 2 of this study, which led to lower variability in asynchronous learning.

Further quantitative analysis of variances among public, private, and virtual teachers also presents meaningful data. In phase 1, private school teachers reported higher levels of self-efficacy in online teaching, and higher levels of synchronous teaching. Although private school teachers spent significantly more time teaching synchronously compared to public school teachers, public school teachers spent significantly more time than both private school and virtual school teachers implementing asynchronous learning in phase 1, which could be a possible explanation for their lower scores of self-efficacy in all three composites compared to private and virtual teachers at that time. A possible reason why asynchronous lectures could affect teaching efficacy is the less personal nature of the format.

Asynchronous lectures can be isolating as there is less direct and habitual interaction between teachers and students. Zagorski (2011) found that teachers felt more isolated teaching online than in-person, and that feelings of isolation experienced teaching online were related to lower self-efficacy than teaching in-person. This result contrasts with public school teachers' in-person self-efficacy, which was similar to or higher than private school teachers. The significant drop in self-efficacy in public school teachers upon shifting to an online format should be further investigated, and future research could examine possible correlations between synchronous online learning and efficacy, divergences between the experiences of public and private teachers throughout the pandemic, and hybrid methods.

There were no significant differences between teachers based on grades and subjects taught. As online teaching in an ERT setting and in-person teaching are extremely different and the challenges between the two differ for all teachers, this result is not unexpected. Furthermore, challenges pertaining to online teaching may persist no matter the grade level and subjects taught among teachers. This result is similar to the findings of Menabò et al. (2022), who found no differences in online teaching self-efficacy between primary and secondary teachers.

As online self-efficacy for classroom management and student engagement significantly increased with more experience, teacher education programs hoping to improve the confidence of future online educators could deploy experiential curricula, offering preservice teachers the chance to learn firsthand the challenges of virtual education. Future teacher education programs post-COVID regarding online learning should also include elements that focus more on the pedagogy of online teaching including instruction in lesson planning, teaching curriculum content, and online assessment. This need for further pedagogical training is supported by the research of Meisner & McKenzie (2023) in their study of 699 teachers across nine states in the USA, exploring teachers' perceptions of self-efficacy for online teaching during the COVID-19 pandemic. Skills related to instructional strategies are not easily gained by experience unlike classroom management and student engagement, indicating a need for professional development programs targeting online instructional strategies in particular, and the necessity to address the competencies related to online instructional strategies. School boards could implement professional development programs for teachers interested in online teaching. Teachers can feel prepared and equipped for online teaching modalities with adequate training; the rapidness of the transition into online teaching set against a backdrop of uncertainty during a global pandemic has no doubt influenced their online teaching self-efficacy. School boards can also support teachers as they go through online teacher development programs so that they persist through the program long enough to gain adequate experience and thus teaching efficacy.

Limitations

This study has potential limitations. Quantitative data collected at two distinct time periods were compared, an analytical abstraction that assumes these two unique situations are commensurable. Secondly, only quantitative data were gathered, meaning that qualitative data, which may offer important insight into the aspects of teaching efficacy and experience that are not captured by quantitative analysis, were not present. The exclusion of qualitative data could limit the scope and rigor of research results, as although representing human experience numerically is often illuminating, it

necessitates the exclusion of data that cannot be expressed in this form. Qualitative analysis of teacher experiences could complement the quantitative data this study gathered, potentially elaborating on some of the patterns identified. Investigating these questions will offer additional information to teacher education programs hoping to offer teachers the best possible preparation for administering curricula online. Finally, not all study participants returned to participate in phase 2, meaning that the data collected in the second phase of the study were limited to a smaller sample size than the data collected in the first phase. This change in the data pools limits the commensurability of the results reported in each respective phase by participants.

Conclusion

Teaching efficacy is an important component of student and teacher outcomes. The results of this study show that the sudden shift to online learning during the pandemic has implications for teacher self-efficacy in public, private, and virtual school teachers, and reveals potential next steps for teacher education programs. Teachers become more comfortable managing online classrooms and engaging students as time goes on, but nevertheless, teachers' efficacy scores are significantly higher in-person regardless of experience gained teaching online. Although self-efficacy for instructional strategies can improve with experience, evidence from this study shows that these skills are less transferable from in-person to online than skills in student engagement and classroom management. Thus, future teacher education programs should focus particularly on skills relating to instructional strategies in online teaching. Furthermore, more in-depth comparisons of experiences between public and private teachers throughout the pandemic may reveal important ramifications on support and resources, and uncover additional information important for equitable teacher education programs.

References

Affouneh, S., Salha, S., & Khlaif, Z. N. (2020). Designing quality e-learning environments for emergency remote teaching in coronavirus crisis. *Interdisciplinary Journal of Virtual Learning in Medical Sciences*, *11*(2), 135–137. https://doi.org/10.30476/ijvlms.2020.86120.1033

Allinder, R. M. (1994). The relationship between efficacy and the instructional practices of special education teachers and consultants. *Teacher Education and Special Education: The Journal of the Teacher Education Division of the Council for Exceptional Children, 17*(2), 86–95. https://doi.org/10.1177/088840649401700203

Ashton, P. T., & Webb, R. B. (1986). *Making a difference: Teachers' sense of efficacy and student achievement*. Longman.

Bandura, A. (1994). Regulative function of perceived self-efficacy. In M. G. Rumsey, C. B. Walker, & J. H. Harris (Eds.), *Personnel selection and classification* (pp. 261–271). Lawrence Erlbaum Associates Inc. https://doi.org/10.4324/9780203773918

Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review*, *84*(2), 191–215. https://psycnet.apa.org/doi/10.1037/0033-295X.84.2.191

Barbour, M. K. (2020). 5 minutes on K–12 online learning with…—Advice from experts to teachers in the field. In R. E. Ferdig, E. Baumgartner, R. Hartshorne, R. Kaplan-Rakowski, & C. Mouza (Eds.), *Teaching, technology, and teacher education during the COVID-19 pandemic: Stories from the field* (pp. 511–513). Association for the Advancement of Computing in Education. https://www.academia.edu/43388666/Barbour_M_K_2020_5_minutes_on_K_12_online_learning_with_Advice_from_experts_to_teachers_in_the_field

Baroudi, S., & Shaya, N. (2022). Exploring predictors of teachers' self-efficacy for online teaching in the Arab world amid COVID-19. *Education and Information Technologies, 27*(6), 8093–8110. https://doi.org/10.1007/s10639-022-10946-4

Cardullo, V., Wang, C.-h., Burton, M., & Dong, J. (2021). K–12 teachers' remote teaching self-efficacy during the pandemic. *Journal of Research in Innovative Teaching & Learning, 14*(1), 32–45. https://doi.org/10.1108/jrit-10-2020-0055

Carleton, L. E., Fitch, J. C., & Krockover, G. H. (2008). An in-service teacher education program's effect on teacher efficacy and attitudes. *The Educational Forum, 72*(1), 46–62. https://doi.org/10.1080/00131720701603628

Cataudella, S., Carta, S. M., Mascia, M. L., Masala, C., Petretto, D. R., Agus, M., & Penna, M. P. (2021). Teaching in times of the COVID-19 pandemic: A pilot study on teachers' self-esteem and self-efficacy in an Italian sample. *International Journal of Environmental Research and Public Health*, *18*(15), Article 8211. https://doi.org/10.3390/ijerph18158211

Chen, R.-J. (2010). Investigating models for preservice teachers' use of technology to support student-centered learning. *Computers & Education*, *55*(1), 32–42. https://doi.org/10.1016/j.compedu.2009.11.015

DeCoito, I., & Estaiteyeh, M. (2022). Transitioning to online teaching during the COVID-19 pandemic: An exploration of STEM teachers' views, successes, and challenges. *Journal of Science Education and Technology, 31*(3), 340–356. https://doi.org/10.1007/s10956-022-09958-z

Dolighan, T., & Owen, M. (2021). Teacher efficacy for online teaching during the COVID-19 pandemic. *Brock Education Journal*, *30*(1), 95–116. https://doi.org/10.26522/brocked.v30i1.851

Dreon, O., Ward, J., & Deemer, S. A. (2018). *Investigating psychological constructs in new contexts: Understanding and measuring teacher efficacy in online classrooms*. AERA Online Paper Repository. https://eric.ed.gov/?id=ED593058

Eyles, A., Gibbons, S., & Montebruno, P. (2020). *COVID-19 school shutdowns: What will they do to our children's education? A CEP COVID-19 Analysis Paper, No. 001.* Centre for Economic Performance, London School of Economics and Political Science. https://cep.lse.ac.uk/pubs/download/cepcovid-19-001.pdf

Ferri, F., Grifoni, P., & Guzzo, T. (2020). Online learning and emergency remote teaching: Opportunities and challenges in emergency situations. *Societies, 10*(4), Article 86. https://doi.org/10.3390/soc10040086

Gibson, S., & Dembo, M. H. (1984). *Teacher efficacy scale* [Data set]. APA PsycTests. https://doi.org/10.1037/t03431-000

Gosselin, K. P., Northcote, M., Reynaud, D., Kilgour, P., Anderson, M., & Boddey, C. (2016). Development of an evidence-based professional learning program informed by online teachers' self-efficacy and threshold concepts. *Online Learning*, *20*(3), 178–194. https://doi.org/10.24059/olj.v20i3.648

Guskey, T. R. (1988). Teacher efficacy, self-concept, and attitudes toward the implementation of instructional innovation. *Teaching and Teacher Education*, *4*(1), 63–69. https://doi.org/10.1016/0742-051X(88)90025-X

Hodges, C., Moore, S., Lockee, B., Trust, T., & Bond, A. (2020, March 27). The difference between emergency remote teaching and online learning. *Educause Review*. https://er.educause.edu/articles/2020/3/the-difference-between-emergency-remote-teaching-and-online-learning

Horvitz, B. S., Beach, A. L., Anderson, M. L., & Xia, J. (2015). Examination of faculty self-efficacy related to online teaching. *Innovative Higher Education*, *40*(4), 305–316. https://doi.org/10.1007/s10755-014-9316-1

Klassen, R. M., Tze, V. M. C., & Gordon, K. M. (2011). Teacher efficacy research 1998–2009: Signs of progress or unfulfilled promise? *Educational Psychology*, *23*, 21–43. https://doi.org/10.1007/s10648-010-9141-8

Lee, M.-H., & Tsai, C.-C. (2010). Exploring teachers' perceived self efficacy and technological pedagogical content knowledge with respect to educational use of the World Wide Web. *Instructional Science, 38*(1), 1–21. https://doi.org/10.1007/s11251-008-9075-4

Lin, C.-H., & Zheng, B. (2015). Teaching practices and teacher perceptions in online world language courses. *Journal of Online Learning Research, 1*(3), 275–303. https://www.learntechlib.org/primary/p/171055/.

Ma, K., Chutiyami, M., Zhang, Y., & Nicoll, S. (2021). Online teaching self-efficacy during COVID-19: Changes, its associated factors and moderators. *Education and Information Technologies*, *26*, 6675–6697. https://doi.org/10.1007/s10639-021-10486-3

Marshall, D. T., Pressley, T., & Love, S. M. (2022). The times they are a-changin': Teaching and learning beyond COVID-19. *Journal of Educational Change*, *23*(4), 549–557. https://www.doi.org/10.1007/s10833-022-09469-z

Meisner, J., & McKenzie, J. M. (2023). Teacher Perceptions of Self-Efficacy in Teaching Online During the COVID-19 Pandemic. *Athens Journal of Education*, *10*(1), 49–66. https://doi.org/10.30958/aje.10-1-3

Martin, N. K., Sass, D. A., & Schmitt, T. A. (2012). Teacher efficacy in student engagement, instructional management, student stressors, and burnout: A theoretical model using in-class variables to predict teachers' intent-to-leave. *Teaching and Teacher Education, 28*(4), 546–559. https://doi.org/10.1016/j.tate.2011.12.003

Menabò, L., Skrzypiec, G., Sansavini, A., Brighi, A., & Guarini, A. (2022). Distance education among Italian teachers: Differences and experiences. *Education and Information Technologies*, *27*(7), 9263–9292. https://doi.org/10.1007/s10639-022-11008-5

Moore-Hayes, C. (2011). Technology integration preparedness and its influence on teacher-efficacy. *Canadian Journal of Learning and Technology, 37*(3). https://doi.org/10.21432/t2b597

Muijs, D., & Reynolds, D. (2002). Teachers' beliefs and behaviors: What really matters? *Journal of Classroom Interaction*, *37*(2), 3–15. https://www.jstor.org/stable/23870407

Northcote, M., Gosselin, K. P., Reynaud, D., Kilgour, P., & Anderson, M. (2015). Navigating learning journeys of online teachers: Threshold concepts and self-efficacy. *Issues in Educational Research, 25*(3), 319–344. https://www.iier.org.au/iier25/northcote.pdf

Pressley, T., & Ha, C. (2021). Teaching during a pandemic: United States teachers' self-efficacy during COVID-19. *Teaching and Teacher Education, 106*, Article 103465. https://doi.org/10.1016/j.tate.2021.103465

Pryor, J., Wilson, R. H., Chapman, M., & Bates, F. (2020). Elementary educators' experiences teaching during COVID-19 school closures: Understanding resources in impromptu distance education. *Online Journal of Distance Learning Administration*, *XXIII*(4). https://www.westga.edu/~distance/ojdla/winter234/pryor_young_chapman_bates234.html

Robinia, K. A., & Anderson, M. L. (2010). Online teaching efficacy of nurse faculty. *Journal of Professional Nursing, 26*(3), 168–175. https://doi.org/10.1016/j.profnurs.2010.02.006

Rodari Meisner, J., & McKenzie, J. M. (2023). Teacher perceptions of self-efficacy in teaching online during the COVID-19 pandemic. *Athens Journal of Education*, *10*(1), 49–66. https://doi.org/10.30958/aje.10-1-3

Schlesselman, L. S. (2020). Perspective from a teaching and learning center during emergency remote teaching. *American Journal of Pharmaceutical Education*, *84*(8), Article 8142. https://doi.org/10.5688/ajpe8142

Schultz, R. B., & DeMers, M. N. (2020). Transitioning from emergency remote learning to deep online learning experiences in geography education. *Journal of Geography, 119*(5), 142–146. https://doi.org/10.1080/00221341.2020.1813791

Soodak, L. C., & Podell, D. M. (1993). Teacher efficacy and student problem as factors in special education referral. *The Journal of Special Education*, *27*(1), 66–81. https://doi.org/10.1177/002246699302700105

Teo, C. L., Tan, S. C., & Chan, C. (2021). Pedagogical transformation and teacher learning for knowledge building: Turning COVID-19 challenges into opportunities. *Canadian Journal of Learning and Technology*, *47*(4). https://doi.org/10.21432/cjlt28057

Tschannen-Moran, M., & Woolfolk Hoy, A. W. (2001). Teacher efficacy: Capturing an elusive construct. *Teaching and Teacher Education*, *17*(7), 783–805. https://doi.org/10.1016/S0742-051X(01)00036-1

Wang, L., Ertmer, P. A., & Newby, T. J. (2004). Increasing preservice teachers' self-efficacy beliefs for technology integration. *Journal of Research on Technology in Education, 36*(3), 231–250. https://doi.org/10.1080/15391523.2004.10782414

Yenen, E. T., & Çarkit, E. (2021). Fear of COVID-19 and general self-efficacy among Turkish teachers: Mediating role of perceived social support. *Current Psychology*, *42*(3), 2529–2537. https://doi.org/10.1007/s12144-021-02306-1

Zagorski, K. H. (2011). *A study of teaching in isolation and the effects on self-efficacy for first and second grade teachers in the online school setting* [Doctoral dissertation, Capella University]. LearnTechLib. https://www.learntechlib.org/p/118245/

Zee, M., & Koomen, H. M. Y. (2016). Teacher self-efficacy and its effects on classroom processes, student academic adjustment, and teacher well-being: A synthesis of 40 years of research. *Review of Educational Research*, *86*(4), 981–1015. https://doi.org/10.3102/0034654315626801

Authors

Julia Forgie is Assistant Professor in Teaching Stream and Coordinator of the Education & Society Program at Victoria College, University of Toronto in Canada. She is also a certified primary/junior teacher in Ontario and her research interests include preservice and in-service teacher training, teaching efficacy, and online teaching and learning. *Email*: julia.forgie@utoronto.ca

Marguerite Wang is a Master of Arts student in the Department of Curriculum, Teaching and Learning and Research Assistant at the Ontario Institute for Studies in Education, University of Toronto in Canada. Her research interests include plurilingualism in classrooms, education in emergencies, linguistic minority students, and language policies through an international and comparative education lens. *Email*: marguerite.wang@mail.utoronto.ca

Lisa Ain Dack is Assistant Professor in Applied Psychology and Human Development at the Ontario Institute for Studies in Education at the University of Toronto in Canada, where she teaches graduate-level education students. Her research focuses on teacher and administrator professional learning, data-based decision making, and educational leadership. *Email*: lisa.dack@utoronto.ca

Miranda Schreiber is a graduate of and research assistant at the University of Toronto in Canada. A Toronto-based writer and researcher, her work has appeared in The Globe and Mail, The Walrus, BBC, The Toronto Star, and the Canadian Medical Association Journal, to name a few. Her first novel, *Iris and the Dead*, is available for preorder with Bookhug Press. *Email*: miranda.schreiber@mail.utoronto.ca