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Examining the Relationship Between Teacher Efficacy, Stress, and Email Use

Abstract

This action research study explored the relationship between teacher stress, efficacy, and email use. Nineteen teachers from an international grade school in Asia participated in a confidential survey which measured stress levels, efficacy beliefs, email use, and email management strategies. In the second phase of the research six teachers were interviewed about their perceptions of the role of email in their work life. An analysis of the survey data demonstrated strong statistical evidence of a correlation between email management strategies and teacher efficacy. The results of the survey and interview data showed that email is a source of significant distraction, role integration behaviours and a perceived source of stress.

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Action Research Report Submitted in Partial Fulfilment of the Requirements for the Degree of Master of Education

Examining the Relationship between Teacher Efficacy, Stress, and Email Use

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Action Research Report
Submitted in Partial Fulfilment
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Table of Contents

Title Page.....	1
Acknowledgements.....	2
Table of Contents.....	3
List of Tables.....	4
List of Figures.....	5
Abstract.....	6
Introduction.....	7
Literature Review.....	9
Methods.....	14
Results.....	17
Discussion.....	28
References.....	33
Appendices	
Appendix A – Action Research Survey – Spring 2021.....	36
Appendix B – Email Invitation to Survey Participants.....	39
Appendix C – Semi-structured Interview Questions.....	40

List of Tables

Table	Page
1. Mean Response per Likert-Scale questions for Teacher Efficacy.....	18
2. Mean Response per Likert-Scale questions for Teacher Stress.....	19
3. Mean Response per Likert-Scale questions for Teacher Email Use & Perceptions.....	20
4. Aggregate Survey Category Scores.....	21
5. Self-reported Number of Times per Day Checking Email Inbox.....	24

List of Figures

Figure	Page
1. Correlation analysis of Teacher Efficacy and Email Management Strategies.....	22
2. Correlation analysis of Teacher Efficacy and Teacher Stress Factors.....	23

Abstract

This action research study explored the relationship between teacher stress, efficacy, and email use. Nineteen teachers from an international grade school in Asia participated in a confidential survey which measured stress levels, efficacy beliefs, email use, and email management strategies. In the second phase of the research six teachers were interviewed about their perceptions of the role of email in their work life. An analysis of the survey data demonstrated strong statistical evidence of a correlation between email management strategies and teacher efficacy. The results of the survey and interview data showed that email is a source of significant distraction, role integration behaviours and a perceived source of stress.

Keywords: teacher efficacy, teacher stress, email

Teaching is cognitively demanding work. Essential responsibilities of teachers such as planning units and lessons of instruction, assessing student work, giving and receiving feedback, and managing classroom relationships require a great deal of mental effort to do well. If teachers believe they can do this work, i.e. that they will be able to bring about desired outcomes in these responsibilities – a concept known as teacher efficacy – they are more likely to actually do so (Collie et al., 2012). Thus, a teaching and working environment that protects cognitively demanding work and promotes teacher efficacy is highly desirable.

At least two trends in education pose a possible threat to such conditions. The first is the dramatic change in the nature of work in general due to the expansion of the internet and the proliferation of electronic devices (Becker et al., 2018; Mazmanian et al., 2013). Even prior to the massive disruptions brought about by COVID-19, electronic communication blurred boundaries between work and non-work and created expectations that workers be always-on and connected (Becker et al., 2018), a phenomenon from which teachers have not been spared. Remote and home-based learning in response to COVID-19 restrictions intensified the frequency of use of Internet Communication Technologies (ICTs) in education such that a much greater proportion of teacher work is mediated through the internet.

A second, well-documented trend is the intensification of teacher workload and resultant high stress levels. Teaching is considered a “high stress” profession (Kyriacou, 2001). A 2019 teacher workload survey found that most respondents “...felt they spent too much time on planning, marking, data management and general administrative work.” Nine out of ten of those respondents reported workload as a “fairly” or “very serious” problem (Great Britain et al., 2019, p. 119). Teachers are also increasingly doing work of an administrative or non-teaching nature, and feel dissatisfaction with the aspects that surround the non-teaching components of their job.

(Ballet et al., 2006; Collie et al., 2012; Kim, 2019). Overall, teachers report a high workload, insufficient time, and the need to work outside of delineated job hours. As with any new technology, understanding the trade-offs inherent in the adoption and proliferation of internet mediated work is essential for the world of education.

Purpose

The purpose of this study was to examine these tradeoffs by investigating the relationship between email management strategies on stress and on teacher efficacy and to better understand how teachers perceive the role of email in their work lives. Although not the only ICT used by teachers, email is perhaps the most ubiquitous, and provided a suitable test case for examining internet-mediated work of teachers in the 21st century. In particular, this study aimed to answer three questions:

1. What is the relationship between email management strategies and teacher efficacy?
2. What is the relationship between email management strategies and teacher stress?
3. How do teachers perceive the role of email in their work lives?

Definition of Terms

For the purpose of this study the following definitions of key terms have been used.

Autonomy paradox: The tension between professionals' personal autonomy and commitment to serve colleagues and clients. When workers are granted greater control and flexibility over their work lives the contradictory result is the restriction of autonomy by the increased demands and expectations of constant connectivity. (Mazmanian et al., 2013)

Boundary theory: The demarcations which define the role identities that people enact across various social domains, and how people transition from one domain to another (Reyt & Wiesenfeld, 2014, p. 740)

Teacher self-efficacy: Individuals' beliefs about their capabilities to carry out a particular course of action successfully. Bandura (1997, as cited in Klassen, 2010).

Teacher stress: A negative emotional experience triggered by the teacher's perception that their work situation constituted a threat to their self-esteem or well-being. (Kyriacou, 2001, p. 28).

Literature Review

Teacher Efficacy

Teachers perform a wide variety of tasks as part of their ordinary work. It is the case that some teachers are not able to perform these tasks, while others do so with proficiency; the responsibility of formal evaluating this performance often falls to school administrators. However, since the late 1960s, educational researchers began looking at a dimension separate from formal evaluation: teachers' perceptions of their own ability, a construct defined as teacher efficacy. Precise definitions of teacher efficacy vary, some focusing generally on beliefs about generally meeting job responsibilities (Bandura, 1986) while others more particularly emphasize beliefs related to student engagement and learning outcomes (Tschannen-Moran et al., 1998). The developers of the Teachers' Self-Efficacy Scale (TSES) identify three specific classroom domains in which to measure teachers' beliefs about their capabilities: implementing instructional strategies, managing student behaviours, and engaging students in the learning process (Tschannen-Moran et al, 1998). The essential characteristic of teacher efficacy, however defined, is that one's self-perception of competence or ability may not be one's actual level of ability (Tschannen-Moran et al., 1998).

The significance of teacher efficacy – despite the fact it might not measure actual ability – has been the focus of numerous studies. Tschannen-Moran and Hoy (2001) refer to its potency in relationship to student achievement, motivation, and students' own sense of efficacy (p. 783). A high degree of teacher efficacy has also been linked to the use of effective teaching strategies, greater levels of planning and organization, greater effort invested, improved classroom management, and greater well-being (Collie et al., 2012; Tschannen-Moran & Hoy, 2001). Others have found that teacher efficacy is positively linked with job satisfaction (Caprara et al., 2003; Klassen & Chiu, 2010; Türkoğlu et al., 2017).

Conversely, low teacher efficacy is likely to lead to decreased levels of student achievement and efficacy (Bandura 1997, as cited in Klassen, 2010). In either direction, teacher efficacy operates in a “cyclical” manner. Greater teacher efficacy begets more efficacy, and vice versa (Tschannen-Moran et al., 1998). It is in part because of this cyclical nature that educational researchers seek to better understand the factors which influence teacher efficacy.

One of the ways teachers increase self-efficacy is through mastering a difficult task (Bandura, 1997; Türkoğlu et al., 2017). Examples of these tasks might be planning a unit of instruction, developing a rubric, selecting and executing instructional strategies, or providing meaningful feedback. In order to increase efficacy, “Teachers need a thorough understanding of the complexity of task requirements and help in breaking these down to allow them to focus on and improve in a manageable subset of skills” (Tschannen-Moran et al., 1998, p. 239). Thus, it is important to understand the working conditions necessary to promote dealing with such complex tasks, and whether techniques like email management strategies are related to teacher efficacy.

Teacher Stress

One third of teachers are stressed or extremely stressed according to Geving (2007, cited in Collie et al., 2012). As in all high-stress occupations the main sources of stress are varied and numerous. For teachers, central sources of stress are broadly of two types: student behavioural stress such as unmotivated students or discipline challenges and workload stress such as time pressures, poor working conditions, and administrative demands (Klassen & Chiu, 2010; Kyriacou, 2001). The studies examining teacher stress are robust and explore a wide variety of causes and effects of teacher stress.

Klassen and Chiu (2010) found that teacher stress influences teacher self-efficacy and teacher job satisfaction. The experience of extremely low self-efficacy has been associated with burnout, although the explanation for this phenomenon is not widely agreed upon (Skaalvik & Skaalvik, 2007). Teachers are generally satisfied with the core responsibilities of their job (related to teaching and learning) but dissatisfied with the aspects that surround that work (Bozkuş, 2018; Collie et al., 2012). There is some research on higher-education institutions which confirms that academics are frustrated by email-related work as it is not perceived as a core responsibility, and thus leads to significant stress (Heijstra & Rafnsdottir, 2010). However, there is a paucity of literature exploring the relationship between the role that email plays within the work life of grade school teachers.

Teacher Work and Email

Autonomy

In general, teachers have a degree of autonomy in structuring their work time. Of course, this varies by case. Classes taught, supervision duties, and meetings are often bound by a consistent schedule, but teacher time for planning, assessment, administration, and

communication are conducted with relative autonomy (Hu et al., 2009; Kim, 2019). There is an established body of research that points to the benefits of autonomy in schools, particularly as it relates to professional curriculum choices such as choosing instructional strategies or resources to use. These benefits primarily show up in the areas of job satisfaction and stress; constraints on autonomy increase stress and decrease job satisfaction. (Pearson & Moomaw, 2005). Having control over one's work environment through on-the-job decision making is a contributing factor to staying committed to the teaching profession (Pearson & Moomaw, 2005), and has been recognized as a critical component in educational reform movements (Ingersoll 1997, cited in Pearson & Moomaw, 2005).

Teacher Email Use – 20 years ago

In the late 1990s and early 2000s, several articles expressed great optimism for the potential uses of email in many areas of teaching and learning. Kabilana & Embib (2006, cited in Hu et al., 2009) argued that email helped to catalyse professional development through networking and collaboration. Another paper highlighted the potential boost to student attitudes towards course content based on email support from an instructor (Hedrick et al, 2000). In an annual journal for higher education development Hassett et al. (1995) proposed the following uses for email: communicating announcements, grade reporting, global content discussions, encouraging individual students, disseminating course content, providing feedback, course evaluations, extending office hours, and communicating course objectives. The prevailing view of the late 1990s and early 2000s – that email would bring immense benefits to the world of education – has recently come under reconsideration.

Teacher Email Use – Today

“Increasingly, people work all the time, everywhere, and on everything” (Reyt & Wiesenfeld, 2014, p. 739). This statement represents the thinking behind a growing body of research in the 2010s and onwards that focuses on the proliferation of ICTS, mobile devices, and expectations of constant connectivity. In particular, these studies recognize the utility and helpfulness of email and the internet, but highlight the negative tradeoffs of this transformation in work lives. Workflow disruption, over-monitoring, digital overload, email addiction, poor work-family balance; all of these and others have been linked to increased work-related stress (Barley, Meyerson, & Grodal, 2011, cited in Pignata et al., 2015; Heijstra & Rafnsdottir, 2010). The development of smartphones and tablet devices in the late 2000s further allowed for digital work to extend into non-work time and space, with potentially serious negative consequences (Pignata et al., 2015).

A growing body of research focuses on the negative impact of email use on knowledge workers in general and higher education in particular. One heuristic used to analyze the prevalence of ICTs in modern work life is boundary theory, defined by Reyt and Wiesenfeld (2014) as:

Individuals enact various role identities in their daily lives. Roles are contextualized with respect to time, space, and social interaction partners. . . Role identities are characterized by specific attitudes and behavior patterns and they are designed to fit each domain’s rules and expectations (p. 740)

For example, a teacher’s role identity is primarily contextualized in the classroom, for a set time each day, and with the students and other colleagues. The attitudes and behaviour patterns of a teacher’s work life are characterized by this classroom context. However, boundary theory adds

that ICTs – and more potently so mobile technologies – add competing pressures and expectations outside of the primary work context (Mazmanian et al., 2013; Reyt & Wiesenfeld, 2014). The pressure – perceived or otherwise – to check (Becker et al., 2018) and respond to email outside of work hours makes it increasingly difficult to disengage oneself from work (Heijstra & Rafnsdottir, 2010).

In their seminal study on the “autonomy paradox” Mazmanian et al. (2013) call for the examination of mobile technologies within a range of workplace settings. “However, mobile work research has yet to explore the cognitive and organizationally relevant behavioural outcomes of such integration activities” (p. 741). In a study of university employees’ perceptions of email, several researchers found that the expectation of a quick response combined with a high volume of emails contributed to high stress (Pignata et al., 2015). Thus, examining teachers perceptions of email usage (mobile or otherwise) in a grade school is an important extension of the current research literature. The potential for email use to impact teacher stress and teacher efficacy is a dimension of contemporary teacher work life worthy of further consideration.

Methods

Participants

Participants in this study were 19 elementary, secondary, and specials teachers in an international school in Shandong, China. All 19 teachers took part in a survey in the first phase of the research, and a purposeful sample of six teachers participated in semi-structured interviews in the second phase of the research. The participants varied in terms of number of years teaching experience, gender, grade-level taught, and current teaching location (because of

COVID-19 travel restrictions, several teachers were not yet in country and were teaching remotely from various time zones).

Materials

A Microsoft Office 365 survey created by the researcher (see Appendix A) was sent by email to all teaching staff at the international school. The survey was piloted with four teachers outside of the international school but from within the same school district; one non-teaching colleague at the school assisted in the editing and revision process for the survey. The survey was comprised of three sections: teacher efficacy beliefs, teacher stress, and teacher email use.

Eight questions from the Teachers' Sense of Efficacy Scale (TSES), developed by Tschannen-Moran and Hoy (2001), were used to measure efficacy beliefs. Several studies have tested the validity of this measure such as Wolters & Daugherty (2007, cited in Klassen & Chiu, 2010). The TSES measures three domains of efficacy: student engagement, instructional strategies, and classroom management. Questions were drawn only from the instructional strategies domain because they reflect teacher work most likely to require focused, uninterrupted outside of the classroom (identifying strategies, modifying lesson plans, etc.) while the others – engagement and management – predominately reflect immediately responsive teacher work inside the classroom. The eight questions were presented in a Likert scale ranging from “1- Nothing” to “5 – A Great Deal.”

To measure teacher stress, the survey required participants to rate their overall job stress on a scale (1 = no stress) to (9 = extreme stress) and then to rate seven potential factors causing stress using a 5-point Likert scale (1 = no stress) to (5 = extreme stress). These factors were drawn from Boyle et al's (1995) Teacher Stress Inventory (TSI).

The final survey section – teacher email use – was divided up into two parts: teacher email usage patterns and teacher email management strategies. The Email Strain Questionnaire (ESQ) is a robust and internally reliable measure of email behaviour (Pignata et al., 2015).

Teacher email use patterns were measured in a 5-point Likert scale of eleven statements ranked in terms of agreement (1 = strongly disagree to 5 = strongly agree). Nine of these statements were drawn directly from the ESQ, while two statements were added:

Statement 7: Time spent on email takes away from my core job responsibilities.

Statement 10: I need to use email during non-work hours to stay ahead.

Email management strategies were measured in Part Two through another 5-point Likert scale measuring frequency of use (1 = never to 5 = always). Eight email management strategies from the ESQ were rated. Two of the strategies (#4 *keeping messages as reminders* and #5 *leave messages in inbox after reading*) were reversed coded.

Design

An explanatory sequential mixed-methods design was used to carry out this study. This design allows for the examination of a research topic from statistical and personal perspectives (Privitera & Ahlgrim-Delzell, 2018). The qualitative component of the study – the interview – was constructed based upon the results of the quantitative research done through Microsoft Office 365 form. As this study was focused on understanding constructs related to teacher's perceptions of their work (efficacy, stress, and email use), this design allowed for a better exploration. A prior study of the same topic by Pignata et al. (2015) at the university level utilized a similar mixed-methods design; it examined the magnitude of email use and stress as well as user perceptions.

Procedures

To carry out this study, all teaching staff in the international school were identified. Administrators, support staff, and teaching interns were not included in this study because of the different nature of their work and the possibility that the research data would be compromised. The Microsoft Office 365 survey link was sent to all identified participants with a brief explanation of the purpose of the study (see Appendix B) and confidentiality assurances. Five days later, a reminder was sent via email to ask teachers to submit the survey. Nineteen teachers completed the survey, and of those, thirteen agreed to possibly be interviewed.

During phase two of this study, semi-structured interview questions (see Appendix C) were crafted based on the results of the quantitative survey to elicit teacher explanations of their work as it relates to email. Seven teachers were purposefully identified to participate in the interviews, based on their willingness to participate in the survey and patterns in their survey responses. They represented a variety of roles, teaching experience, and location (one teacher was interviewed who was teaching remotely). One teacher was unable to meet because of a scheduling conflict, so the researcher conducted six interviews. Five of these interviews took place in the school building, and one interview took place via a ZOOM videoconference. All interviews were voice recorded, transcribed, and then coded to identify relevant themes.

Results

The purpose of this study was to investigate the relationship between email management strategies on teacher stress and teacher efficacy, and to better understand how teachers perceive the role of email in their work lives. These three questions framed the study.

1. What is the relationship between email management strategies and teacher efficacy?
2. What is the relationship between email management strategies and teacher stress?

3. How do teachers perceive the role of email in their work lives?

Quantitative Results

Three main sets of data were collected in the quantitative survey: teacher efficacy beliefs, teacher stress levels, and teacher email use and perceptions. Tables 1-3 summarize the mean results for each of the datasets.

Table 1

Mean Response per Likert-Scale questions for Teacher Efficacy

How much do you believe you can do? Likert-Scale from (1 = nothing) to 5 (a great deal)	Mean	SD
How much can you do to adjust your lessons to the proper level for individual students?	3.26	0.73
How much can you gauge student comprehension of what you have taught?	3.63	0.68
How well can you respond to difficult questions from your students ?	3.84	0.69
How much can you use a variety of assessment strategies?	3.53	0.90
To what extent can you provide an alternative explanation or example when students are confused?	3.89	0.66
How well can you implement alternative instructional strategies in your classroom?	3.05	0.71
How well can you provide appropriate challenges for very capable students?	3.32	0.89
To what extent can you craft good questions for your students?	3.47	0.96

Based on this data, teachers reported the lowest efficacy beliefs in terms of implementing alternative instructional strategies and the highest in providing alternative examples or answering questions.

Table 2*Mean Response per Likert-Scale questions for Teacher Stress*

Overall Stress Likert-Scale from (1 = no stress) to (9 = extreme stress)	Mean	SD
How would you rate your overall job stress?	6.53	1.07
How great a source of stress are these factors to you? Likert-Scale from (1 = no stress) to (5 = extreme stress)	Mean	SD
Difficult class	2.63	1.01
Responsibility for student achievement	3.32	0.95
Too much work to do (e.g. preparing lessons/grading)	3.84	0.76
Lack of time to spend with individual students	3.32	0.89
Maintaining class discipline	2.58	1.02
Administrative demands (e.g. filling in forms/keeping records)	2.84	0.83
Job interferes with private/family life	2.84	1.17

Teachers reported high overall stress at 6.53 out of 9, and “too much work to do” as the most significant cause of stress by a significant margin (3.84) compared with the next highest sources of stress “responsibility for student achievement” and “lack of time to spend with individual students,” both at (3.32).

Table 3*Mean Response per Likert-Scale questions for Teacher Email Use & Perceptions*

Email Work Importance Likert-Scale from (1 = strongly disagree) to (5 = strongly agree)		Mean	SD
Email is critical for getting my work done.		3.53	1.02
I use email a lot for my work.		3.84	0.83
It would be harder to do my work without email.		3.58	0.96
Email Overload Likert-Scale from (1 = strongly disagree) to (5 = strongly agree)		Mean	SD
I can handle my email efficiently. (R - complete)		2.68	0.82
I have trouble finding information in my email.		3.05	0.97
I can easily deal with the amount of email I receive. (R)		2.50	0.92
Time spent on email takes away from my core job responsibilities.**		2.95	0.91
Dealing with email disrupts my ongoing work.		2.95	0.97
I find dealing with my email overwhelming.		2.58	0.84
I need to use email during non-work hours to stay ahead.**		3.84	0.90
I sometimes miss information or important messages.		3.32	1.00
Email Management Strategies Likert-Scale from (1 = never) to (5 = always)		Mean	SD
I check my email as soon as I see or hear that a new email message has arrived. (R)		3.16	1.12
I restrict myself to checking my email at specific times of the day.		3.05	1.22
I try to keep my inbox size small.		3.16	1.42
I keep messages in my inbox as a reminder of things I need to do. (R)		2.05	1.13
I leave messages in the inbox after I have read them. (R)		2.26	1.24
I delete work-related email messages after I read them.		2.32	1.06
I manually file my messages as soon as they come in.		1.79	0.98
I file my messages into separate folders.		2.32	1.34

Notes: (R) indicates reverse coding, ** indicates researcher-added question

Based on the data gathered teachers also indicated that email is relatively important for their work; the mean of all three statements testing this was higher than 3.50 out of 5.00. In terms of overload a high percentage of teachers need to use email outside of work hours to keep up (3.84 out of 5.00). Most email strategies were seldom or sometimes used.

The aggregate scores for six components of the survey were calculated: teacher efficacy, overall teacher stress, factors of stress, email work importance, email overload, and email management strategies. This produced a mean score for each respondent, displayed in Table 4, which was then used for further statistical analysis.

Table 4

Aggregate Survey Category Scores

Respondent	Teacher Efficacy	Teacher Stress Factors	Overall Teacher Stress	Email Work Importance	Email Overload	Email Management
1	4.00	3.29	7.00	3.67	3.00	3.00
2	3.63	3.43	6.00	4.00	2.88	2.63
3	3.63	3.43	9.00	2.33	3.13	2.13
4	3.25	2.71	7.00	4.00	2.63	1.38
5	3.13	2.14	4.00	3.67	2.38	2.63
6	3.75	3.29	8.00	3.67	2.75	3.13
7	3.00	2.29	6.00	4.33	2.63	2.13
8	3.75	3.57	6.00	4.33	2.50	2.25
9	3.38	3.43	7.00	5.00	2.13	2.88
10	2.63	3.57	7.00	5.00	4.00	1.75
11	4.13	3.71	7.00	2.67	3.63	2.50
12	3.88	2.43	7.00	3.00	4.13	2.75
13	4.00	2.57	6.00	2.33	2.71	3.63
14	2.88	3.00	7.00	3.67	2.88	3.00
15	2.38	2.29	6.00	3.33	3.88	2.25
16	3.75	3.14	5.00	3.67	2.50	2.50
17	3.38	2.86	6.00	3.33	3.38	1.75
18	4.50	3.86	7.00	3.33	2.88	2.88
19	3.50	3.00	6.00	4.00	2.75	2.63

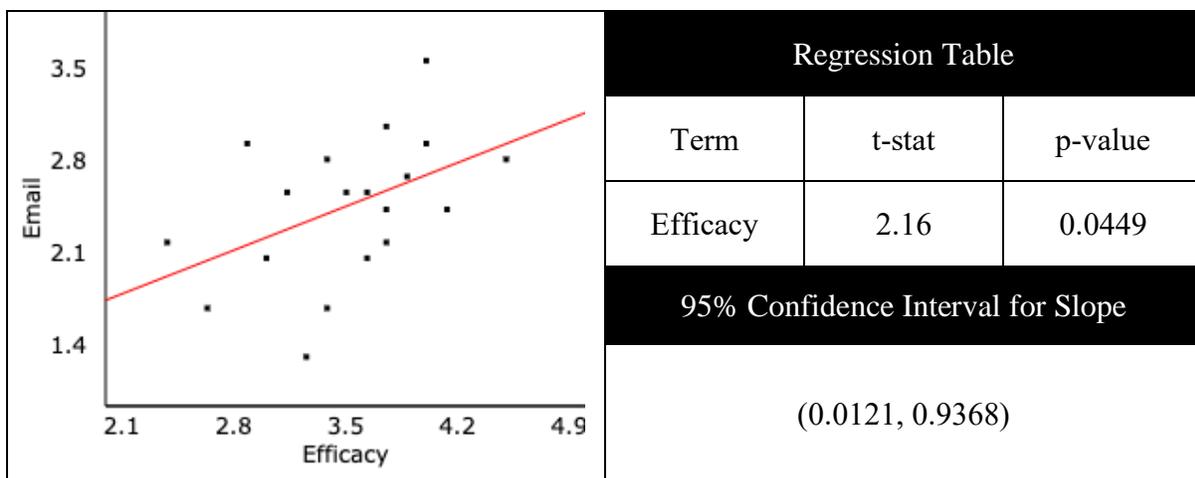
The researcher used these aggregate scores to run correlational analysis between each of these six components to identify relationships, and particularly to answer research questions one and two. A Correlation/Regression applet was used to complete this analysis.

Research Question One**What is the relationship between email management strategies and teacher efficacy?**

Based on the aggregate scores for both of these factors, a correlation/regression analysis revealed there is strong evidence of a statistically significant correlation between teacher efficacy and email management strategies, as displayed in Figure 1.

Figure 1

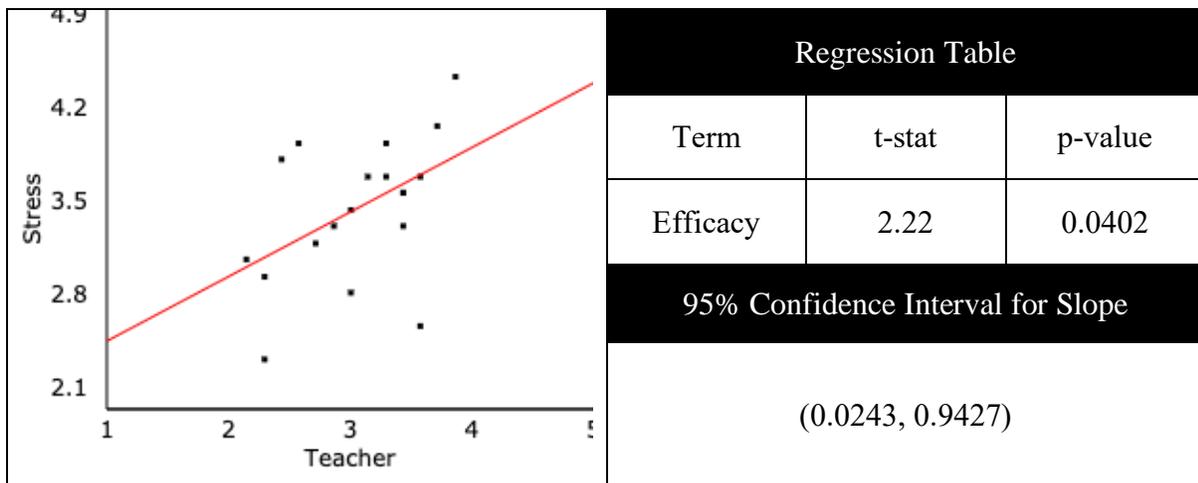
Correlation/Regression analysis of Teacher Efficacy and Email Management Strategies

**Research Question Two****What is the relationship between email management strategies and teacher stress?**

The quantitative analysis of teacher stress did not reveal a statistically significant correlation with email management strategies. However, there is strong evidence of a statistically significant correlation between teacher stress factors and teacher efficacy as shown in Figure 2.

Figure 2

Correlation/Regression analysis of Teacher Efficacy and Teacher Stress Factors



This correlation does not directly answer research Question Two, but does align with the significant body of research which concluded that teachers with a high level of self-efficacy were less likely to report extreme source and burnout (Betoret, 2006; Klassen, 2010).

Qualitative Results

Data from the six interviews were subjected to analysis where key themes were identified from a first reading. A more detailed selective coding of specific subthemes followed during a second reading. A tabulation was kept during the second reading and relevant subtheme examples drawn from the data.

Four key themes were identified during the coding process. The first theme is email role integration behaviours with two subthemes of checking email frequently and email use outside of work (12 comments). Secondly, focused time for instructional planning with two subthemes of email not considered core work and email as a distraction (10 comments). The third identified theme is email stress with three subthemes of the fear of missing something important, expectation of constant connectivity, and frustration with others (17 comments). The fourth

theme is email management strategies with three subthemes of setting aside specific time, purposefully not checking, and the use of folders/filing (15 comments).

Email Role Integration Behaviours

The interview participants were asked specifically how many times per day they thought they checked their email inbox, shown in Table 5.

Table 5

Self-reported Number of Times per Day Checking Email Inbox

Participant	A	B	C	D	E	F
Number of times per day checking email	12-15	Several times, during a 2-hour window (8:00-10:00a.m.)	~20	~10	Innumerable	~10

Several participants described deliberate email checking while others described more compulsive behaviours: “Whenever I have a minute and it’s not before I do anything else specific I open my computer and see it [email]” (Interview C, 03-04-2021). The compulsive behaviours in particular demonstrate the overlap or integration of roles as teachers switch in and out of email communication mode.

The use of email outside of work hours received the greatest number of comments, and all participants reported some form of such email use. Some took a very limited approach, only scanning for important emails once or twice during non-work hours and only responding in an emergency, such as Participant F “... if I get an email that I’ll read the first line and if it looks important, I usually respond to it. And so, if it’s also from a student and I’m still awake, I’ll respond to it” (Interview F, 03-07-2021).

Some recognized the precedent that would be set by replying to email late at night: “I shouldn’t respond because he should ask me before ten-thirty, you know, like, well, like I’m awake, like I could actually help him” (Interview C, 03-04-2021). Others frequently checked and responded to email well beyond work hours, stating their ability to help, and a desire to respond to email immediately after it arrives in the inbox.

A justification given by three of the participants for checking email outside of work hours, and thus enacting a “work-role” according to boundary theory (Reyt & Wiesenfeld, 2014) is that they didn’t want to miss anything “horribly important” (Interview D, 03-04-2021).

Focused time for Instructional Planning

Several responses characterized email work as relatively unimportant vis-à-vis the core tasks of teaching. One participant described the role of email as “Basically, just information and notifications about things.” (Interview D, 04-06-2021). Another grouped email work with random ‘stuff’ that comes up during the day. Although email was described as somewhat useful tool for communication, it holds a peripheral place in terms of relative importance of work. The work which requires the most focus and concentration, according to five of the six respondents is instructional planning, either for daily lessons or larger units.

In order to remain focused to complete this work, four participants noted the importance of minimizing the distraction of email:

So normally when I'm lesson planning, I try not to check my email: I'm just lesson planning. When I start lesson planning, I don't check email until I finish lesson planning. Otherwise I know that I'll get distracted, and then it will take me forever. But I don't do that perfectly... (Interview E, 03-06-2021)

As well, two participants recognized the drain caused by cognitive switching when checking email: “I'd rather not read through these emails because if there is something, then my brain switches...” (Interview F, 03-07-2021).

As well, the power of email was felt as a form of more legitimate distraction when attempting to do difficult, sustained-focus work:

I am bored. I've lost my ability to focus for this moment. I need something else to distract me. I want to go to Instagram, but I'm not because I'm working. So, I'm going to look at email instead and get the same kind of like distraction that I'm looking for. (Interview, 03-04-2021).

Although participants managed to restrict their email use with varying levels of success during instructional planning time, they articulated a general awareness of the potential distracting power of email.

Email Stress

Four participants expressed fear that they would miss something important by not checking their inboxes (either frequently during work or outside of it). As one respondent described his feeling in the mornings before work: “I need to check my email because I'm worried that there might be a fire to put out” (Interview, 03-04-2021). Part of the reason this stress was felt so acutely by some is the organizational expectation of constant connectivity. Some felt that emails were regularly sent with highly important updates or issues that needed immediate response. Participant F described it like this:

It's hard to ignore emails that have important information that come in, especially if there is a bunch of them. I think I need to stop what I'm doing, read them, because sometimes they are about an update that's happening this afternoon. (Interview, 03-07-2021)

Others cited the possibility of an emergency update or meeting as the reason for frequent checking, despite the stress it caused particularly outside of work hours.

Another major source of frustration noted in eight comments was the use of group emails not relevant to many of the recipients:

“I like [sic] look down and I see there’s six emails that I got in the last fifteen minutes.

I’m like ‘what if something’s important?’ I click it and it’s all air quality updates, broken links . . . or weekly updates that don’t apply to me” (Interview A, 03-02-2021).

Three others described the sheer volume of emails – many of them irrelevant – as a source of frustration.

Email Management Strategies

Three of the interview questions (See 8, 9, and 10 in Appendix C) were directed at the use of email management strategies, of which several proved relatively successful for some of the interviewees. Setting aside specific times of the day to handle email proved effective for some of the participants. One teacher employs a ‘window period’ strategy; a two-hour block of time each morning during which he reads and responds to emails. This came about after his reflection on prior email habits:

So I used to open e-mails and reply to them as soon as I got them. And, I used to have my notifications on for emails and now I don't anymore. So now I literally set aside a certain time frame or time period where I will put my time and effort into that and not just be a slave to it the entire day ‘just in case it's an important email.’ (Interview B, 03-03-2021)

Others restrict email use during certain times of the day, such as during class or planning times.

Two identified the short breaks between classes as unhelpful times to check email, and thus work hard to refrain from doing so (not always successfully).

The processes by which respondents managed their email workflow was highly variegated. Some deleted emails immediately. Two did not. Two used flagging. Three respondents use some sort of filing/folder system in their inbox to manage their work.

Discussion

Overview of the Study

An explanatory sequential mixed-methods design was used to study three questions: What is the relationship between email management strategies and teacher efficacy? What is the relationship between email management strategies and teacher stress? How do teachers perceive the role of email in their work lives? Nineteen teachers completed a Microsoft Office 365 form survey to form the quantitative basis for the research. From this data, semi-structured interview questions were formed and six purposefully selected teachers participated in the qualitative research phase, designed to further explore teacher perceptions of the role of email in their work.

Summary and Analysis of Findings

Research has shown that teaching is a high stress profession and the two main types of stress experienced by teachers are stress related to students' behavior and discipline and stress related to workload (Kyriacou, 2001; Klassen, 2010). Based on the survey results in this study, workload proved to be the greater stressor at this international school with an average response of 3.84 out of 5 for the statement "too much work to do" (see Table 2). As well, the average overall stress level was reported at 6.53 out of 9. More than two thirds of teachers reported being considerably stressed. Furthermore, based on the survey and interview data teachers are working outside of designated hours. This aligns with the research done by the Great Britain Department for Education Workload Survey: teachers spent an average of 12.8 hours working outside out of

school (Great Britain et al., 2019). At least some of this work done outside of work-hours is email-related: 12 out of 19 survey respondents indicated they “agree” or “strongly agree” with the need to use email in non-work hours to stay ahead. All six interview participants reported checking email to some degree outside of work hours, and two doing so compulsively and constantly.

The statistical analysis in this study did not reveal a correlation between email management strategies and teacher stress. However, the high levels of stress and the overflow of work into non-work hours represents a significant issue that warrants further research. Reyt and Wiesenfeld (2014) explain the cost of switching “cognitive gears” when transitioning between multiple roles – home and work roles in this case – as a decreased ability to focus on detail-orientated and cognitively demanding work (as opposed to more abstract creative thinking). The interviews revealed that email is at least perceived as a burden and a distraction for some of the time, and potentially even an addiction. Teacher leaders and administrators need to give thought to the organizational conditions that cause stress – of which there are undoubtedly many – and move forward sensitized to the power of email as a stressor in the lives of teachers.

A second finding of this study is that autonomy in structuring productivity may not be in teachers’ (and schools’) best interests. Schools employ teachers to teach: to plan and deliver quality instruction, assess student learning, manage classrooms, and promote the vision of learning set by an institution. Checking and replying to emails may be part of that work, but the results of this study showed that it has the potential to move towards the center and take away from the essential work of teachers. All of the teachers interviewed identified instructional planning as the work they need to give focused cognitive energy to in order to do well, but also expressed frustration at the competing distractions that take away from this work. Becker et al.

(2018) point out that the pernicious influence of email is such that even the act of checking email requires an individual to mentally shift work roles, even if no email has been received. A dominant theme in the interview data was the fear of missing out on important communication by not checking email. Thus, an organizational condition has been created whereby individuals are distracted from their core work because of an implicit, informal communication norm.

The quantitative analysis in this research showed strong evidence of a correlation between email management strategies and teacher efficacy. To be sure, more research needs to be done to examine the impact of teacher productivity management systems on individual teachers and schools, but this study revealed the possibility of the “autonomy paradox” factoring into the work lives of teachers. In this study, teachers managed their email with considerable autonomy: no evidence of significant organizational norms or boundaries was found, and teachers used a wide variety of times and strategies to do their email work (including doing so on personal mobile devices). This increases individual teacher’s flexibility and control – they can do email where, when, and how they desire. However, According to Mazmanian et al (2013) the autonomy and flexibility of mobile email use also raises “expectations of responsiveness and accessibility and leading to a collective reduction of autonomy as workers began to engage with work at all times.” The consequence of this for teachers – if not checked by schools and districts – is a state where teachers are bound to their email with the expectation of constant connectivity and very little focused time to do their core work, at least without considerable stress.

Guarding the productive work time and mental focus of teacher – with the long-term aim of decreasing stress and increasing efficacy – is a problem that school leaders will need to attend to increasingly. Becker (2018) proposes one way to do this: “The most obvious solution would be to increase boundary control and reduce monitoring of electronic communications, provided

that the employee is consciously aware that monitoring is the source of the negative effect.” One of the interview participants employed a system of individual boundary control by restricting email checking to a two-hour period during the day, and reported this to be a very helpful strategy for focusing on other work. Variations of this individual strategy could be adopted by departments within schools (or even entire schools) to remove the pressure for teachers to be constantly monitoring their inboxes for important and urgent information. The greater benefit would come as teachers focus on the challenges of teaching and learning – assessment, instruction, differentiation – and develop in their actual and perceived abilities and teachers (Kim, 2019; Türkoğlu et al., 2017).

Limitations and Recommendations for Future Research

One of the limitations of this research study was the relatively small sample size of teachers who participated. Future research on the role of email in teachers’ work lives with more participants would be able to control for gender, teaching experience, and school division (primary, secondary, etc.). Another somewhat ironic limitation of this study is the fact that teachers were emailed the survey. Since one of the research questions focused on teacher perceptions of email, it is possible that some teachers did not participate in the survey because of their established perceptions of work mediated through email – perhaps that it is unimportant or bothersome.

This study focused specifically on email and its impact on teacher stress and efficacy. However, in an increasingly digital and virtual work environment, the study of teacher work habits, organizational boundaries (or lack thereof) on teacher work, and the impact on student achievement are all areas worthy of future research. Furthermore, students may be impacted by

these phenomena as well – studies of student email (or other ICT) management and behavior is a frontier in educational research likely to grow in relevance.

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Appendix A

Action Research Survey - Spring 2021

Section 1: Personal Information

Your information is confidential and will be protected.

1. What best describes your current primary professional role?
 - a. Early Childhood Center (ECC) teacher
 - b. Elementary teacher
 - c. Secondary teacher
 - d. Specials teacher (art, music, Chinese, STEM, etc.)
 - e. Administrator
 - f. Academic support staff
 - g. Other _____

2. How many years of teaching experience do you have? _____

3. From which time zone are you currently teaching? _____

Section 2: Teacher Beliefs

This section of the survey is designed to help me gain a better understanding of the kinds of things that create difficulties for teachers in their school activities. Please indicate your opinion about each of the statements below. Your answers are confidential.

4. How much do you believe you can do? *This will be rated on a 5-point Likert scale ranging from 1 (nothing), 2 (very little), 3 (some), 4 (quite a bit) to 5 (a great deal).*
 - a. How much can you do to adjust your lessons to the proper level for individual students?
 - b. How much can you gauge student comprehension of what you have taught?
 - c. How well can you respond to difficult questions from your students ?
 - d. How much can you use a variety of assessment strategies?
 - e. To what extent can you provide an alternative explanation or example when students are confused?
 - f. How well can you implement alternative instructional strategies in your classroom?
 - g. How well can you provide appropriate challenges for very capable students?
 - h. To what extent can you craft good questions for your students?

Section 3: Stress

This section of the survey is designed to help me gain a better understanding of the kinds of things that create stress for teachers in their school activities. Please indicate your current levels of stress below. Your answers are confidential.

5. How would you rate your overall job stress? (1 = no stress) to (9 = extreme stress)
6. How great a source of stress are these factors to you? *This will be rated on a 5-point Likert scale ranging from 1 (no stress), 2 (mild stress), 3 (moderate stress), 4 (much stress) to 5 (extreme stress).*
 - a. Difficult class
 - b. Responsibility for student achievement
 - c. Too much work to do (e.g. preparing lessons/grading)
 - d. Lack of time to spend with individual students
 - e. Maintaining class discipline
 - f. Administrative demands (e.g. filling in forms/keeping records)
 - g. Job interferes with private/family life

Section 4: Email Work Patterns

This section of the survey is designed to help me gain a better understanding of email use patterns and management strategies currently being used by teachers. Please respond only for your work-related email.

7. Please indicate your level of agreement with each of these statements. *This will be rated on a 5-point Likert scale ranging from 1 (strongly disagree), 2 (disagree), 3 (neither agree nor disagree), 4 (agree) to 5 (strongly agree).*
 - a. Email is critical for getting my work done.
 - b. I use email a lot for my work.
 - c. It would be harder to do my work without email.
 - d. I can handle my email efficiently.
 - e. I have trouble finding information in my email.
 - f. I can easily deal with the amount of email I receive.
 - g. Time spent on email takes away from my core job responsibilities.
 - h. Dealing with email disrupts my ongoing work.
 - i. I find dealing with my email overwhelming.
 - j. I need to use email during non-work hours to stay ahead.
 - k. I sometimes miss information or important messages.
8. Please indicate how often each of these statements is true about your email use. *This will be rated on a 5-point Likert scale ranging from 1 (never), 2 (seldom), 3 (sometimes), 4 (often) to 5 (always).*
 - a. I check my email as soon as I see or hear that a new email message has arrived.
 - b. I restrict myself to checking my email at specific times of the day.
 - c. I try to keep my inbox size small.
 - d. I keep messages in my inbox as a reminder of things I need to do.
 - e. I leave messages in the inbox after I have read them.
 - f. I delete work-related email messages after I read them.
 - g. I manually file my messages as soon as they come in.
 - h. I file my messages into separate folders.

9. Do you have any comments you wish to make regarding the volume and management of your work email? _____
10. Are you willing to potentially be interviewed based on the results of this survey?
 - a. Yes
 - b. No

Appendix B

Email Invitation to Survey Participants

Dear Colleagues,

I'd like to invite you to participate in a (5-minute) survey for part of a graduate research project I'm working on this Spring.

SURVEY LINK

This project looks at the relationship between stress, teacher beliefs, and email use in the lives of teachers. All information collected will be confidential.

I would love to have all the survey responses in by this Friday, February 5th.

Thank you!

Jonathan Van Santen (researcher)

Appendix C

Semi-Structured Interview Questions

Questions:

1. Can you please describe a typical workday to me?
2. Could you describe the role that email plays within your typical workday?
3. On average, how many times per day do you check your email inbox?
4. Tell me about your email use outside of work hours. Do you check email before or after coming home?
5. Could you tell me about something that is part of your regular work that requires intense and uninterrupted concentration? How do you make sure that you're able to remain uninterrupted and focused?
6. To what extent does email function as a distraction from your other work?
7. What is the biggest email-related frustration for you?
8. What boundaries do you place on the use of email?
9. What is your process for handling email once it is in your inbox? What does it look like you for you to 'do' email work?
10. Tell me about any training you have had (or tools you have adopted) to manage your email?