Teacher Wellbeing from Engaging with Educational Technologies (TWEET)

|Teacher_Wellbeing
from
Engaging_with_Educational Technologies|

|(TWEET)|

Case Studies From Across Ireland

A_SCoTENS-funded_Project

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About Teacher Wellbeing from Engaging with Educational Technologies

Teacher Wellbeing from Engaging with Educational Technologies (TWEET) is a SCoTENS-funded project that commenced in September 2020 and concluded in January 2023, having been delayed by the coronavirus pandemic. Funding for the project was obtained via the SCOTENS Seed Funding Scheme.

Attribution

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- the many school leaders, teachers and stakeholders from Ireland and Northern Ireland who participated in the research; and
- Ulster University, Dublin City University, Lancaster University and the Education Network (Northern Ireland) Innovation Forum.

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Abstract

The use of educational technology as society emerges from COVID-19 continues to pose a challenge for educators. There is a lack of evidence on how digital technology can positively impact teacher wellbeing when effectively managed by school leaders and teachers. This research sought to explore and develop the connection between educational technology and teacher wellbeing, using Passey's (2021) framework and proposition that specific digital technology adoption in schools can benefit teacher well-being in various educational contexts. Six schools, three primary and three secondary, in Northern Ireland and the Republic of Ireland, were studied through in-depth case studies focusing on teacher wellbeing and technology adoption. Interviews were conducted with school principals, leaders, and teachers. The results of the study include that while teachers readily discuss the impact of technology on their work, they are less likely to reflect on its impact on their physical, social, and emotional wellbeing.

Visual Executive Summary

Teacher_Wellbeing_from_Engaging_with_Educational_Technologies| |(TWEET)|

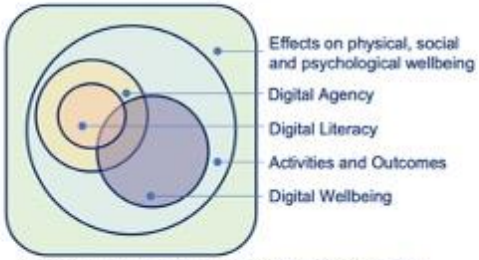
Objective: To test Passey's proposition (2021) that **effective or specific technological adoption in education** in schools **may benefit the wellbeing of teachers** in a wide variety of very different educational contexts, associated with various uses and purposes.

An all Ireland SCoTENS-funded Project

6 schools: 3 primary, 3 post primary. Selective, non-selective, large and small

Interviews and focus groups conducted across all 6 schools with classroom teachers, principals and digital leaders

40 factors queried relating to all 6 features of the conceptual framework.



A conceptual model that identifies key features affecting teacher wellbeing when using digital technologies. (Adapted from Passey, 2021, p.9)

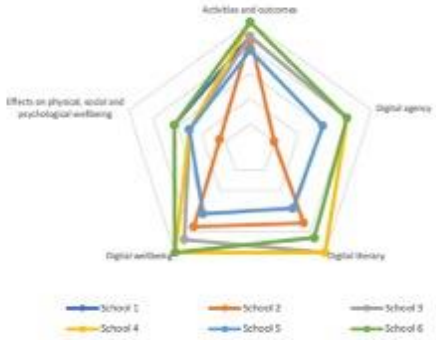
06 school case studies conducted across variously sized primary and post primary in NI & RoI

School #	Jurisdiction	School Type	Enrolment
1	NI	Post-primary	<1200
2	NI	Post-primary	<500
3	RoI	Post-primary	<1,100
4	RoI	Primary	<70
5	NI	Primary	<400
6	RoI	Primary	<1000

To **assist visualisation** of how those interviewed most prominently focused their thinking on teacher wellbeing and digital technology use, each case study incorporates **a star-type figure**. These figures **consider the maximum number of recordable factors** per feature of the framework and map the features recorded and agreed by the research team. It is important, once again, to re-emphasis that **this representation can in no way be ascribed to be accounting for weaknesses** of schools, leaders, or staff towards teacher wellbeing. Rather, it provides a clear visualisation of **the dominance of discussion** topics within each school's series of interviews, grouped by feature from the originating framework (Passey, 2019) at **a given moment** in time with a **select group of staff**

Conversation Mappings & Main Features of each Case Study

Factors influencing teacher wellbeing identified per school, grouped by feature.



School #		Key Characteristic
1		Deliberately strategic and organic plan to embed the use of digital technologies progressively across the school, initially for the purpose of easing the administrative workload of teachers
2		Resilient Teaching for Blended Learning supported by a practical approach of "Invest to Save".
3		Strongly collaborative corporate culture, enabled through reliable technology used in safe, secure and professional ways
4		Pedagogically-led innovative and impactful practice across the breadth of the curriculum in a very small primary school
5		embedding the effective adoption of technology in education in ways that may benefit the wellbeing of teachers, is the theme of change leadership
6		leading improved digital technology resourcing in parallel with initiating developments in pedagogy, through a STEM-led approach.

Extensions to Passey's (2021) Framework Emerging from this Study

	School 1	School 2	School 3	School 4	School 5	School 6	Total
Reducing time in subsequent years	0	0	1	1	1	1	4
Connecting or sharing with other educators beyond the school	1	1	0	0	1	1	4
Knowing technology issues can be fixed	1	1	0	0	1	1	4
Supporting pupil, class or group management	0	1	1	0	0	1	3
Sharing of teacher workload	0	1	0	1	1	1	4
Improving pupil access to classwork	0	1	1	1	1	1	5
Reducing marking workload	0	0	0	1	0	0	1

The six case studies provided evidence which extends the research framework further, by identifying additional circumstances and ways in teachers perceive digital technologies to ease and enrich their pedagogic practices.

Furthermore, the results from this study build on the framework proposed by Passey (2021) and apply specifically to digital technology use and teacher wellbeing: an important, yet largely hitherto neglected, area of research interest. Our findings suggest that teachers speak, with greater readiness, on matters associated with activities and outcomes and increased reluctance to reflect upon and discuss matters linked to their physical, social and emotional wellbeing.

Sammy Taggart | Professor Deirdre Butler | Professor Don Passey | Professor John Anderson

Features concerned with teacher wellbeing	Factors influencing teacher wellbeing	Code
Digital literacy	Having choice of digital technologies	A1
	Having skills to deploy and use the digital technologies	A2
	Supporting information and data literacy	A3
	Supporting communication and collaborations	A4
	Supporting digital content creation	A5
	Supporting safety	A6
	Supporting problem solving	A7
Digital agency	Supporting interactions with parents and guardians	B1
	Feeling more responsible for one's actions	B2
	Feeling security and privacy are ensured	B3
	Feeling that there has been a positive impact on learning	B4
Digital wellbeing	Feeling motivated from digital technology use	C1
	Feeling the use has value for learning	C2
	Feeling the school culture and climate is positive to the use	C3
	Feeling personal satisfaction	C4
	Feeling professional satisfaction	C5
	Feeling positive emotionally	C6
	Supporting collaboration	C7
	Supporting recording of evidence	C8
Activities and outcomes	Support for planning	D1
	Support for professional learning	D2
	Feeling safe and responsible	D3
	Feeling access is easily feasible	D4
	Having access to digital technologies to support interactions in class or beyond	D5
	Having ideas of how positive impact will arise	
	Supporting explanations and modelling	D6
	Supporting pupil practice	D7
	Improving assessment and feedback	D8
		D9
Effects on physical, social and psychological wellbeing	Feeling more able to switch off and relax	E1
	Reducing long weekday hours	E2
	Finding more time to be with family and friends	E3
	Reducing weekend working	E4
	Reducing holiday working	E5
	Reducing anxiety	E6
	Reducing depression	E7
	Reducing exhaustion	E8
	Reducing stress	E9
	Reducing workload	E10
	Offering a better work/life balance	E11
	Improving pupil/student behaviour	E12
	Reducing unreasonable manager demands	E13
	More positively handling rapid change	E14
	Reducing problems with parents or guardians	E15
	Reducing colleague bullying	E16
	Offering more opportunity to work independently	E17
	Gaining more trust from managers	E18
	Reducing discrimination	E19
	Enabling more physical exercise	E20
	Reducing reliance on ways to alleviate stress	E21
	Reducing reliance on tools considered unhealthy	E22

A conceptual framework detailing factors influencing positive teacher wellbeing when using digital technologies. (Passey, 2021, p10)

Extensions to the Framework	Reducing time in subsequent years
	Connecting or sharing with other educators beyond the school
	Knowing technology issues can be fixed
	Supporting pupil, class or group management
	Sharing of teacher workload
	Improving pupil access to classwork
	Reducing marking workload

Sammy Taggart | Professor Deirdre Butler | Professor Don Passey | Professor John Anderson

Report Structure

This report focuses on six case study schools and aims to provide an understanding of the relationship between educational technology and wellbeing. The report begins with a summary of the topic, providing an overview of the main questions and objectives of the research.

The next section of the report provides an overview of the conceptual framework that informs the research. This includes a discussion of relevant literature and theories on the topic, as well as an explanation of the methodology used to collect and analyse data. The theoretical framework is incorporated to support a comprehensive understanding of the topic and to guide the research process.

The detailed presentation of the case study schools forms the main body of the report. This section provides information on the school demographics, the types of educational technology used, and data on teacher wellbeing. The case studies were chosen to provide a diverse range of perspectives on the topic, and the information presented in this section is intended to provide a detailed understanding of the context of the research.

The findings are discussed in relation to the research questions and objectives, and the implications of the findings are considered. The findings are expected to provide new insights into the relationship between educational technology and teacher wellbeing.

The final section of the report presents extensions based on the findings of the research alongside a summary of validation activity undertaken to confirm the authenticity of the findings. This section also draws overall conclusions about the impact of educational technology on teacher wellbeing emerging from this work. The research findings are expected to contribute to the ongoing discussion about the role of technology in education and its impact on teacher wellbeing.

Overall, the report provides an in-depth examination of the topic of educational technology and teacher wellbeing and provides an emerging understanding of the relationship between them. The report draws on a range of literature and theories and presents detailed case studies to provide a diverse range of perspectives. The findings of the research are expected to be of interest to educators, policymakers, and researchers, and to contribute to the ongoing discussion about the impact of technology on education and teacher wellbeing.

1. Introduction and Background to the Study

This study is set in the context of uses of educational technology applications which seek to enhance education in schools, and which are significantly important elements of initial and continuing teacher education.

Background

Research has rarely considered how constructive, productive applications of digital technologies, when effectively managed by leaders and teachers in schools, may benefit in a variety of ways and may be advantageous to their wellbeing – and, if so, in which ways (De Pablos et al., 2011; Passey, 2021). Specific uses and applications of digital technologies are being shown to have a positive effect on teacher wellbeing. For example, from an early set of research case studies (Passey, 2019), it was found that a specific form of mathematics software enhanced engagement of pupils in classes, where their levels of engagement were generally very low. For teachers, engaging these pupils led to high emotional levels of concern. Teachers using the software reported being less exhausted and less emotionally drained.

Teacher wellbeing is an important concept in schooling internationally. With poor teacher wellbeing typified throughout the literature as psychological conditions detracting from a teacher's performance through, for example, feeling of being overloaded, under stress and burnout (Briner & Dewberry, 2007; Ross et al., 2012), teacher wellbeing has been receiving attention within the literature since the 1930s (Orsila et al., 2011). Similarly, the typical direction of current research into technological adoption in education aims to investigate: if, and how, digital technology applications enhance learning/outcomes; or what deleterious impact technologies may have on teacher work and workload, levels of technostress (Jena, 2015; Syvänen et al., 2016) or teacher anxiety (Awofala et al., 2019; La Paglia et al, 2008). Recent literature in the area of teacher wellbeing influenced positively by uses of digital technologies (Passey, 2021) provides a conceptual framework and research instrument to consider a broad range of features and factors to explore whether and how digital technologies may influence teacher wellbeing. Building on the self-determination theory proposed by Ryan and Deci (2000), Passey (2021) presents aspects of competence, relatedness and autonomy as foundational considerations of the conceptual framework. He develops five categories of features concerning teacher wellbeing influenced by digital technologies, relating to Digital Literacy, Digital Agency, Digital Wellbeing, Activities and Outcomes, and Effects on Physical, Social and Psychological Wellbeing.

The testing of Passey's (2021) framework as an instrument to gather evidence about the ways that digital technology uses can influence teacher wellbeing in this study will inform teachers, and teacher educators, those who support schools and teachers, when identifying, managing and focusing a wide variety of different digital technology applications in ways that can promote teacher efficacy, reduce workload and promote wellbeing.

The hiatus of education due to the impact of COVID-19 has generated a marked surge in digital technology adoption within schools. Work in how this recent uptick in digital technologies might be augmented to support teacher wellbeing is both timely and imperative for teaching and its stakeholders. This study will help support how teachers and schools can recognise, adopt and use digital technologies in ways that can have a positive impact on teacher wellbeing as they emerge from the COVID-19 pandemic.

Defining Teacher Wellbeing

Teacher wellbeing is a complex concept that has been defined in various ways in education literature. McLeod and Wright (2016) assert that there is significant variation in how 'wellbeing' has been defined through education literature. It is oftentimes described in deficit terms (Roffey, 2015) such as those pertaining to stress, workload, burnout and low retention rates. Initial attempts to define the term, synthesised by McLellan and Steward (2015), focused on the absence of negativity where teacher wellbeing is reported in stress- or depression-related terms. However, such simplistic definitions have evolved within the literature to provide consideration of and recognition that wellbeing is part of a process of self-realisation (McLellan & Steward, 2015) "within a context of interacting factors rather than the presence or absence of subjectively quantified emotions" (Brady & Wilson, 2021, p.46).

Acton and Glasgow (2015) propose a comprehensive definition of teacher wellbeing that incorporates both personal and professional elements, as well as the interpersonal dynamics of the teaching profession. Specifically, they define teacher wellbeing as "an individual sense of personal professional fulfilment, satisfaction, purposefulness, and happiness, constructed in a collaborative process with colleagues and students" (p. 102). This definition reflects the holistic nature of teacher wellbeing, which encompasses both the individual teacher's sense of well-being as well as the collective experiences and perceptions of well-being among colleagues and students.

Conceptual Framework (Passey, 2021)

Synthesising features associated with teacher wellbeing through engagement with educational technology derived from existing literature, Passey (2021) ascribes: digital wellbeing; digital literacy; digital agency; activities and outcomes; and effects on physical, social and psychological wellbeing to be influential. The complexities of the interconnectivity of the features are shown in Figure 1.

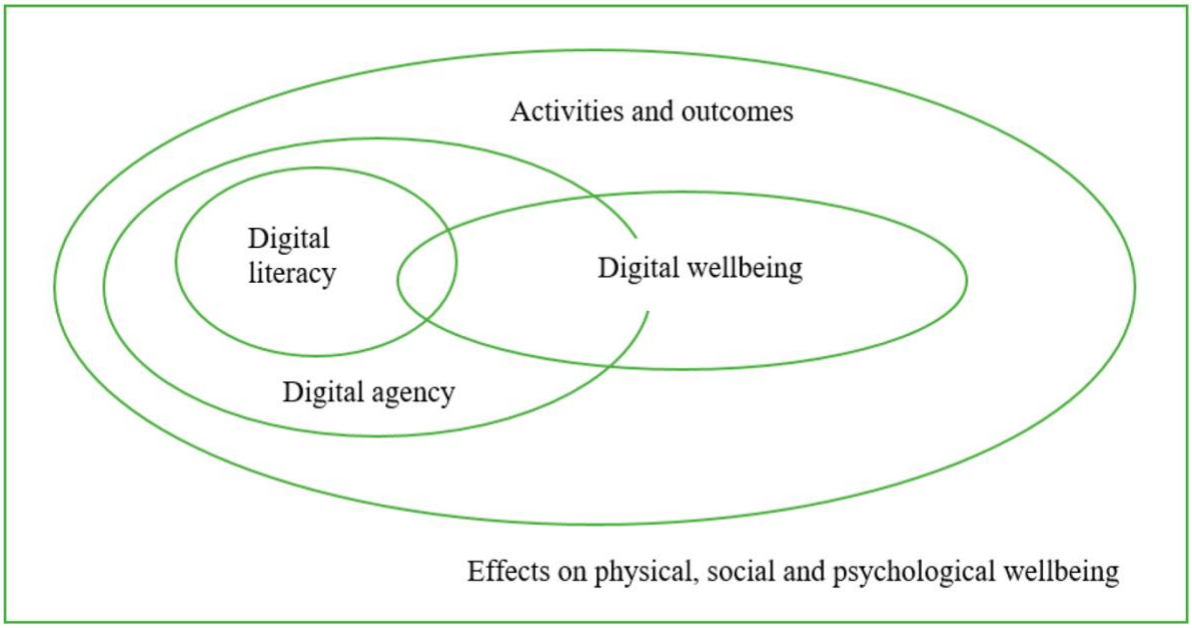


Figure 1 A conceptual model that identifies key features affecting teacher wellbeing when using digital technologies. (Passey, 2021, p.9)

Passey (2021) acknowledges that further work is needed to "explore the detail of these overlaps and relationships [and]… that other possible models might be drawn and might accommodate other features that would emerge and become identified in the future" (p.9).

To explore aspects relating to the features likely to affect teacher wellbeing, Passey proposes research instruments based on his careful analysis of a series of international case studies. To that end, and to test the efficacy of the conceptual framework, this study queries 40 factors relating to digital wellbeing; digital literacy; digital agency; activities and outcomes; and effects on physical, social and psychological wellbeing, as outlined in Table 1.

Table 1 A conceptual framework detailing factors influencing positive teacher wellbeing when using digital technologies. (Passey, 2021, p10)

Features concerned with teacher wellbeing	Factors influencing teacher wellbeing	Code
Digital literacy 	Having choice of digital technologies	A1
	Having skills to deploy and use the digital technologies	A2
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	Supporting digital content creation	A5
	Supporting safety	A6
	Supporting problem solving	A7
Digital agency 	Supporting interactions with parents and guardians	B1
	Feeling more responsible for one's actions	B2
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Digital wellbeing 	Feeling motivated from digital technology use	C1
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	Feeling access is easily feasible	D4
	Having access to digital technologies to support interactions in class or beyond	D5
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	Supporting explanations and modelling	D7
	Supporting pupil practice	D8
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Effects on physical, social and psychological wellbeing 	Feeling more able to switch off and relax	E1
	Reducing long weekday hours	E2
	Finding more time to be with family and friends	E3
	Reducing weekend working	E4
	Reducing holiday working	E5
	Reducing anxiety	E6
	Reducing depression	E7
	Reducing exhaustion	E8
	Reducing stress	E9
	Reducing workload	E10
	Offering a better work/life balance	E11
	Improving pupil/student behaviour	E12
	Reducing unreasonable manager demands	E13
	More positively handling rapid change	E14
	Reducing problems with parents or guardians	E15
	Reducing colleague bullying	E16
	Offering more opportunity to work independently	E17

Features concerned with teacher wellbeing	Factors influencing teacher wellbeing	Code
	Gaining more trust from managers	E18
	Reducing discrimination	E19
	Enabling more physical exercise	E20
	Reducing reliance on ways to alleviate stress	E21
	Reducing reliance on tools considered unhealthy	E22

Applying the Framework

An important point about the role and purpose of the framework needs to be stressed at the outset. The framework was never designed to be used as a 'tick-off list' to rate effective teacher wellbeing when using digital technologies, in the sense of implying that any school ought to be aiming for a complete 100% score. Rather, it was intended to display a range of ways in which technologies have, through a number of case studies, been shown to influence teachers positively in their wellbeing, so that these can be illustrated and better understood.

It is rather a matter of *which* elements of the framework are found to be important by, and for, individual teachers. The application of the framework in any school is not a way of indicating 'weaknesses' that need to be improved. On the contrary, its use should show what teachers have found to be of positive value for their wellbeing, in the interests of broadening our understanding of what comprises the professional and personal health of teachers.

2. Outline of the Research

Aims

The aims of this study were:

- to test the proposition proposed by Passey (2021) that specific or effective technological adoption/use in education in schools may benefit the wellbeing of teachers:
    - in a wide variety of very different educational contexts, uses and purposes,
    - and that a common analytical framework derived by Passey (2021) may assist understanding of the characteristics of technology adoption/use where there has been a beneficial impact on teacher wellbeing;

- to evaluate the framework (Passey, 2021), through validation and possible extension, with a range of stakeholders in schools and in initial and career-long teacher education who are engaged variously in educational transformation, innovative teacher education, school improvement, ameliorating teacher workload (and associated stress) and promoting the wellbeing of teachers.

Recruitment and Data Collection Procedures

The study recruited 6 case study primary and post-primary schools, 3 in Northern Ireland and 3 in the Republic of Ireland. These schools provided the basis for critical, in-depth case studies focused on teacher wellbeing and digital technology adoption and use. Members of the research team interviewed school leaders, classroom teachers and those responsible for leading and shaping digital technology individually, or in small groups, in each of the schools.

Informed consent was obtained digitally prior to engagement and reaffirmed verbally before an interview/focus group discussion. Interview data were recorded and auto captioned/transcribed. Principals completed a brief questionnaire about the school demographics. Similarly, participants completed a brief demographic questionnaire to collect teaching experience and roles within the school.

Recruitment of Participants (Schools, Principals, Teachers)

This research involved collaboration with members of a regional forum of school practitioners and those who support schools to evaluate and promote innovation in the use of digital technologies in schools – The Education Network (Northern Ireland) Innovation Forum. This group engages with a large number of stakeholders involved in digital technology who can be called upon for recommendations for participation. Similarly, the researchers were involved variously in digital technology support throughout Ireland and were able to identify a purposive sample of participating schools and stakeholders. Schools were approached on the basis of this purposive sampling approach to include those known to the researchers to demonstrate:

1. a strong positive wellbeing culture for their staff;
2. a strong sense of leadership and innovation in use of digital technologies;
3. an openness to the methodological approach through prior engagement; and
4. strong home-school partnerships.

Participating teachers were purposefully identified to participate in this study by the school leaders, in each case, based on role, school size and involvement with digital technologies to represent senior and middle leadership levels, alongside classroom practitioners. Invitations and consent forms were emailed to school principals to obtain institutional consent and to

cascade with colleagues who in turn provided consent. In order to develop a value outcome from each session, the research team designed a teacher interview protocol and principal interview protocol (See Appendix 1). These protocols were semi-structured with open-ended questions that asked participants their perceptions of digital technologies and matters associated with wellbeing based on research instruments outlined by Passey (2021). The interviews were conducted via Microsoft (MS) Teams and were recorded and transcribed utilising MS Meeting Notes, a password-protected speech-to-text transcription tool embedded with MS teams and securely stored within a university enterprise-level, secure account. The transcription was then scrubbed to correct errors and remove identifiable and extraneous content. The data were securely accessible to the research team to structure the analysis of the transcripts.

Summary of Participating Schools

The study comprised six post-primary and primary schools across the island of Ireland with different enrolment numbers and contexts. The largest school was based in Northern Ireland with 1,153 students and 77 teaching staff and the smallest in the Republic of Ireland with 62 students and five members of teaching staff. Table 2 provides a summary of the schools involved in the study.

Table 2 Details of participating schools

School Number	Jurisdiction	School Type	Enrolment
1	Northern Ireland	Post-primary	<1,200
2	Northern Ireland	Post-primary	<500
3	Republic of Ireland	Post-primary	<1,200
4	Republic of Ireland	Primary	<70
5	Northern Ireland	Primary	<400
6	Republic of Ireland	Primary	<1000

3. Presentation and Analysis

The overarching aim of this study was to test the proposition proposed by Passey (2021) that specific technological adoption/use for educational purposes in schools may benefit the wellbeing of teachers in a wide variety of very different educational contexts, uses and purposes across the island of Ireland. Presentation and analysis of the data are described in the form of six case studies. It is important to reiterate that Passey's (2021) framework was

neither intended to be, nor used in this study, as an evaluative checklist of aspects linked to teacher wellbeing and digital technologies. Rather, it was intended, and has been adopted in this study, as a tool to help teachers articulate (and researchers record) how teachers are thinking about ways digital technologies may be advantageous to their wellbeing. Given the diversity of school contexts and individuals involved in this work, variability is to be expected and any perceived gaps in responses should not be considered as deficits in schools or in consideration of specific aspects of teacher wellbeing; rather those gaps should be considered as a means of highlighting how those interviewed reported their thoughts at a given time.

To assist visualisation of how those interviewed most prominently focused their thinking on teacher wellbeing and digital technology use, each case study incorporates a star-type figure. These figures consider the maximum number of recordable factors per feature of the framework and maps the percentage, per feature recorded and agreed by the research team.

Table 3 shows the frequencies recorded and the corresponding percentages per feature for each of the six schools.

Table 3 Frequencies and percentages of recorded factors per school

	Frequencies							Percentages					
Feature (Max number of recordable factors)	School 1	School 2	School 3	School 4	School 5	School 6	Feature	School 1	School 2	School 3	School 4	School 5	School 6
Activities and outcomes (9)	8	8	8	9	7	9	Activities and outcomes	88.9	88.9	88.9	100.0	77.8	100.0
Digital agency (5)	4	1	4	4	3	4	Digital agency	80.0	20.0	80.0	80.0	60.0	80.0
Digital literacy (7)	6	5	7	7	4	6	Digital literacy	85.7	71.4	100.0	100.0	57.1	85.7
Digital wellbeing (8)	8	6	7	8	5	8	Digital wellbeing	100.0	75.0	87.5	100.0	62.5	100.0
Effects on physical, social and psychological wellbeing (8)	5	2	4	4	4	5	Effects on physical, social and psychological wellbeing	62.5	25.0	50.0	50.0	50.0	62.5

Figure 2 shows an overlaid star-type diagram for all six schools based on the percentages shown in

Table 3. It is clearly evident within Figure 2, for example, how participants across all schools readily reported links between teacher wellbeing and activities and outcomes. Greater variability is present in the reporting of digital literacy and digital wellbeing, while effects on physical, social and psychological wellbeing are less discussed across all schools during this study.

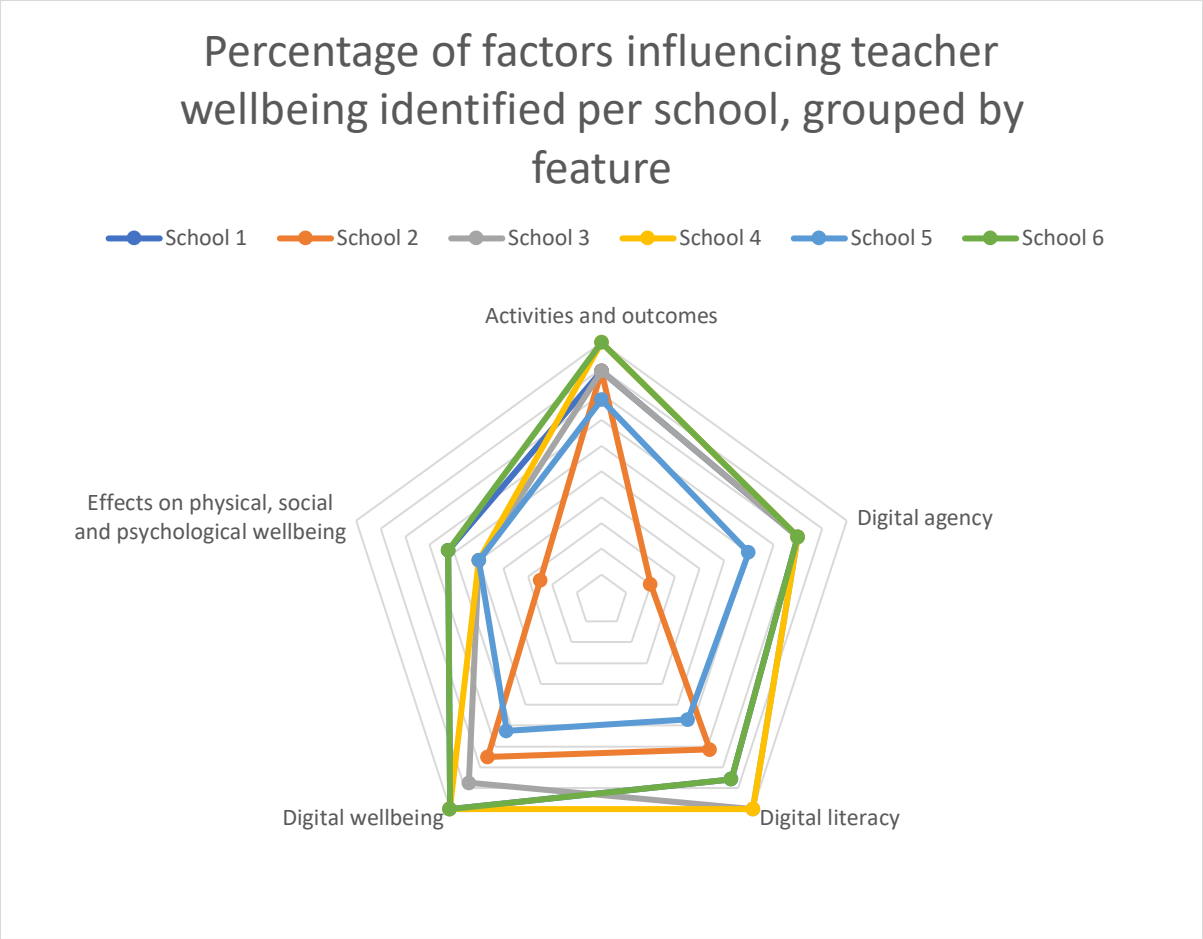

Figure 2 Percentage of factors influencing teacher wellbeing identified per school, grouped by feature

It is important, once again, to re-emphasis that this representation can in no way be ascribed to be accounting for weaknesses, or indeed strengths in attitudes of schools, leaders, or staff towards teacher wellbeing. Rather, it provides a clear visualisation of the dominance of discussion topics within each school's series of interviews, grouped by feature from the originating framework (Passey, 2019) at a given moment in time with a select group of staff.

School Number 1

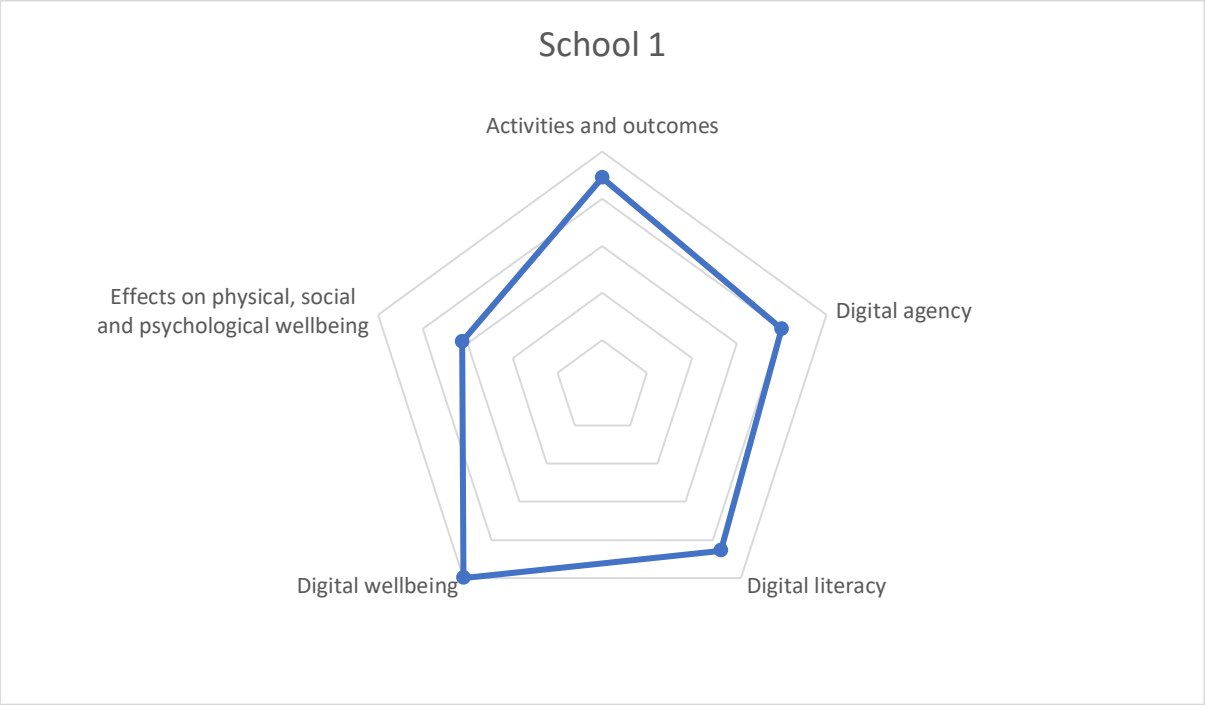

Figure 3 Percentage of factors influencing teacher wellbeing identified in school 1, grouped by feature

Background

School 1 is a maintained post-primary school with sixth form provision in a large town in Northern Ireland with 77 teaching staff. Current enrolment comprises an intake of approximately 1,150 pupils with a broadly comprehensive academic ability range. Fewer than 70 pupils are male.

School Policies

The school has articulated a wide-ranging consideration of policy developments to inform and guide practices related to digital teaching, learning and wellbeing.

The school has developed discrete policies relating to:

- Information and communication technologies (ICT)/digital learning
- Online safety
- ICT staff development and professional learning

Relating to wellbeing, it has both a staff wellbeing and a pupil wellbeing policy.

Recognising the integrative role of digital technologies, the school has gone further, however, and has embedded parameters for managing the use of digital and/or online technologies into its whole school policies on:

- teaching and learning
- positive behaviour/rewards/discipline
- staff development/professional learning
- staff wellbeing
- pupil wellbeing

The school has been the recipient of several relevant awards over the years, including a C2k/Capita ICT Excellence Award. The Board of Governors is said to be fully supportive of the ICT-based work of the school, and the school's approach to digital technologies is considered in all new recruitment and promotion interviews.

The school used a range of resources in their response to the COVID-19 pandemic to facilitate the continuity of provision, including printed hard-copy resources for home-based learning, links to existing commercial online resources, links to teacher-generated asynchronous audio, and video content alongside a synchronous teaching provision. Synchronous audio/video lessons were provided by teachers using Collaborate Ultra in about 70% of post-16 age range lessons and 50% of Key Stages 3 and 4 (11-16-year-old age range) lessons. Teachers had agency to determine if video was used within these sessions.

Study Participants

In addition to an interview with the principal, participants included a senior leader with digital responsibilities (M), head of faculty (F), head of pastoral care (F) and a classroom teacher (F). One participant identified that she "oversaw the effective and innovative use of digital technologies as part of her learning and teaching responsibilities". All participants were over the age of 35 years with teaching experiences ranging between 10 and 39 years. All teachers had responsibilities for Key Stage 4 (15-16-year-old age range) teaching, with three of the four also teaching at Key Stage 3 (11-14-year-old age range) and post-16-year age range. All teachers had pursued Bachelor degree pathways into teaching, one via a Bachelor of Education (B.Ed.) route and others with a subject specific degree and associated Postgraduate Certificate of Education (PGCE) qualification. None had completed Masters-level studies.

A Key Characteristic

A main characteristic interpreted from the evidence to emerge from the interviews of this school's approach was to embed the effective adoption of digital technologies in education in ways that may benefit the wellbeing of teachers. There is a **deliberately strategic and organic plan to embed the use of digital technologies progressively across the school, initially for the purpose of easing the administrative workload of teachers**.

School Vision

As an early adopter of digital technologies, the principal embarked on a phased journey, over the past decade, led by an initial team of ten enthusiastic practitioners, to embed digital technologies across the school. In a step-by-step approach to incrementally increasing the numbers of staff with the necessary digital literacy, she tasked the initial team of ten teachers to provide professional learning support to a second group of ten teachers, and so on, through presentations and up-skilling sessions as part of a staff development plan. Personal iPad devices were provided to the teachers in each group of ten as the plan rolled out. The implementation of the plan was supplemented through a subject department strategy of exploring and sharing subject-specific examples of digital technologies at work.

These enthusiasts were resourced and upskilled both by colleagues and external professional learning providers, with:

> "a brief to… make teaching and learning more effective in the classroom as well as reduced teacher workloads" (ICT Digital Lead).

The principal's focussed "tunnel-vision" since 2012 to embed technology at the heart of learning and teaching has reportedly 'transformed everything for [teachers] as professionals. I think it [ha]s transformed our staff, their skills, their pride in what they do' (Principal School 1). Describing the integration of positive engagement with ICT by colleagues as self-perpetuating, the principal asserted:

> "it's self-perpetuating, whereby once one person sees what it can do, and more importantly when they see what it can do for the children, everybody wants to be part of it […], I mean, OK, there was pockets of negativity, but you get that with any initiative. And what I realised very quickly was that that was because people felt threatened, or because people felt that they didn't have the skills. But we knocked that down 1 by 1."

This vision is focused on improving teaching and learning, through baseline provision of iPad devices for all teachers and Apple TVs across all teaching spaces with a clear leadership articulation that whilst:

> "not on Apple Commission, I just think, used properly in teaching, [iPads for all staff] will transform any school" (principal).

A collaborative culture and expectation of digital agency was gradually established across the school, one of being open to exploring what technology might be able to do to support other educational activities and outcomes in a broader way while at the same time alleviating any sense of fear of lack of personal digital literacy.

The vision incorporated a prioritisation of lessening the administrative burden for teachers through effective use of technology, allowing greater focus on teaching and learning. The transition to more pedagogical uses of devices was then naturally sought by colleagues.

The following sub-sections review the school's approaches and reported outcomes of their vision, related to the main features of the digital technologies and teacher wellbeing framework.

Digital Literacy

The principal's plan is workload-led, with a view to helping the teaching staff to appreciate the time and effort savings from the application of technologies to routine and burdensome tasks, to become accustomed and comfortable with their own **digital literacy**, that is, a combination of their technical skills and professional expertise.

Focusing on the primacy of teacher digital literacy as the first step in embedding digital technologies, this school drilled into any emerging pockets of resistance to embedding device use by resourcing teachers with iPads and peripherals and organising formal and informal professional learning, saying:

> "look, we'll give you one to one tuition. Would you like an iPad? Would you like to be up-skilled?"

Even now, teacher professional learning remains embedded in everyday practice, with weekly "upskilling sessions" linked to school development planning and annual performance review and staff development (PRSD) objectives. This supportive culture of self-directed skill development is further supported within segments of all departmental meetings, where teachers take time to share best practice with colleagues.

The school recognises that new approaches can be stressful for some staff, but in leading digital transitions, it determined that "stress came from the feeling that you weren't going to be good enough or that you weren't going to be able to crack this nut". The response was to look at workload and wellbeing gains where the principal emphasised that when leading digital change, "it's showing them that they will win, that they will gain from this and actually it will lessen their workload in the long run." The principal reports that this, coupled with a positive attitude to learning from all colleagues, provided a ripe environment to improve teacher digital literacy:

> "it is about an attitude. It is about driving it… Coming from the top as well, it is about everybody in the school being prepared to say, listen, I'm a learner here… This is changing every month, but we all have to continue to learn."

Digital Agency

The principal ensured that **digital agency** was explicitly included as part of the statutory annual Professional Review and Staff Development (PRSD) reviews. The homogenous hardware landscape deployed across this school also favoured, perhaps ironically, opportunities for teachers to have individual agency in how they used the digital provision. This teacher agency was evident before, after and during COVID-19 pandemic lockdown periods, where, whilst the school mandated synchronous lessons, teachers' home privacy was respected and teacher choice regarding video on/off was respected.

This flexibility and convenience extended to homeworking:

> "At home as well, it [my work iPad] would sit on the island at home and if I hear something dinging, and if I have an opportunity, it allows me to manage it in a way that suits me."

Digital Wellbeing

While the effects of COVID-19 have been far reaching throughout education, the digital readiness of this school afforded a sense of personal and professional satisfaction amongst teachers and leaders with associated benefits towards teacher wellbeing.

> "Our staff were so proud of what they had achieved during COVID and I was so proud of them. But they just felt that throughout the pandemic they had delivered for the children. I mean we were delivering in e-learning ways, even pastorally for children… there was just this sense that 'yes we did good' and I think from a staff wellbeing perspective, there is no greater feeling than that. Just that sense of yes, I'm good at my job."

Teachers perceived that the use of technology reduced stress, and the strong collaborative approach minimised risks of resistance to enhancements in pedagogy and practice. Furthermore, risks of pressure were alleviated by leaders adopting a relaxed regime to teachers using their own smartphone and the times at which emails could be sent and replied to, while being explicit that there was no expectation of working outside school hours.

Teachers also reported that their use of digital technologies diminished their anxieties about pupils losing or damaging aspects of work needed for public examinations. One teacher reported:

> "it also means that there's less risk of [pupils] losing their work. We have evidence of the important pieces of work that they do, and then it allows you to track their progress."

Digital technologies are pivotal in creating a culture of openness in this school, where colleagues are encouraged to collaborate and co-author resources to support teaching and learning. One Head of Department reported:

> "as a head of department, I'm trying to create an open atmosphere within the department. So the more that you're willing to share, the more we are all willing to admit maybe that something has gone wrong or how you've overcome certain things. This can kind of take away some of the apprehension maybe and fear that some members of staff might have."

This openness was used to create a nurturing, open culture for new colleagues where:

> "there would be a lot of joint work together looking at samples of people's work, to gather and looking at pupils' work and do that digitally as well. We were [able to] scan samples of pupils work and share these with colleagues."
>
> Acknowledging the journey of the school towards such openness, one teacher reported, "but there's a lot of trust involved in that".

Activities and Outcomes

Digital applications to administer, record and report assessment data and outcomes led to pastoral teams digitising their administrative record-keeping tasks and then to teachers using technology to support formative assessment for learning more widely.

The goal of the strategy was that all teachers would be using digital technologies to enhance their teaching in ways which improved outcomes and raised standards. The evaluation of progress depended significantly on evaluation surveys with the learners. Teachers perceived that the use of digital technologies reduced stress, and the strong collaborative approach minimised risks of resistance to enhancements in pedagogy and practice. Furthermore, risks of pressure were alleviated by leaders adopting a relaxed regime to teachers using their own smartphone and the times at which emails could be sent and replied to, while being explicit that there was no expectation of working outside school hours.

All colleagues interviewed reported the positive affordance of digital technologies on their planning, associated workload, collaboration opportunities and strategies for review and reflection. Recounting the power of Explain Everything[1], one teacher explained how this was used to:

> "organise teaching materials for the year… on explain everything they can see the process in terms of success criteria, activities, plenaries, homeworks, samples of work are all on that app. So in terms of teacher wellbeing, it reduces the workload on an annual basis" (ICT Digital Lead).

Citing collaborative capabilities, he elaborated saying, "I can share that with other teachers if they want to add to it so that reduces workload massively year by year by year". The practical aspects afforded by this were further amplified:

> "I now no longer need a lever arch file; I no longer need a box of keep tapes or CDs they're all stored on my iPad and I can share them with any members of my department. We need them. And, you know, I can upload them to the pupils and pupils can write on them."

Similarly, there were reports of how Explain Everything was used to support teaching and learning beyond the classroom, especially during periods of extended closure resulting from COVID-19. Teachers reflected positively on this saying:

> "it made me relieved that my students were still accessing learning content. So, I knew I was doing the best I could to make sure there was no barriers to them".

The school hardware infrastructures reflect teaching and learning in this multi-building school covering an extensive site. The principal reports how digital technologies not only support, but fundamentally enable effective communication, co-planning and resource development across staff. Standardised classroom and teacher hardware allows colleagues to "teach anywhere anytime", across the school campus, with access to mobile, wireless and always-ready hardware.

Once inside the classroom, teacher mobility is also enabled and encouraged with sedentary activities discouraged by the reduction of traditional 'desktop' devices. The principal reports: "We expect to see teachers [to be] up and about walking around the classroom teaching with their iPad, using the Apple Pencil".

[1] Explain Everything is a whiteboarding app used to organise and share ideas and make them visual and clear to support communication.

Furthermore, the 'always-ready' nature of chosen hardware was reported by the principal to support management of her own workload. She recounted:

> "there are times when I leave this room and I could come back and there could be 23 emails in the space of, you know, 20 minutes waiting for me. So I certainly found for me, to be able to manage my workload, this notion that you didn't have to go and log in somewhere and do all your work at once - the iPad sits on the table. I just as I come in and out all day will answer emails or forward".

Effects on Physical, Social and Psychological Wellbeing

The school reported how they responsively designed solutions to unmanageable levels of teacher-workload by incorporating digital technologies into everyday practice. Identifying concerns placed upon the pastoral teams within the school by extended home-schooling, the ICT Digital Lead recounted how:

> "there was a whole process where a subject teacher informed a form tutor who then informed year head and then the year head had to make phone calls home to alert parents that their child didn't attend online classes today or they have some outstanding work that they haven't submitted work to be assessed."

Identifying this as unmanageable, the school enabled Guardian Summaries[2] within Google Classroom. Using this as a means of promoting parental engagement and as a tool to identify challenges in the feedback loop when supporting pupils, colleagues reported how "it really reduced the amount of work our pastoral team had to do on a weekly basis in terms of following up on an engagement."

Extending this benefit of parental communication, another teacher emphasised how digital technologies can support parental communications more widely, saying managing data digitally makes:

> "it's easily accessible for parent-teacher conferences. We can create their marks over the term, over the year and into a table or into a grid that just opens at a parent teacher meeting."

[2] Guardian Summaries allow teachers to invite a parents/guardians to receive email summaries about their students' work in class. This will summarise: Missing work—Work not submitted when the summary was sent; Upcoming work—Work that's due today and tomorrow (for daily emails) or that is due in the upcoming week (for weekly emails); and, Class activity—Announcements, assignments, and questions recently posted by teachers.

The burden on teachers associated with managing pupil data reportedly extends into pastoral care. Within the school data are held within Google Drive and shared with key staff to support pupils and aid communication. The collective responsibility and security afforded by this system reassures colleagues that their data are readily available to deal with pastoral issues, but safely stored and backed-up.

The final section of the school case indicates how digital technologies and teacher wellbeing linked to readiness to address the challenge of continuing teaching and learning during the Covid-19 pandemic period.

COVID-19 Readiness

Whilst COVID-19 could not have been predicted, the principal and staff reported how their digital pre-pandemic readiness "lessened the administrative burden" (principal) of the digital response to the pandemic, where data were already in shared formats and readily available remotely. This was reported to have mitigated wellbeing impacts associated with the pandemic response. This extended to pedagogical readiness too and the resultant impact on pupils and, in turn, teacher stressors. The principal reported:

> "[pupils] knew comparatively that their teachers were doing the business for them. So there was no stress on their part and they were ready for exams had they happened… but from our staff point of view, this stress was also reduced because they knew that they had been able to deliver for their students."

School Number 2

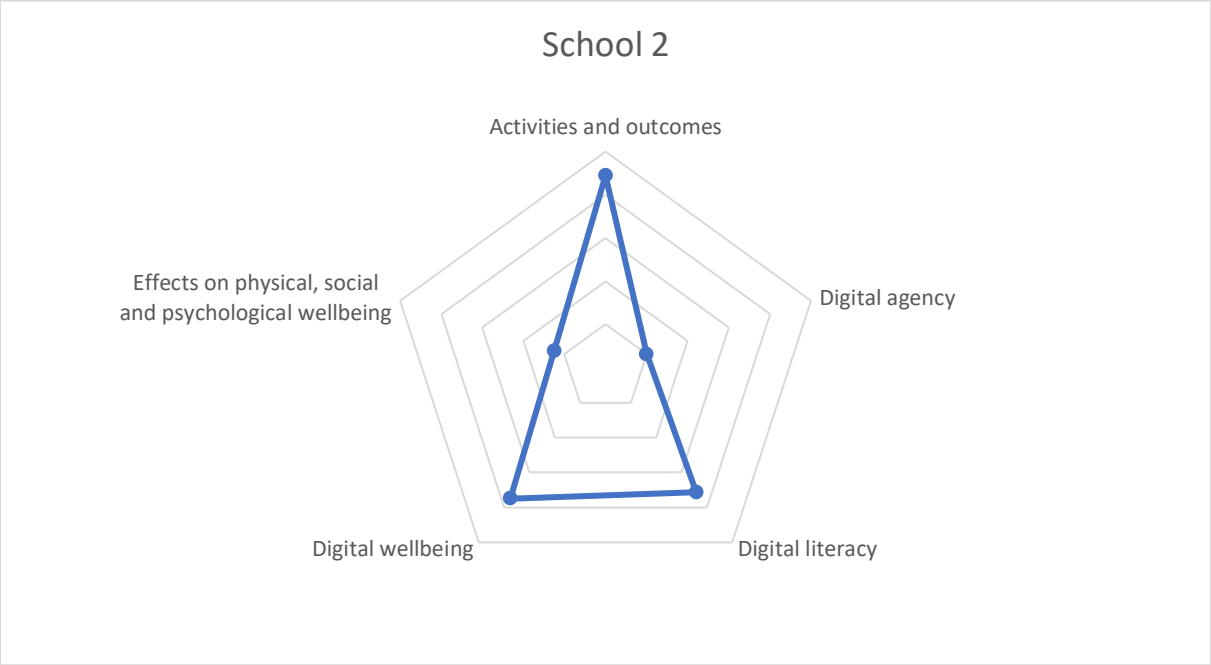

Figure 4 Level of factors influencing teacher wellbeing identified in school 2, grouped by feature

Background

School 2 is a relatively small, academically selective, co-educational, post-primary school with a 14-18 age range in a market town, with 464 pupils at the time of the research. The school has 29 teaching staff and is part of a cluster of junior and senior high schools in a specific geographical area in Northern Ireland.

School Policies

The school has adopted a wide-ranging approach to policy development to inform and guide practices related to digital teaching and learning.

The school has developed discrete policies relating to:

- ICT/digital learning
- Online safety
- ICT staff development and professional learning

Recognising the integrative role of technologies, the school has gone further and has embedded parameters for managing the use of digital and/or online technologies into its whole school policies on:

- teaching and learning
- positive behaviour/rewards/discipline

However, the school has neither a staff nor a pupil wellbeing policy (distinct from an online safety policy) and, therefore, it has not specifically developed parameters for managing the use of digital and/or online technologies with respect to wellbeing.

The school has been the recipient of several relevant awards including a Global Information Systems (GIS) Innovation Awards. The Board of Governors is fully supportive of the ICT related work of the school through its financial plans.

The school used a range of resources in their response to the COVID-19 pandemic to facilitate the continuity of provision including printed resources for home-based learning, links to existing commercial online resources, links to teacher generated asynchronous video content alongside a synchronous teaching provision. Synchronous video lessons were provided by teachers in about 75% of lessons.

Study Participants

In addition to an interview with the school senior leader with digital responsibilities (M), participants included the ICT coordinator (M), 3 classroom teachers (F) with various whole-school responsibilities from nutrition and food science, English, and health and social care subject strands. All but one participant, aged 31-35 years, were over the age of 41 years with teaching experiences ranging between 10 and 29 years, including 3 participants with more than 20 years'' experience. All teachers had pursued Bachelor degree pathways into teaching, and had associated PGCE qualification. One had completed Masters-level studies.

A Key Outcome Characteristic

A main characteristic to emerge from the interviews of the approach of School 2 to embedding the specific or effective adoption of technology in education in ways that might benefit the wellbeing of teachers, was the theme of **Resilient Teaching for Blended Learning** supported by a practical approach of **"Invest to Save".**

School Vision

The pandemic brought to the fore this school's culture of promoting what they termed to be resilient teaching. Their investment in ICT infrastructure and staff development was well established. This school recognised that such widespread and ongoing upskilling in digital technology use takes people out of their comfort zones. Although the school had been involved in advancing uses of technologies for many years, the most recent wave of development dated back to 2015. Building objectives within the school development plan since 2015, the school targeted the use of 'ICT for Higher Level Learning' and 'Teacher/Pupil Learning Dialogue' – crystalised by the school as pedagogy and interactivity. Staff had been encouraged to engage with the programme by aligning the objective of using digital technologies with the pedagogical

ambition of teachers. With a strong personality lead in the senior leadership team, the policy direction was one of staff engagement, but not of mandatory staff compliance. The ICT school leader reported:

> "We start to persuade them because we start with pedagogy which is everybody's business. The bread and butter of what we're doing and identifying those pedagogical things that we want to do anyway."

Focusing on a model of defining, developing, expanding, and embedding, digital champions had been used to exemplify principles, to fire imagination and maximise potential. These, reportedly, all worked to avoid tokenism by focusing on pedagogical intent. This was reported to have brought the large middle portion of the staff in a common intended direction. Colleagues with slower rates of adoption had been encouraged through ongoing iteration of the message, expectation and culture. Seeking to minimise pressures, but remind colleagues of the direction of travel:

> "we just keep saying these things and we say them in every context: in the context of staff training or IT staff meetings or at leaders' meetings… And a lot of my job is through conversations with people informally with iteration, to just gently, persistently, just saying like this isn't going to go away. And so, it is partly through that softer side of things".

Colleagues reported that this was positively positioned, and they felt part of a bigger support package and saw how embedding digital technologies fitted into the broader short-, medium- and long-term plans of the school. The more recently adopted Bring Your Own Device (BYOD) programme supported the school's use of digital technologies and minimised pressures for those leading digital technologies to provide up-to-date devices at scale.

Digital Literacy

The development of digital literacy across the school was peer-led rather than top-down. Digital champions were identified across the school team, including those who might have initially resisted the adoption of technologies but who were well placed to encourage those who were most resistant. The development of digital literacy of staff was "not necessarily motivated through the latest gizmos"; rather, it was through a culture of more marginal gains. Led by a group of teachers where "initially, it's those things that are just taking what you're doing anyway, and making it better and more efficient" (Digital Lead). These were centred around a series of pedagogical goals. The COVID-19 pandemic called for a refocusing of these goals to meet the scale of response needed to ensure the continuity of teaching and learning across schools. The school reflected where most or all staff were at the beginning of

the COVID-19 pandemic, defined by the school in Figure 5 as Level 1, with a clear map of next level needs and the provision of both formal and informal support to move collectively towards it.

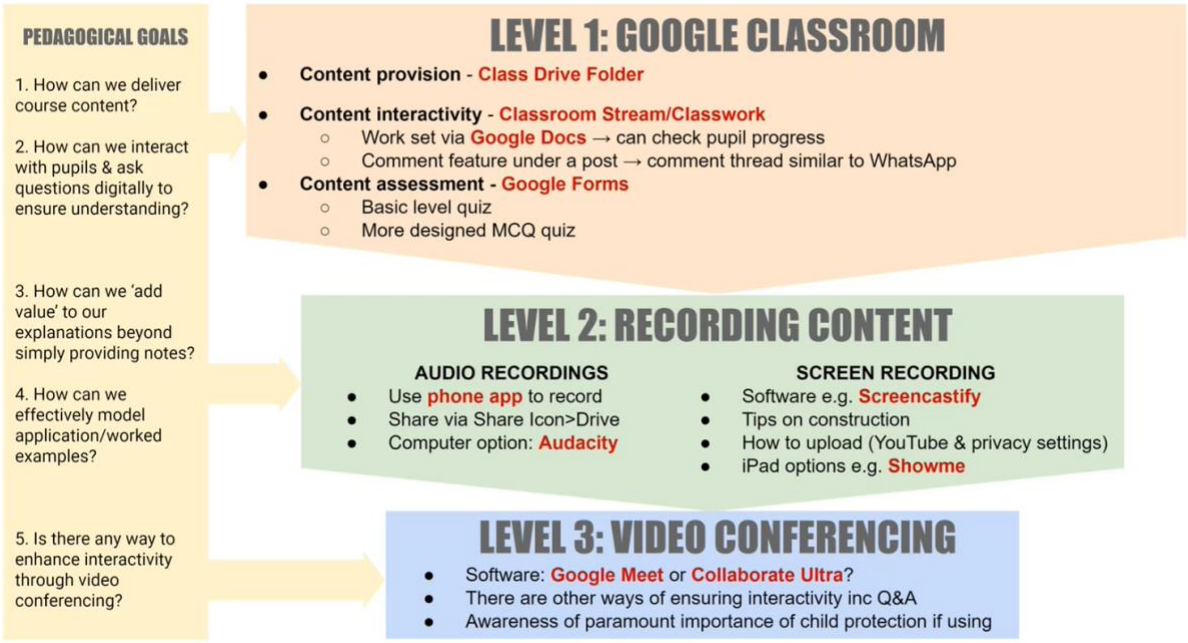

Figure 5 Digital literacy Levels - School 2

Participants believed that this commonality of approach positioned pupils better to inadvertently support teachers' practice when using such new technologies:

> "Teachers will be at perhaps different levels of ICT expertise or experience, right? But there's enough people who use this well that the pupils, whenever they come through, their experience - all of the pupils will know how to use all of those things in level 1... if we are using the same kinds of things in similar ways, speaking the same kind of language, it means then that whenever you mentioned something to your pupils that may be new to you, they'll have heard him three or four other classrooms - they'll just know what to do." (Digital Lead)

Simultaneously, school-wide transitioning to fully online administrative processes were used to showcase obvious digital efficiencies. Such engagement promoted the adoption of these tools co-dependently. One administrative signposting of such adoption was recounted:

> "[Head of Sport Science] organised games on a Wednesday afternoon using Google Sheets and then all of a sudden, all these teachers who are on games are saying 'my goodness this is so much more efficient, so much better.' Simple things like that, promote development… Sometimes they are engineered; Sometimes they're just spontaneous." (Digital Lead)

Digital Agency

The school worked to maintain a balance between teacher agency and school-wide consistency of approach where colleagues were encouraged and motivated to support the school's strategic plan, but also to identify and champion new technologies. The digital lead used the analogy of:

> "a braided river which has very defined parameters with banks either side, but within its there's lots of little rivulets, so it's about creating a sense of direction as a leadership team; it's about creating the parameters within which we're working and then creating as much agency as we possibly can".

Driving leading edge innovation adoption is promoted across the willing staff, cultivated centrally, curated and showcased for broader adoption with strategic support.

Digital Wellbeing

At a policy level, staff felt protected by robust acceptable use policies so that they and their pupils reported working in a safe, controlled and monitored digital environment. They valued this and the boundaries that could be set within the protections of the policies and procedures.

More broadly, teachers welcomed the efficiencies afforded by digital technologies primarily in easing the administrative burden; maximising feedback quality, whilst minimising teacher time; tracking pupil progress; and subsequent collegial communication. Middle leaders, across the school, responsible for pastoral support of pupils who "often don't teach many of the pupils directly" used data, shared by colleagues, to plan interventions in support of underachieving pupil groups and individuals. Reportedly this ease of communication allowed staff to "dip in and out of all those records and see how their [pupils] are progressing". (Digital Lead)

Generally, staff presented a very positive disposition towards the impact of digital technologies on their wellbeing with one teacher reporting how it:

> "helps keep you young in teaching - if you go with the new technologies, you work to keep up with them and you won't look incompetent".

Staff fully subscribed to the model of investing to save in the future with digital technologies. Reflecting on the adoption of a new technology for language learning, one teacher recounted:

> "Physically typing more vocabulary and all that comes with that has been quite a burden this year but I am looking ahead and seeing, because I see how much the pupils are benefiting from it… that has motivated me to go along with it and it will be of even more value next year".

Teachers believed using and updating and reworking resources that had been digitally curated reportedly massively reduced teacher workload in the future justifying initial, often burdensome, intrusions into personal time.

Activities and Outcomes

The school extensively used Google forms to "assess higher level learning through multiple choice questions" (Digital Lead). The Digital Lead asserted that using time previously dedicated to assessment time to teach and to some degree automating the assessment process, staff were freed to focus on other aspects of teaching and learning:

> "we did a training session with staff about how you can assess higher level learning through multiple choice questions. They're not just simple, yes or no... if you design them well, they really can be a test of application."

The implications of this changed the location of assessment and subsequently the nature of teacher-pupil contact time:

> "So, they do these multiple-choice quizzes at home… if you have designed them so that even if they've got their books open in front of them, they're still going to have to think, because [of] this application tasks. This actually got us to the point now in the Geography Department where a few years ago we came up with the policy of yes, they will do them [tests] at home and they can try them as many times as they want, and we'll take the average of their highest in their lowest."

This is summarised as a win-win for all involved:

> "I think that's a win for me because I get my students to think about Geography for three times longer than they would otherwise have done - from their view they think it's a win because they get multiple goes".

The school makes extensive use of Learning Logs and Digital Jotters – Google Documents shared between pupils and their teachers. These have become increasingly prevalent after the extended periods of lockdown. The ICT coordinator reported how these had positive impacts on both staff and pupil wellbeing. In instances of self-isolation due to COVID-19, staff workload was reduced while pupil independence was increased:

> "if pupils were off there was an expectation that if they were well, they would join us. If they weren't, well, we didn't want to see them... I would set out what the class work was is going to be, and then obviously the homework... the beauty of that is that if you had missed a period last week, you didn't have to come and see me, or arrange a time we talk through things you could quickly go and see what work was being done."

This digitisation of these pupil-teacher exchanges provided welcomed transparency and efficiency and this was especially valuable in the process of emerging from the COVID-19 pandemic. Described by school leaders as “location agnostic”, this allowed “students, remote learning from home using digital technologies, to interact with me in exactly the same way as a student in class could”. This reportedly reduced teachers’ concern and vulnerabilities about potential learning loss by “stopping the loss in the first place” which was in turn “more sustainable for teachers” and “just makes life better and easier” (Digital Lead).

COVID-19 Readiness

Reporting how this school felt able to “turn into the storm that was COVID” the Digital Leader reported how the ability of colleagues to do this was characterised by their long-term strategic upskilling in the embedding of digital technologies through an investing (now) to save (later) model. The position of readiness of the school pre-pandemic allowed staff to feel positively about how they were able to support their pupils and:

> “most parents felt that their children were actually being very well served during COVID and so we have many live lesson[s] scheduled all the time. So, the classroom really came home for them.”

School Number 3

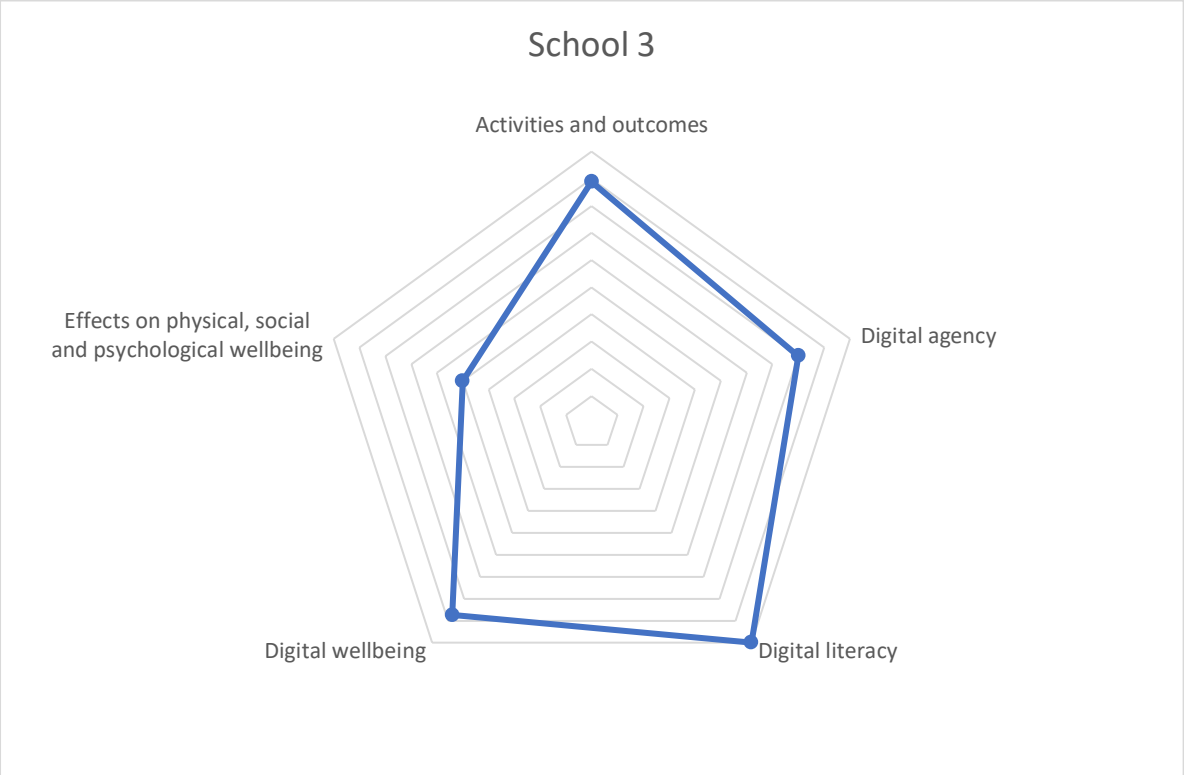

Figure 6 Percentage of factors influencing teacher wellbeing identified in school 3, grouped by feature

Background

School 3 is a large second level community school in Ireland with 110 teaching staff employed to support 652 male and 673 female pupils (aged approx. 12 – 18 years).

School Policies

The school has adopted a wide-ranging approach to policy development to inform and guide practices related to digital teaching, learning and wellbeing.

The school has developed discrete policies relating to:

- ICT/digital learning
- Online safety
- ICT staff development and professional learning

Relating to wellbeing, it has both a staff wellbeing and a pupil wellbeing policy.

Recognising the integrative role of technologies, the school has gone further, and has embedded parameters for managing the use of digital and/or online technologies into its whole school policies on:

- teaching and learning
- positive behaviour/rewards/discipline
- staff development/professional learning
- staff wellbeing
- pupil wellbeing

The school has been the recipient of several relevant awards including its position as a Microsoft Showcase School since 2019 and receiving an outstanding Evaluation of Remote Teaching and Learning (ERTAL) Report from the DES Inspectorate 2021, representing "a resounding affirmation of … [the school's] outstanding professionalism" in their pandemic response. The Board of Management are fully supportive of the ICT-related work of the school through financial plans.

The school used a range of resources in their response to the COVID-19 pandemic to facilitate the continuity of provision, including printed resources for home-based learning, links to existing commercial online resources, links to teacher-generated asynchronous video content, alongside a synchronous teaching provision. Synchronous video lessons were provided by teachers for "almost all classes", coordinated with the normal school timetable.

Study Participants

In addition to an interview with the school principal (M), participants included a senior leader (deputy principal) with digital responsibilities (M), and two digital leaders/teachers (1 F, 1 M). Participants, whose ages ranged from 31-49 years, had teaching experiences ranging between 4 and 19 years. All had pursued Bachelor and Master degree pathways into teaching.

Key Characteristic

A main characteristic to emerge from the interviews, encapsulating the approach of School 3 to embedding the specific and effective adoption of technology in education in ways that may benefit the wellbeing of teachers, was of a **strongly collaborative corporate culture, enabled through reliable technology used in safe, secure and professional ways.** The interview evidence indicated a culture with roots in a whole-school Digital Learning Framework that went back at least seven years, based on a foundation of staff surveys, led by digital champions through small digital teams. According to a senior leader:

"Teachers feel supported by senior staff" to "take one step at a time"

Vision

Befitting a Microsoft Showcase School, there is a strong emphasis on holistic integration of a range of digital technologies, through focused staff development, underpinned by data-driven analysis of impact and staff surveys identifying both weaknesses and strengths, with the aim of ensuring consistency of a student-centric approach to the curriculum and practice across a large school. The consequence of this approach, according to the principal, is that teachers see the use of technology for teaching as worth investing time in, because the returns in terms of learning are evident to them.

The school places a strong emphasis on the technological efficacy and reliability of the digital service. This is achieved by adopting a managed service approach to its infrastructure, including management of Surface devices and a careful selection of those students who need devices and where they need to use them in the classroom. Personal device provision is specifically focused for those students with special education needs.

Digital Literacy

The managed service is delivered through a local contractor who provides technical training to the staff. In addition, the school employs an on-site information technology (IT) technician.

The development of digital literacy is underpinned by an emphasis on online safety, with multi-factor authentication access to personal devices, regarded as more secure than desktops, although it maintains traditional school IT laboratories.

Data security is safeguarded, with teachers given advice, for example, about not to allow roll-call and other screens containing personal information to appear on projected or shared screens.

> if you're projecting your screen on to the board, you have to be careful that you don't have the roll call list up because in our roll-call we'll have students with an asterisk next to their name and that means that they have some special educational needs. So you need to be extremely careful if you're sharing your screen. (Teacher / Middle Leader)

The use of MS Teams by all staff for sharing of pedagogic and administrative documentation and resources has created an open foundation for communication and collaboration across the school, evident in shared content creation, supporting information literacy and problem-solving skills. There is a sense, according to a teacher, of:

> "...fairness, more openness, more collegiality".

"The teacher is able to see that everyone is working."

Digital Agency

All the staff use a common virtual learning environment within which all teachers have an email and are contactable by any student or parent. Staff protocol stresses heavily the importance of not replying outside school hours, to help manage the risk of overload. An outcome that has been welcomed is that parents are better informed by dissemination of information and advice online yet there has been a keen appreciation that issues raised by parents are better discussed face-to-face or by telephone rather than by email.

While the expectations of the students are managed through advice, a growing professionalism of the teachers is encouraged. Decisions on managing workload are personally determined to aid the life/work balance of the individual.

The staff greatly appreciate the staff WhatsApp group for the benefits to better communicate and collaborate which it brings.

The school procures software to support administration as well as teaching and learning, the design of which the principal indicated is 'teacher friendly' so that it 'makes life easier' by being readily integrated into and streamlined with teacher practice, "assisting the organisation of their work and bringing everything into one place for them".

The school's approach to recognising the importance of the effective design of educational applications extends to its involvement in advising companies on the modalities of learning in software design.

The set-up of groups in MS Teams is similarly very well controlled, being established only for certain year groups who use the Class Notebook as an aid to group work in the classroom, while a research-informed blended learning tool supports planning, tracking of pupil engagement and reflection on practice.

Digital Wellbeing

The school culture for embedding technology promotes a positive climate benefitting professional and personal satisfaction through motivation to use the technology, enhanced student engagement and perceptions of positive value for learning. Prior to Covid the principal stated that they "were guilty of a little bit of innovation overload... albeit well intended aimed at supporting teachers. Some took it on board but others found themselves to be struggling".

Coupled with this was “the concern being expressed by staff around .. how contactable they were … with every teacher having an email address”. Aware of this becoming a serious well-being issue, conversations were engaged in with staff about “notification overload” and “the well-being piece” (principal). It was stressed that staff were not to feel it necessary to respond to email or notifications out of hours and so on.

As the principal noted:

> … notwithstanding the fact that you get an email from the principal. It doesn’t matter. There is no expectation that the email is responded to ...out of hours … and I do understand the whole locus of control piece …. perhaps having a greater impact … but these is no expectation that a person receiving an email our of hours would respond out of hours.

In addition, a support structure for staff was put in place through a “Digital Champions” model. These twelve Digital Champions had

> “four to five teachers in their support group … aimed at competence and confidence building... that the teachers found to be far more supportive … [as] they were quite comfortable being guided by their colleagues” (principal)

However, the key to the success of this model was that these digital champions were “identified not just for technological skills. But interpersonal skills … they need to be approachable … supportive”. In addition, the support was “quite focused …. it was incremental, sustainable... and devoted time” was set aside for this learning (principal).

As the Senior Leader with responsibility for digital technologies outlined;

> Digital Champions meet with their colleagues who they are mentoring and discuss various aspects of teaching and learning in relation to digital technology and how digital technologies can support them... it's real distributed leadership in action.

The streamlining and integration of work is, according to a teacher, “beneficial for teachers”, is “teacher friendly’ and ‘makes life easier.”

> “Students manage their own learning.”

Some of the insights that a teacher stated is that the online presence:

> “shows degrees of student engagement and the degrees of engagement”.

Because teachers are better organised, with, for example, more provision of advanced learning intentions, a teacher said it:

> "benefits your teaching" and as a result "students are better organised" and "there is more student control".

The overall climate is positively orientated to sharing the benefits for learning arising from the use of technology.

> It is really helping use with the workload and distribution of the workload and sharing of the workload... traditional teachers would have held on to their class materials. It was something they didn't really share, where now it is across the board. that collaboration has been a great thing ... technology has allowed us to do that. It has made everything more organised, more systematic (teacher / middle leader)

An interesting development during the responses to remote teaching was the shift in focus illustrating clearly how concern for well-being was galvanised into action and supports put in place to support it. During the first lockdown between March and June 2020 the school was "quite content focused" but on returning in September the focus had shifted to "staff care … and how you engage in teaching and learning in the digital space... what we wanted to do was to support the teacher... how we could prioritise connectivity … that human connectivity above content" (principal). The senior leader with responsibility for digital technologies stated that:

> "when teachers relaxed with the technology and start feeling comfortable... becoming themselves online … the relationship was more like it is in the classroom so that there was a human connection …. which I think was absent in the early days"

The feedback from both teachers and students indicated that the

> "greater emphasis on the social and emotional piece was both gratifying for the teacher from a professional space. Gratifying for their well-being but it also enhanced the learner experience" (principal)

The online platform itself has been pressed into the service of promoting wellbeing through a Wellbeing channel and the establishment of Wellness Wednesday events.

> "We actually got a better understanding of the pastoral needs of the students …. [using] channels on Teams as the teacher feeds in information, then year heads pick up information, other teachers can glean information from that as well … so there's a very systematic way of weaving 12 classes in First Year... to ensure no student got lost in a year group of 265 … we quickly understood the students who were not engaging … it was a real eye-opener for us" (Senior leader with responsibility for digital technologies).

The stability and reliability of the school network is regarded as a key to staff wellbeing. The next planned investment in portable wireless projectors is considered at least in part on the basis of removing the potential cause of stress which can arise from using wired projectors.

Activities and Outcomes

The school's investment in professional staff development provides a sound foundation of readiness to employ technologies effectively with collaborative staff presentations to build capacity further. While the provision of a common device for each teacher was a bonus, the greatest impact came not from the device itself but from the sharing of effective practices on a common platform through digital learning teams led by a team of twelve digital champions.

> … the technology has allowed us to openly communicate with one another and to help each other (middle leader / teacher)

Gains which benefit teaching are appreciated, arising as they do from a collaborative approach by teachers to sharing and distributing the workload of lesson planning and resource preparation. The collaboration was seen to improve the better organisation and consistency of setting out learning intentions for lessons in advance. Better teacher self-organisation was seen in turn to lead to: better organised students, flipped classroom practice, more interaction in class, more detailed note-making by students, more explicit marking criteria and more prompt and more selective/better focused feedback, and an overall improvement in learner control of their own learning. For example, having all resources, notes etc in OneNote teachers state they are more organised and students feel they are not

> "under pressure in school" to be constantly taking notes as all the resources and what the teacher writes on the projected screen will be available to them. Consequently, the focus is on "questions.... the class is actually a lot more interactive …. more open discussion, more understanding …. it makes them [the students] more accountable … and gives them a lot more control" (Middle Leader / Teacher)

In addition. student assessment and tracking is enabled through the applications of technology, which means that teachers can track student engagement and progress leading to more effective management and advice to the students. Indeed, the use of technology it was claimed has meant assessment procedures are

> A lot more transparent … it's raised standards for everyone really...teachers and students alike.. For teachers its's allowing s to be more organised and more efficient with time...allows me to have the time to focus on seeing where they're at ... for students because it's allowing them to have more control within the classroom... there's a huge shift and I think its's a really positive one (Middle Leader / Teacher).

In turn, this benefits the teachers whose own work patterns are said to be:

> "personally determined now, which aids life/work balance".

Nevertheless, the school recognises that it runs the risk of innovation overload by introducing a wide range of software applications through their research engagement with a number of IT and software companies, as the rate of teacher adoption does vary.

The use of digital technologies has helped keep parents informed (e.g., an app that sends notifications about school events etc), it has enabled greater communication with parents and is encouraged as

> "it given us an opportunity to reach out for a connection … it provides an opportunity to engage but it doesn't mean it's the only method of communication"

It should help ensure

> "that when you meet a parent at parent-teacher meetings there should be no surprises" (senior leader with responsibility for digital technologies).

COVID-19 Readiness

The pre-existing investment in technological maturity is such that the school was 'very well placed' (principal) as they had "introduced Teams and ..OneNote and we had that system in place" (middle leader/teacher) to move into the online space with a synchronous timetable with a positive response in terms of student engagement. Mutual staff support led to an experience which was described as more 'skilful and satisfying' with an increase in synchronous teacher presence with video. The availability of class work tasks and homework online made the planning of learning, as well as boundaries and expectations, more visible to parents as well as students, which, while it was generally appreciated, tended to make the students more demanding of the teacher.

However, the teachers learned to put limits on their availability to parents and students:

> You need to manage it because you are more contactable …. you have to put limits around yourself and make everyone aware of that … turn off notifications on your phone (middle leader/teacher).

Consequently, using effective strategies to manage the technology

> "meant there was downtime for teachers." (middle leader/teacher).

School Number 4

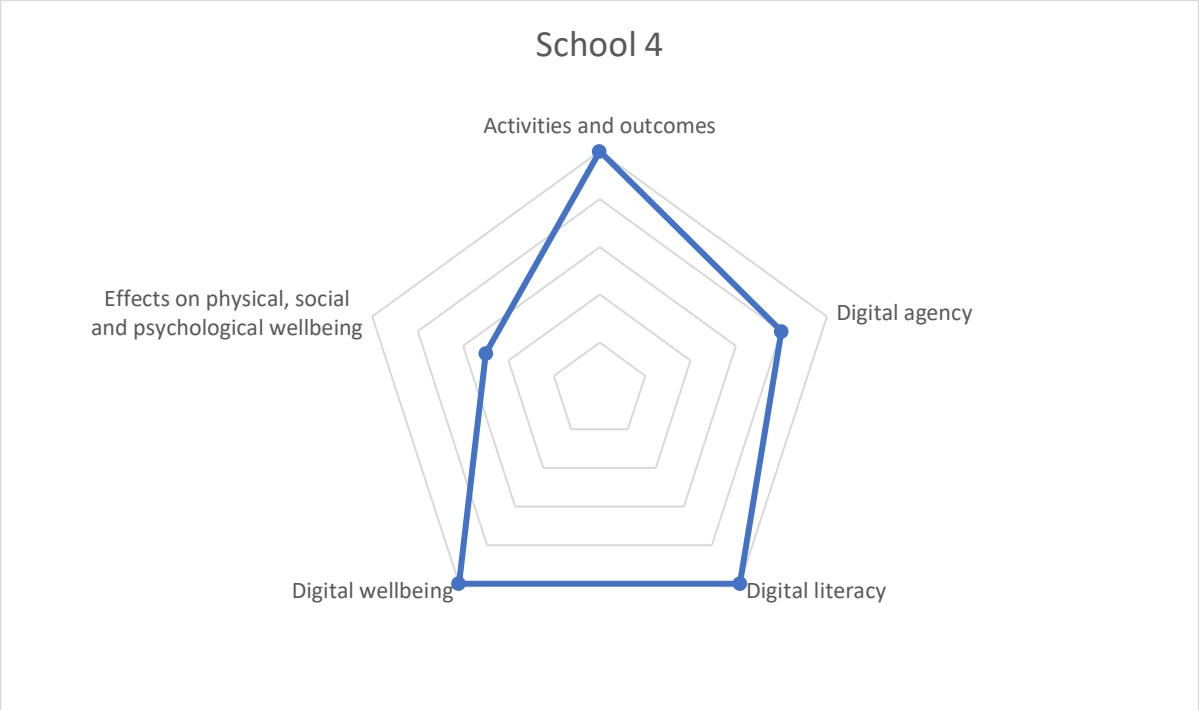

Figure 7 Percentage of factors influencing teacher wellbeing identified in school 4, grouped by feature

Background

School 4 is small national, primary school in Ireland with five teaching staff. Current enrolment comprises 34 male pupils and 18 female pupils. Three classes comprise multi-age children, each with learners across a number of year groups.

School Policies

Policy development reflects the circumstances of a small school with few staff. The school, reflecting its pedagogically-led ethos, has developed policy to inform and guide practice related to digital teaching and learning. It has also embedded related policies into its whole school policies on teaching and learning and on positive behaviour/rewards/discipline rather than establish separate policies. It does not, through policy development, explicitly address teacher and pupil wellbeing, whether or not related to digital technologies.

The school has been the recipient of several relevant awards over the years, including its positions as a Microsoft Showcase School since 2014 and Digital School of Distinction since 2015.

The school provided synchronous video lessons by teachers throughout their response to the COVID-19 pandemic to facilitate the continuity of provision.

Study Participants

In addition to an interview with the school senior leader with digital responsibilities (F), a recently-appointed teacher (M) responsible for years 1-3 (7-9 years of age) was interviewed.

Key Characteristic

A main characteristic to emerge from the interviews, of the approach of School 4 to embedding the effective adoption of technology in education in ways that may benefit the wellbeing of teachers, was of **pedagogically-led innovative and impactful practice across the breadth of the curriculum in a very small primary school.** While the principal and teachers openly embrace innovative technologies, they only do so when the applications evidently contribute either to the needs of the children, or by broadening the curriculum, especially by engaging them in real-world projects.

Vision

The principal's vision, while emphatically pedagogically-led, is underpinned by a realistic understanding that change takes time and support, coupled with the enthusiastic buy-in of the teachers and board of management.

> "When I came as Principal, I felt it was essential that we would adopt technologies because I had seen the benefits for the students. The benefit for myself as an educator too in terms of how seamlessly and how easily we could integrate technology over the past 15 years has been mind-blowing in terms of the jump in technologies and what we can do ...Now it's an everyday tool that we use ...It's not something that takes over the from the curriculum. And it should be something that makes life easier.... but it's a process … and it's been building a community and encouraging buy-in ...over years."

As a result of the clarity of vision and the improvements in practice, this small primary school is justly recognised as a Microsoft Showcase school providing leadership across the jurisdiction, with an even wider reputation for the excellence of its practices. Through the Microsoft programme for innovative educators, the school is linked with schools in Northern Ireland and Canada, sharing its expertise in annual events. Furthermore, as Microsoft regard the teachers as leading innovators, the company responds to the feedback from the teachers to improve their software design process.

Digital Literacy

Within the school, teacher professional learning is supported on a one-to-one basis. In addition, the principal produces staff training videos on the different applications adopted by the school which one teacher, recently employed at the school, found to reduce his stress at

moving from a school which only used interactive whiteboards for whole-class teaching to one where all teaching is hosted in MS Teams and through One Note.

> "...I would normally only have used the whiteboard in the other school ...but since getting started in [this school] I've seen how beneficial It can be with all the different applications that we use in the classroom...not it's just like second nature to me ... . I'm well able to use it all now and it has definitely made the work a lot easier for me now."

The digital technology supports long-term, shared planning, within which framework teachers develop fortnightly planners and provide monthly reports on progress online.

While all the children have their own devices, internet access is protected by a firewall to ensure safe and secure searching, which is discussed with the children so that they have an understanding of trust over their own safety.

Furthermore, and unusually (in the experience of the researchers) for a primary school, the school plans to mitigate interruptions to progress by keeping individual mobile devices in reserve against the risk of breakdowns.

> .... if things breakdown, the first protocol is going to [the principal] because she is more technical and can know what is wrong. If she's not able to sort it out she has a person she can contact... to see if needs to be updated etc.... If not, we swap out the device (Teacher)"

Digital Agency

The teachers report that advantages from technology applications include much closer assessment of pupil progress, with at least weekly tracking of pupil progress, and prompt feedback about learning to the children.

> Using different applications… has helped me... it gives me more insight into the children's work because you can do a lot of different assessments through it... Reading progress [for example] the children can even do at home... it shows if there's any mispronunciations over words, if they add in words, you know this is where they made a mistake. This is the word they got stuck on... it gives you a bit of an insight as to how their reading is, how you can improve what they are struggling at.

Once a teacher demonstrates a teaching point on his own device it is immediately and permanently available on all of the children's devices for review:

> "it's just a matter of writing on your device and the children have it there then first hand, and if they need to go back and look at it that night, they can... you can see

> them getting more independent themselves and they know where to look, for the notes and different things that I am putting up [in OneNote]."

Both the Principal and the teacher regard this approach to be much more effective in targeting learning support where needed than lengthy diagnostic tests. The applications used reveal words posing common reading difficulties, providing data for analysis (which teachers can use to make informed decisions about how they plan for literacy development), which makes teaching *'smarter'* in focusing on what the children need help to learn, rather than focusing the teachers on what needs to be *'covered'*. Therefore, literacy interventions are more focused and differentiated.

> "'Insights' reveals the words that the whole class are having difficulty with. So, then you can focus on those words in your literacy lessons. So, it's making the teaching smarter, because suddenly you know you can say, OK, you know, maybe 80% of the class had difficulty with this word.... and then use that to inform my actual planning."

Solutions to common learning problems are shared online through One Note, which parents can review, as well as the children.

Digital Wellbeing

The culture developed in the school, with its emphasis on value for learning, supports a collaborative approach which creates a strong sense of personal and professional satisfaction for both teachers and children.

> ...there's definitely a lot of trust… we don't mind sharing stuff 'cause if I can pick something up from you then you could pick something up from me… we're all here to help each other. (teacher)

This approach is an example of a school culture where the use of technology for learning is so deeply inherent that issues such as the reduction of stress and exhaustion from engaging in an unusually wide range of learning activities are not explicitly surfaced by the teachers because the technology makes a high level of work not only manageable but enjoyable.

The learning activities, which are all enabled through the use of digital technologies, draw the learners and teachers into engaging in problems in the real-world, as opposed to those created as curriculum real-world simulations.

> "… to interact with different schools… the kids love it. They'll always remember that, the day they connected with that school in Canada... if we didn't have these technologies and devices then that wouldn't be an option for them."

The emphasis placed on reviewing any digital technology before adoption is an assessment by the teachers of the extent to which it will bring improvements to teacher workload and improve learning.

There is a sense of professional satisfaction from sharing teaching approaches and resources with each other and a feeling that it fosters a team-teaching approach across the school. For example, when asked about anxiety or stress levels if there was to be another lockdown and school closure, the class teacher indicated:

> "I'm definitely not concerned now being in this school, because everybody is so up to date and they know what's going on. So, if it does happen, it happens and the kids are all well in tune with it so it doesn't stress me out that much, obviously I'd rather not but no, it definitely wouldn't worry me now if I had to. But if I was in another school without what we use here then definitely not."

Activities and Outcomes

Openness of access to information and data about the children's learning means that parents and children also have sight of their progress; parents can see improvement and the learners can set their own targets, they are more self-determined and more greatly motivated in learning as a result. It has also resulted in teachers being more accurately informed about learners' capabilities, enabling the development of tailored materials, and avoiding misjudgements about student capabilities.

> "It has enabled better differentiation for the students… I had one student in particular that was really excelling in terms of their reading [using the Reading progress software] and I couldn't believe it because I had actually pitched this child for maybe getting extra support."

The teachers feel that, as a result, they are able to set even more demanding learning tasks and activities because their evaluative approach to selecting technology applications is to look 'beyond easing' workload to 'actually enhancing' teaching and learning.

> "we don't use Apps for Apps-sake... as a whole staff we would look and ask. How is it going to benefit the students? How is it going to make life easier for the teachers? How is it linked to the curriculum?"

The school has broadened both its curriculum and its international contacts beyond the classroom through engagement in technology-based projects, establishing virtual 'spaces'

where scientific and environmental issues are studied. The children have opportunities to link with adults who bring a wide perspective to the classroom.

The teachers express the sense that their role has changed for the better. The use of technology "eases preparation" and "promotes sharing with the children". As a teacher said:

> "no longer a teacher doing chalk and talk (but) can 'show how' to do things better – a better 'explainer' than before".

In return, there is a clear sense for the teacher that this is changing how the children learn:

> "[They are] more independent in managing their learning".
>
> "Years 2 and 3 work more independently".

The teachers also are more motivated to engage in professional learning as they have a support network through the MIE (Microsoft Innovative Educator) network:

> …the amount of people that I've connected with because of being an MIE, there's lots of different courses, to upskill yourself, you learn differently things and you know it's great that way and it's something that I would never have done, only for being where I am you know. (teacher).

Covid Readiness

It was thanks to the strong culture of using digital technologies on a daily basis for teaching and learning that this school "literally went from being in the classroom to being in the virtual classroom" (principal) at very short notice once the lockdown was announced nationwide. However, it was also due to the principal's foresight to prepare the children and parents that the transition was successful.

> I had begun preparing the students for the transition and I had brought the parents in and I had also started upskilling them to be in Teams and being virtual (principal).

The onset of the pandemic was, according to the principal, a major accelerator to face-to-face synchronicity for the children for one hour a day, building on existing online practices to strengthen the role of the teacher as an 'explainer', demonstrating learning practices and showing how learning can be improved. The school uploaded digital versions of books and assessment of reading at eight different reading levels, which revealed continued progress in reading scores for individual children.

Explanations can be reviewed at home and the teachers have observed that the eight- and nine-year-old children are notably more independent in their work and better at managing and organising their own work.

> “Parents are better informed and engaged – less demanding. (principal)”

Virtual assemblies for all three classes helped to retain a good sense of community during the lockdown periods.

School Number 5

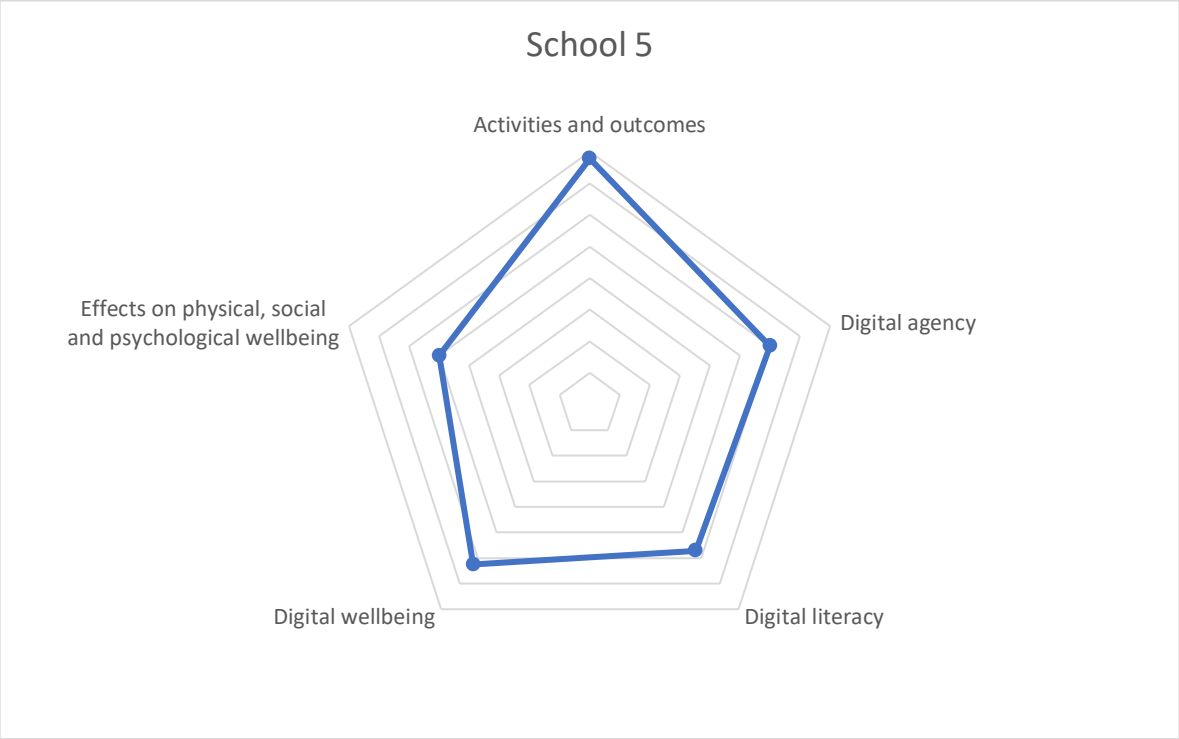

Figure 8 Percentage of factors influencing teacher wellbeing identified in school 5, grouped by feature

School 5 is an Integrated primary school in a large town in Northern Ireland with 21 full-time equivalent teaching staff. Current enrolment figures include 360 primary pupils and 51 nursery pupils.

School Policies

Policy development reflects the circumstances of a medium-sized primary school. The school has developed policies both to inform and guide practice related to digital teaching and learning and for online safety. It has whole-school policies both for positive behaviour/rewards/discipline and for staff wellbeing and into both it has integrated parameters relating to the use of digital technologies. The school has a whole-school policy on teaching and learning, the Principal reflect on how it has not been developed to record most recent integration of digital learning. The school has not developed policies related to pupil wellbeing, either whole-school or arising from digital technology use, other than for online safety. In response to guidance and circulars issued by the Department of Education, the school has most recently developed a home learning policy to address blended and remo

The school is the recipient of several relevant awards, including being amongst the first primary schools in Northern Ireland to be recognised as a Microsoft Showcase School and also recognised through the EdTech Top 50 and the Digital Schools Awards.

The school used a range of resources in their response to the COVID-19 pandemic to facilitate continuity of provision. The range included printed resources for home-based learning, links to existing commercial online resources, links to teacher-generated asynchronous video content alongside synchronous teaching provision. Synchronous video lessons were provided by teachers in less than 10% of lessons.

Study Participants

In addition to an interview with the school principal (M), participants included three classroom teachers (1M, 2F) who hold various whole-school responsibilities. Teacher ages ranged from 26-49 years, with teaching experiences between 4 and 20 years. All teachers had pursued Bachelor degree pathways into teaching. None had completed Masters-level studies.

A Key Characteristic

A main characteristic to emerge from the interviews, of the approach of School 5 to embedding the effective adoption of technology in education in ways that may benefit the wellbeing of teachers, is the theme of **change leadership from a recently-appointed principal who is a Microsoft Innovative Educator.** The school's vice-principal is a SeeSaw Ambassador. Several of the teachers are now recognised in the same way.

Vision

The leadership of this school is steeped in leading the use of digital technologies to support teaching and learning for many years and providing leadership across the profession. As a result, pupils, parents and colleagues across the school have developed heightened levels of comfort around the use of emerging digital technologies.

Digital Literacy

The digital literacy of teachers has grown rapidly in recent years from reportedly outstanding practice in some classrooms to a much wider adoption and appreciation, promoted by the response to COVID-19, with a sense of 'real successes', where teachers concluded,

> "I've moved from 'hate' to 'appreciate'...I've learnt!"
>
> "Overall, it's beneficial...I'm happy and confident"

With two teachers in each year group, there is a sharing of workload through online access using OneDrive and MS Teams, and co-created content development, which is encouraged by the principal as a personal investment by teachers of their own time into lesson preparation.

Such a collaborative approach is seen as beneficial by the teachers, and minimises the risk of parents seeing judgments about pupil progress as being inconsistent (within the same age

group), which is also reported as an advantage. The principal notes that parental expectations can lead to observations being made about the differing work patterns of teachers but that the teachers are beginning to "see things from the parental view"

However, while consistency helps address possible adverse comments, as one teacher put it:

> "The price is consistency across all teachers".

Digital Agency

In relation to approaches to some components of directed time, the school promotes a location-agnostic approach crystalised by the principal saying:

> "Just because a member staff is in the school, I don't necessarily assume they're working and just because they are not on school premises, I don't necessarily assume they're not working."

This reported approach to flexible team working is a counter to 'presenteeism' and has built up significant trust across the school.

Dedicated channels are set up using MS Teams and shared OneDrive resources where curriculum leaders design and share action plans, updates and key stage-focused sharing. This allows minutes to be shared and, given the evidence trail:

> "They don't need me to attend all their meetings to make sure the meetings are being done." (principal)

The broader strategic overview with the school is reported by the principal to:

> "not only give people a sense of, number one, trust, but also sense of responsibility for what they have to do in school for when it comes to, for example, an inspection… Our action plans to show that it's a working document, but in fact it's a timestamped document that can demonstrate the work that goes on consistently throughout the year."

This has a knock-on effect on levels of staff anxiety and, as the principal reports concerns about "what would we do if…". This mapping of progress is visible to all allowing colleagues to "feel more in control of what they are trying to do all the time" as these are

available to MS Team and OneDrive "increasing their professionalism" making them "more accountable". The principal concludes,

> "[I] don't feel that things are left to slide, but that I'm able to go back on a timestamp and say, look guys you if you can demonstrate that you're continuing to do this, you're continuing to review these documents. I can't ask anymore of you as opposed to them maybe feeling under additional pressure to get things done."

As a result, the principal, or anyone, can contribute to development of policy and practice documents:

> "putting a line through writing does not mean 'marking their homework'" (principal)

This approach is said to strengthen professional accountability for improvement, which is seen as preferable to the 'tyranny' of being 'driven by SMART targets' as a contributor to digital agency.

Digital Wellbeing

The culture in this school is described by the principal as a "position of continual strength", poised in readiness for the challenges any given school year might bring. This extends through many aspects of school life, but most obviously, in recent years, the school's readiness to pivot to a digital provision and indeed, the school's constant readiness to undergo external inspection. The principal describes how this positive positioning through ICT-supported leadership impacts positively on teacher wellbeing:

> "If you have an inspection coming in two weeks, would staff rather not feel that you were talking from a position of continual strength as opposed to a two-week rush to try to get information together?"

He describes further how the school's use of comments in draft documents to support colleagues has a 'softness' that is harder to achieve with red pen annotation on colleagues' work:

> "There's a softness to it. If you add a note and a comment to the side of an action as opposed to putting a red line or a green line or a purple line through something and writing on it… That's a different way of doing things, because the latter is correcting."

Teacher professional learning across the staff of the school has also benefitted from digitisation, and has been a release to innovative practices. The sense of 'who leads' innovation has gone, as a digital environment opens up the exploration of novel practices to everyone.

The staff share in the view that the benefits of digital approaches can be seen in enhanced classroom learning. They have no sense, as a teacher says, that the computer will 'replace the teacher'.

The principal leads on a version of STEAM and has bought in Microbits as a new resource. However, he remains cautious about meeting parental expectations. A digital world, he believes, raises expectation about education (as with health services) which can possibly never be met.

COVID-19 Readiness

The response to the pandemic was, to all accounts, a significantly disruptive workload. The principal said:

> "I lost sight of teacher workload."

This challenge was made more difficult because the principal felt that the teachers:

> "Perhaps had too high an expectation of the response of parents to using technology".

Yet, a local school-wide survey about school performance throughout extended periods of school closure reported very favourable perceptions of parents, with many parents indicating a high degree of satisfaction and that they believed:

> "the school could have done nothing more to support their child". (principal)

And the consensus view amongst teachers and leaders in the school was that there were benefits to learning overall through:

- the acceleration of the response of teachers to adopt blended learning approaches;
- broader parental understanding of 'learning' and especially the dynamic of motivation and reward; and
- better pupil behaviours arising from their knowledge that their teachers in touch more regularly with their parents (for example, the school posted photographs of 'settled behaviour' on Seesaw).

School Number 6

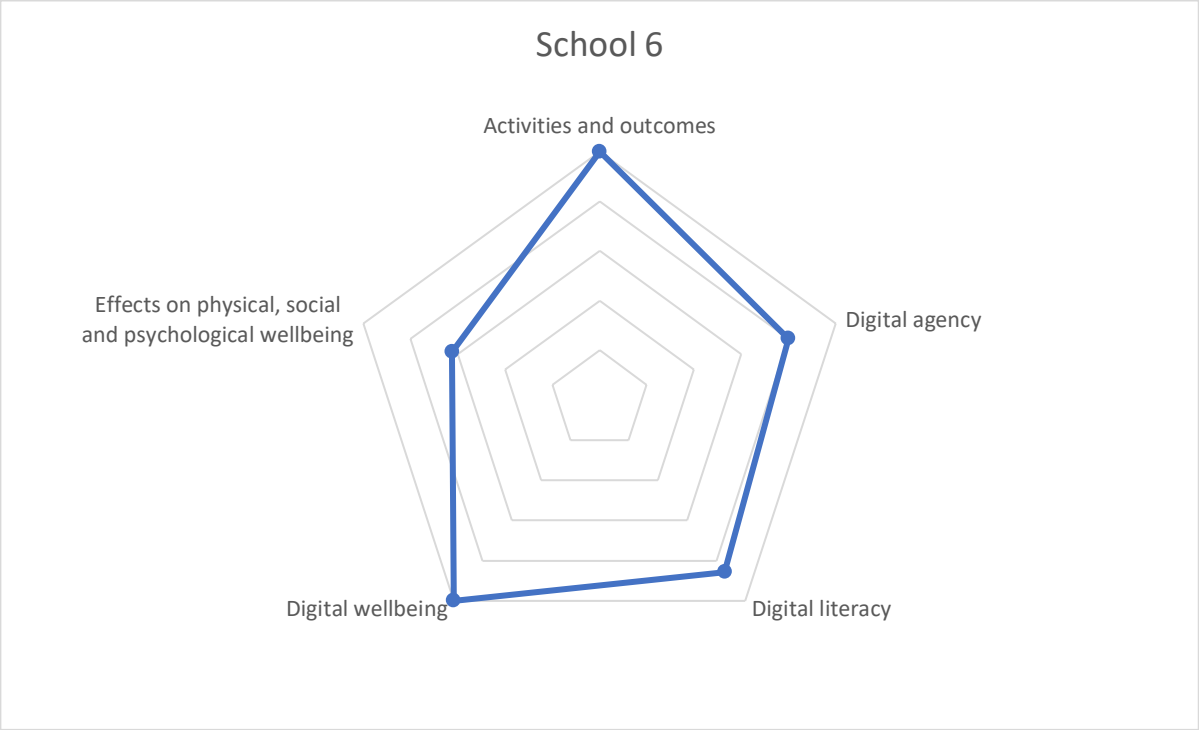

Figure 9 Percentage of factors influencing teacher wellbeing identified in school 6, grouped by feature

School 6 is a large primary level national school in Ireland with 48 teaching staff employed to support 504 male pupils and 423 female pupils.

School Policies

Policy development reflects the circumstances of a primary school in early stages of re-development with a new Principal. It has developed policies both to inform and guide practice related to digital teaching and learning and for online safety. Furthermore, the school has embedded parameters about digital learning into a whole school policy on teaching and learning. While the school has a policy on staff wellbeing, this policy makes no references to the impact of digital technologies. The school does not have a policy on staff development/professional learning for the whole school or for learning through digital technologie. There are no specific references to the impact of digital technologies in any positive behaviour / rewards / discipline policy. Furthermore, the school does not have a policy relating to pupil wellbeing, beyond online safety.

The school has been the recipient of several relevant awards including The Digital Schools Award, Digital School of Distinction Award and other STEM related awards in science and

mathematics. The Board of Management is fully supportive of the ICT related work of the school.

The school used a range of resources in their response to the COVID-19 pandemic to facilitate the continuity of provision including printed resources for home-based learning, links to existing commercial online resources, links to teacher-generated asynchronous video content. Synchronous audio or video lessons were reportedly not provided by teachers throughout the periods of COVID-19 related home-schooling.

Study Participants

In addition to an interview with the school senior leader (F), a learning support teacher with digital responsibilities (F) and a classroom teacher (M) were also interviewed. Both teacher participants were under 50 years of age and teaching experience ranged from 10 to 29 years. Both teachers taught 4th-6th class (10 to 12-year-olds) with one also responsible for infants. One had completed studies to Masters level.

Key Characteristic

A main characteristic to emerge from the interviews, of the approach of School 6 to embedding the specific and effective adoption of technology in education in ways that may benefit the wellbeing of teachers, is of a large school, **undergoing transition with respect to embedding technology in practice, with a new principal leading improved digital technology resourcing in parallel with initiating developments in pedagogy, through a STEM-led approach. This is a 'change-leading' school.**

Vision

A recently-appointed Principal is working to continue to improve the school's approaches to teaching and learning alongside an investment in the digital technology infrastructure with an emphasis on coding and robotics.

> "The school "has always had a good positive climate of using digital technologies.... I've been teaching here 25 years and have been using technology since day one" (Teacher Support Teacher).

> "We have a very strong tradition ...in terms of technology and being at the forefront of technology in education … long before I came in terms of putting it on the agenda and pushing it forward … certainly in my role ...the plan is to keep that flag flying high for us." (Principal)

The improvements in developing the school's digital infrastructure are backed enthusiastically by the Board of Management and the parents, who recently raised a considerable sum of money to resource a STEM laboratory.

Digital Literacy

What surprises the principal is the "amount of young teachers who actually don't have the skills that [she] thought they would have as they are quite tech savvy in their own lives". However, "the technology is at their fingertips" (principal) as the school is very well equipped with Activ Panels / Promethean Interactive whiteboards in all classrooms; devices for all staff members; sets of mobile devices shared among classrooms; Google Suite for sharing resources, staff email and timetabling and Aladdin as the data management system. In particular, staff are attracted to being able to cast their teaching points from their device to an interactive white board for benefit of the class to view.

The principal is conscious of moving beyond this use of digital technologies for teacher presentation and developing "the pedagogical knowledge in tandem with the teachers' technical knowledge...We're like a family here...we're here to help... to support...we've a strong tradition here of people with the expertise ...who lead and who are there to scaffold the learning and to help". Consequently, the approach to professional learning is one of a professional cascade model with more technology-able teachers supporting others through peer mentoring with the structure of pedagogic support being regarded as excellent.

Developing teachers' understanding of claymations, digital storytelling, robotics, Minecraft, in partnership with the teachers is a core element of this school's approach to developing teachers and in turn children's digital literacy, as with "help the teachers gain a little bit of confidence …. [and over time] certainly increased confidence... and if you're talking well-being, it gives them a sense of satisfaction that they could run with this with their class" (principal).

As explained by the Learning Support Teacher who has been appointed so that a large portion of her classroom hours is dedicated to supporting other teachers in the pedagogical use of digital technologies in their dedicated STEM room in the school:

> I work with the teachers on a week on week off basis … so let's say it was fourth class and we were using the Lego robotics for a project I take the class the first week with the teacher, but the teachers themselves had to continue the project the following week... so we work like that in an 8-week block... so it is a kind of professional development.... and the idea is that I would do myself out of a job

While initially teacher involvement was set out as a staff development requirement, through a professional cascade of peer-to-peer mentoring (e.g. staff brought their students to the STEM

room), the onset of Covid-19 lockdowns accelerated the need to learn and quite a number of teachers provided peer support to those who were finding it more difficult:

> I was very happy to share all my resources and share my plans … if fact I did a couple of screencasts to show the teachers what to do. .. knowing what kind of tools are available to teachers makes life a bit easier … it's that awareness of knowing what's out there to help (Classroom teacher)

Indeed

> “a lot of the teachers in the school are continuing to use that kind of technology [Google Classroom / Aladdin] that they wouldn’t have used except that [they] had to” because of Covid and school closures. "For a lot of teachers, it is still ‘more work’ (and) “a minority are still ‘dependent’, but most now find that “the learning set up to support teachers (use of technology) that reduces stress and encourages them to actually engage with the use of technology.... ‘cause once you have some sort of grasp of concepts you will have a better attitude towards it and it is less stressful and you feel like yeah, I can actually do this. ”. (Classroom teacher).

As each teacher is provided with a personal device, and is using a shared staff drive, this has reportedly eased workload, although it has resulted in an increased workload with more teachers needing professional support from the change leaders to move, according to the principal. beyond "streaming to an interactive whiteboard’”.

Overall, however, change leaders report that the teachers mainly say that using technology is easing pressures and stressors, and that the teachers were reported “to be more willing to embrace the use of technologies in their teaching and to be increasing in professional and personal confidence as a result” (Principal). while a minority remain reluctant users with concerns about technical reliability and insufficient technical support when issues need to be resolved. Having their own personal device and access to online shared drives has enabled the teachers

> “Feel safer … as all their work stuff is on their laptop or iPad... all your work-related documents, your assessments of a child … is on one device. You’re not accessing them on your home device so it’s a confidence and security thing.... because before this a lot of teachers would have been emailing things from home into school or there were USB keys all over the place... I feel more comfortable now that things are on your work device and I think everybody else does … as its password protected and encrypted.” (Support teacher).
>
> I put up a planning folder for the different subjects and the different sources to go with each lesson … the resource folder is great to have and is always there, you cannot

lose it... and it's there to help support other teachers who may have been struggling to use different methods. Classroom teacher)

An important factor relating to teacher well-being and the development of digital literacy as outlined by the Learning Support teacher is that "teachers are willing to keep using the digital technology … because they're supported here because the principal is so supportive.... and having someone you can go to". This was reiterated by a teacher who indicated:

> "that's just the mindset ... everybody reciprocates … we all want to help each other". Just in time support is also important as a source of stress can be when something doesn't work so teachers have set up WhatsApp groups so they "can say I'm having an issue. Any advice and we can help each other" (Classroom teacher).

Digital Agency

The online publication of information for parents is a step forward for the school and for openness of communications with parents, within the limits set out in the school's protocol. The introduction of a shared drive and use of personal devices has been stated to ease workloads as well as bringing greater document security.

The extent to which teachers have adopted the introduction of technology depends, according to one teacher, on their individual attitude. Some are positively inclined, recognising, as they do, the important of skills in a digital age for the children, as well as potential advantages to themselves as teachers, while others are said to be more reluctant to change their practices.

Change leaders are forthright about the advantages in terms of the positive impact on learning, while some others:

> "are encouraged to engage and may feel stress".

More staff development opportunities are identified, both in terms of a need to continue to share best practices and to be persuasive of the potential values. The institution of a staff WhatsApp group is providing useful sources of information sharing and self-help on how to resolve any technical challenges.

Digital Wellbeing.

The use of the shared drive has also promoted, within each year group of teachers, a growth of professional sharing of innovative practices, while modifying their teaching. However, adopting such practices is still an added workload and there is a barrier of efficiency returns

which has not yet been crossed for some. There has also been a reluctance by some teachers to continue using particular digital technologies as "it reminds them of the lockdown and they don't want to ever think about teaching that way ever again, so they avoid it... there's an element of reminding us of the stress of it and the anxiety ...that was enforced on people and enforcing anything like that is challenging" (Learning resource teacher).

Change leaders are motivated by the recognition that children live in a digital world and are driven by the need to match their learning experiences appropriately. However, they are keenly aware that

> "The technology is effective only - it's meeting the needs that you want and the children that you know... it has to have a positive impact on the children's learning and their behaviour, their motivation, their focus, before a teacher will continue...." (Learning support teacher).

What is interesting is the interconnection and balancing between teachers' own stress levels and perceived learning outcomes of the children.

> I think from a stress point of view, if you see that it's working and that the children are learning and it's a positive environment, that's huge in reducing your own stress levels … Even if you feel a bit stressed and anxious, if you actually see the children really engaging and having a positive effect from a learning perspective, you're willing to put up with that stress a bit … and be willing to put in the extra time in or the extra workload (Learning support teacher).

This view of the interrelationship of how the teacher experienced stress and how it was related to children's learning was reiterated and extended to other factors by the classroom teacher, who stated that stress:

> Depends on the nature of the work... the teacher and how advanced they are with using the different technologies... the amount of preparation and uploading of things online is time-consuming ... once you get the hang of it. You can tweak a few things here and there... Regardless of how stressful it is... I feel it's a hugely important tool to incorporate in the classroom to help children learning … you can't just have only one way … you want to find many different ways to vary your approach to teaching … because as a teacher we're trying to find the way the child learns as oppose to the way we teach.

Direct attention to both teacher and pupil wellbeing became a priority during the pandemic lock downs so rather than creating pressure on families to have access to devices or extra materials to engage with learning activities they "[primarily concerned with] pupils' well-being

and teachers ...kept it to the basics... as there was a lot of stress on families, a lot of pressure." (Learning support teacher).

Activities and Outcomes

The most significant impact on the introduction of digital technologies on the teachers has been seen as coping with change, and learning to manage their teaching practices in different, and ideally, more efficient ways. For example, the introduction of using shared drives among the teachers has strengthened their:

> "...history of sharing resources ...whether we create them ourselves or anything we've come across and I think that's is positive from a stress or workload point of view that you can find something there [in the shared drive] that your colleague down the corridor uses and you don't have to recreate this from scratch yourself... as each class level has a drive." (Learning support teacher)

In addition, the installation of interactive whiteboards / activpanels has "actually encouraged teaching in creating content that they can use on them and reuse and share" (Learning support teacher).

It has not been seen as leading in the short-term to easements in pressures for a small number of teachers. However, work is continuing on building the shared drive for assessment, marking, record keeping and for managing homework and assignments, leading to intended more prompt feedback on learning and greater management efficiencies.

For the learners, however, the teachers report that introducing technology projects has gone well beyond just exciting and engaging their interests, increasing levels of enthusiasm so that they are no longer passive learners, but are leveraging other learning gains.

> … using Google slides .. I find to be a very good way for them (the students) to present projects … as they can express themselves and tehir creativity and put theor own mark on things in a way they couldn't do. On a piece of paper. It's giving them the responsibility to do their own learning and research, which is the way the world is. (Classroom teacher)

These observed gains include improvements in their critical thinking, independence in learning, problem-solving, and growth of coding skills arising from Lego-led digital solution-building opportunities, especially through group work.

> "…. I'm so proud ... to see the skills they developed … and it wasn't just the techie skills, it was the mapping skills. It [the use of Minecraft] made the maths meaningful for them ... their spatial awareness …. they were going out measuring the perimeter of the school... came up with the word scale … how they communicated and collaborated... the enthusiasm and interest ...the potential for cross-curricular

> linkage... to see them before your eyes, those 21st century learning skills develop in them was amazing" (principal, referring to experiences when she was teaching in the classroom)

Covid Readiness

The onset of the pandemic led to an increased and time-consuming workload in part due to parents being demanding of responses from the school which the school set out to manage through agreed protocols. Some parents were reliant on the school to resolve home reliability issues by offering technical support.

While there was an admitted sense of 'panic-stations' and an experience of increased workload, the principal urged the teachers to self-schedule their response to the pressures as a means of managing their own workload. The use of Aladdin / Google Classroom enabled notice board messaging, commentary on children's work and feedback did strengthen communication with home. However, "the accessibility and availability" afforded by the digital technologies has resulted in "high expectations" including a rise in the volume of emails for parents. Although schools are back in person, there has been a tendency by some parents to still expect online engagement if their child is absent and there is also an increased expectation that email communication can be replied to very promptly. These expectations are the source of stress for some members of staff.

While online provision, which did not include live teacher presence, was experienced as time-consuming.

Some teachers said that certain learners flourished at home, where there was a supportive environment for study and due to the absence of distraction from classmates. Teachers remarked that although spending time giving feedback on students' work was time-consuming it was worthwhile as it was motivating to the students and parents appreciated remarking on how it motivated their children to engage with the learning activities.

> "...parents came back to me and said, God Miss you must spend ages [on feedback] but he really wanted to do well because of your comments … it was really motivating for him."

It was also felt that the online experience for students during Covid "did promote a bit more independent learning and independent responsibility for their own learning" (Classroom teacher).

The absence of teacher synchronous video presence (e.g., Zoom or Teams) during lockdown was attributed to two causes, the risk of Wi-Fi connectivity failure and an anxiety amongst some teachers about being recorded. However, teachers did send daily messages and make recordings using Flip etc so the children could see their teachers and hear them explaining things using pictures and videos.

It was reported that an understanding was growing of how Google Classroom could be used to do more than engage the learners as passive recipients of teaching but to leverage more creative learner engagement. "Peer comments were turned off (initially) but (we are) now rethinking the advantages of peer review" (teacher) especially where children were seen as more independent and "more responsible for their own learning".

> I always turned off the comments section ...but now I feel ...the way the world is with social media and positing comments and online bullying that children need to learn a way to actually behave responsibility online with regards to how they comment on other peoples' work to allow for critical thinking and for people to allow others to criticise their work ... so that is something I'd like to look into more now. (Classroom teacher)

In addition, while a lot of teachers are still using Google Classroom for homework for the general student body it is now being seen as particularly beneficial for those students with learning needs who have dedicated

> "...assigned laptops ...as they may have dyspraxia or whatever … and some of those children who won't talk in the classroom [but] they'll send messages on Google Classroom to the teachers" (Learning support teacher).

4. Discussion, Conclusion and Validations

The discussion within the case studies shown does not set out to draw comparisons across the six case study schools; rather, it draws out learning points from the studies for the purpose of testing the validity of the research framework and, where relevant, extending the identification of ways in which technologies may impinge, with advantage, on the wellbeing of teachers and school leaders.

It is to be hoped, however, that scrutiny of the six case studies presented here will enable teachers, school leaders and teacher educators (as well as opinion leaders and policy makers) to see the use of digital technologies in considered and beneficial ways and as a consequence to plan for, to provide professional learning leadership for, and to evaluate the impact of technologies on teacher wellbeing in a professionally open and holistic manner.

This study set out to evaluate Passey's (2021) framework for understanding the impact of technology on teachers' wellbeing through validation and extension. The study validated the framework and extended it by identifying additional ways in which teachers perceive technology to ease and enrich their professional practices, such as through the sharing of teacher workload and the ability to fix technology. Studies such as those by Edwards (2019) and Smith et al. (2018) have also found that technology can improve teachers' workload and job satisfaction. This research adds to the growing body of literature on how technology can be used to support teachers' wellbeing in the classroom.

This study also found that a variety of approaches are available to schools to benefit the wellbeing of teachers by utilizing digital technologies. The diversity of schools involved in the study illustrates that different approaches can be taken to embedding technology effectively in ways that promote teacher wellbeing. This is in line with studies such as Kirschner & Karpinski (2010) which have found that the effective integration of technology in education is context-dependent and requires a tailored approach.

When data were analysed and factors influencing teacher wellbeing were listed by frequency, it was apparent that features concerned with activities and outcomes, closely aligned with teaching and learning, were most reported as benefiting teacher wellbeing. For example, through support for planning and having the skills to deploy and use the digital technologies available. This aligns with research by Kirschner et al. (2016) which found that the effective use of technology in education is closely linked to the development of pedagogical skills and the alignment of technology use with learning goals.

However, factors influencing a teacher's physical, social, and psychological wellbeing were least commonly reported and there appeared to be reservations, or possibly some reluctance, amongst teachers to discuss these matters. This raises questions as to why this may be the case, and aligns with research by Henderson et al. (2018) which found that teachers may be reluctant to discuss issues related to their wellbeing as they may perceive them as personal and/or unrelated to their professional roles.

In conclusion, this study validated Passey's (2021) framework for understanding the impact of technology on teachers' wellbeing and extended it by identifying additional ways in which teachers perceive technology to ease and enrich their professional practices. It also highlights the importance of considering the context-dependent nature of technology integration in education and the need for tailored approaches to promote teacher wellbeing. This study adds to the growing body of literature on how technology can be used to support teachers' wellbeing in the classroom and raises important questions for future research on the topic.

We conclude that analysis of the six case studies, as summarised above:

1. validates, strengthens and extends the value of the research framework beyond the initial case studies on which it was originally based;
2. identifies which elements of the framework more commonly or typically enable teachers to identify positive ways to embed the use of digital technology tools in their practices; and
3. extends the research framework further, by identifying additional circumstances and ways in which teachers perceive technology to ease and to enrich their professional practices.

Validation

Analysis of the six case studies positively validates, strengthens and extends the value of the research framework, beyond the initial case studies on which it was originally based, in a number of ways, including:

I) Showing a direct relationship of the breadth of perceptions by teachers about the beneficial roles of technologies for their professional wellbeing to the digital learning culture of their school;

II) Identifying constructive uses of digital technologies arising from perceiving the role of technologies as an aid to the professional roles of the teacher (in

administration and management, pedagogy and professional learning and development) rather than as a technology-led intrusion into their practices; and

III) Extending the agency of the teacher in controlling their own actions and being both open-minded and collegial in identifying and sharing professional insights.

Most Commonly Identified Elements

The elements of the framework which, from this set of interviews in these six schools, have more commonly enabled teachers to identify positive advantages from uses of digital technology tools in their practice on their wellbeing are shown in Table 4.

Table 4 Factors influencing teacher wellbeing listed by frequency

Features concerned with teacher wellbeing	Factors influencing teacher wellbeing	Totals
Activities and outcomes	Support for planning	6
Activities and outcomes	Feeling access is easily feasible	6
Activities and outcomes	Improving assessment and feedback	6
Activities and outcomes	Having ideas of how positive impact will arise	6
Activities and outcomes	Support for professional learning	6
Digital agency	Feeling that there has been a positive impact on learning	6
Digital literacy	Having choice of digital technologies	6
Digital literacy	Having skills to deploy and use the digital technologies	6
Digital literacy	Supporting communication and collaborations	6
Digital literacy	Supporting digital content creation	6
Digital wellbeing	Feeling the use has value for learning	6
Digital wellbeing	Feeling the school culture and climate is positive to the use	6
Digital wellbeing	Supporting recording of evidence	6
Digital wellbeing	Supporting collaboration	6
Activities and outcomes	Feeling safe and responsible	5
Activities and outcomes	Having access to digital technologies to support interactions in class or beyond	5
Activities and outcomes	Supporting pupil practice	5

Digital agency	Feeling more responsible for one's actions	5
Digital agency	Supporting interactions with parents and guardians	5
Digital wellbeing	Feeling motivated from digital technology use	5
Digital wellbeing	Feeling professional satisfaction	5
Effects on physical, social and psychological wellbeing	More positively handling rapid change	5
Effects on physical, social and psychological wellbeing	Reducing stress	5
Effects on physical, social and psychological wellbeing	Reducing problems with parents or guardians	5
Activities and outcomes	Supporting explanations and modelling	4
Digital agency	Feeling security and privacy are ensured	4
Digital literacy	Supporting information and data literacy	4
Digital literacy	Supporting problem solving	4
Digital wellbeing	Feeling personal satisfaction	4
Digital wellbeing	Feeling positive emotionally	4
Effects on physical, social and psychological wellbeing	Improving pupil/student behaviour	4
Digital literacy	Supporting safety	3
Effects on physical, social and psychological wellbeing	Gaining more trust from managers	3
Effects on physical, social and psychological wellbeing	Reducing exhaustion	1
Effects on physical, social and psychological wellbeing	Reducing reliance on tools considered unhealthy	1

Data in Table 4 show how teachers and leaders in the case study schools have articulated aspects of behaviour and practice influencing their wellbeing when linked most directly with activities and outcomes, closely aligned with teaching and learning.

There appears to be, however, more reticence amongst teachers to reflect and speak overtly about matters pertaining to effects on their physical, social and psychological wellbeing.

Extensions to the Research Framework

The six case studies provided evidence which extends the research framework further, by identifying additional circumstances and ways in teachers perceive digital technologies to ease and enrich their pedagogic practices. These extensions, which are now integrated into an extended framework are:

	School 1	School 2	School 3	School 4	School 5	School 6	Total
Reducing time in subsequent years	0	0	1	1	1	1	4
Connecting or sharing with other educators beyond the school	1	1	0	0	1	1	4
Knowing technology issues can be fixed	1	1	0	0	1	1	4
Supporting pupil, class or group management	0	1	1	0	0	1	3
Sharing of teacher workload	0	1	0	1	1	1	4
Improving pupil access to classwork	0	1	1	1	1	1	5
Reducing marking workload	0	0	0	1	0	0	1

The results from this study build on the framework proposed by Passey (2021) and apply specifically to digital technology use and teacher wellbeing: an important, yet largely hitherto neglected, area of research interest. Our findings suggest that teachers speak, with greater readiness, on matters associated with activities and outcomes and increased reluctance to reflect upon and discuss matters linked to their physical, social and emotional wellbeing.

It is also apparent within our findings, extending beyond Passey's original 2021 framework, that some teachers are using digital technologies to more positively augment their workloads, through for example, sharing workloads with colleagues or offering pupils opportunities access classwork more independently.

Further Validation

The completed research was further reviewed, for the purpose of potential application, with two distinctly different groups of educators: with the Education Network (Northern Ireland) Innovation Forum and through a research seminar held at the 2022 Standing Conference on Teacher Education, North and South (ScoTENS) annual conference.

Both explorations provided interest and ways to apply the findings from the six case studies and for the value and relevance of the research framework. Significant points emerged from both discussions about means of using the framework to promote better appreciation of the potential of the use of digital technologies to enhance teacher wellbeing.

1 Education Network (Northern Ireland) Innovation Forum

A focus group discussion at the 14 October 2022 meeting of the Innovation Forum comprised a group of innovation-active classroom practitioners together with educators who support schools in Northern Ireland through intermediate authorities and organisations. The majority of contributions recorded in response to the research findings were from classroom teachers.

Digital Literacy and Capacity

- Being able to rely on the digital technology from the outset is essential; frustration arises quickly from technical problems.
- The early development of teachers' digital literacy is essential.
- Top-down, unrealistic expectations of 'quick returns' from investment in digital technology can be counter-productive, leading to negative perceptions.
- Effective digital capacity-building at an early stage can increase the confidence of teachers and their associated sense of wellbeing.

School-Parent Partnership

- The much closer online engagement with parents, which was essential during periods of Covid-19 lockdowns, had considerably heightened the expectation of parents of immediate responsiveness from teachers to online communications.
- Uncontrolled, this leads to unrealistic expectations and causes stress.
- In the worst case, it can lead to a sense that 'when technology fails – communication fails.'
- Properly managed, it respects boundaries personal to teachers and their family life and supports a good life/work balance, enabling teachers to work within timeframes that suit them best.
- Communication is seen as a shared learning curve for teachers and parents which enables effective support for learning, and models, for the pupils, a constructive home/school partnership.

Easing Workload

- It is recognised that digitisation through the use of online platforms can, and has, decreased administration tasks, for example, reduced time spent photocopying – time saved to the benefit of interaction with colleagues.
- There is an expectation that applications can assist is data analytics to support decision-making, but it is not well understood.
- Applications which support communication online with children in different ways are reducing pressures on teachers.

Leadership

- A key to the constructive use of digital technologies in schools rests (it was argued) on progressive leadership which creates an appropriate culture.
- Such a culture is not technology-driven but is based on identifying which digital technologies can serve needs, based on an understanding of the **teachers'** perceptions of their needs.
- A culture which:
    - builds on a perceived ease of use, focuses on identifying stress, reducing it, and getting the best value for the total investment, and
    - supports a 'new generation' of teachers who look on digital technology more favourably, are not fearful of it and want to know how best to use it.

Use of the Passey Framework (2021)

- It was recognised that the Passey framework has potential for raising awareness about the positive aspects of digital technology, counter the negative narrative and promote teacher uses of digital technology which support wellbeing, provided that it is advanced by a 'neutral voice' and not by speakers or organisations which may been seen to have a vested interest.

2 ScoTENS Conference Research Seminar

At a research seminar at the ScoTENS (Standing Conference on Teacher Education, North and South) 2022 conference on 20th October at Dundalk, the TWEET research findings were considered by a group of seventeen delegates, mainly comprising those involved in initial and post-graduate teacher education on both sides of the border and including senior government teacher union representatives.

Initially, delegates were split on the extent to which they perceived the relationship between the use of digital technologies and teacher wellbeing as being stressful (50%), neutral (25%), or beneficial (25%) to teacher wellbeing.

Following a presentation of the TWEET research findings, all delegates could see potential value in the Passey Framework (2021) as a way of raising awareness about the relationship between using digital technologies and teacher wellbeing, with two-thirds stating that they believed the value to be 'good' and one-third seeing 'some' value in the framework.

Furthermore, delegates could see the potential for using the Framework to open discussion amongst teachers about how their use of digital technologies to:

- promote reflection on how it may potentially affect their wellbeing;
- be integrated into their practice in ways that promote and maintain positive wellbeing;
- model, for their learners, ways in which digital technology use may positively benefit their own wellbeing; and
- build positive relationships with parents that may, indirectly, impact positively on their wellbeing.

It was noted, with the recent distribution of over 20,000 personal digital devices to all teachers in Northern Ireland, that the Framework could be usefully introduced as a platform for discussion.

Delegates discussed how the Framework, with its many elements, might be best considered and applied. Should the elements be considered in isolation or is it preferable or necessary for them to be viewed collectively, as a summary, in coming to any evaluation about teacher wellbeing in a school?

A question was raised about the subjectivity of teacher perceptions on the impact of digital technology use on their wellbeing.

In using the Framework to raise discussion in schools about individual causes of stress, as identified by individual elements in the Framework, distinction needs to be made (it was argued) between those teachers who did not benefit positively, and those who simply preferred not to comment and share their personal views openly.

It was agreed that to be successful, any discussion of teacher wellbeing needs to take place in the context of a positive, trusting school culture and of constructive school leadership.

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Appendix 1 – Semi-structured Interview Schedule

For each category of interviewee, key questions are followed by possible supplementary sub-questions that could be raised during the semi-structured interview. (Question Source: Passey, 2021)

Principal

1.	In terms of planning and using digital technologies, which digital technologies do you use, and what factors are involved when you plan for use of these?
	Do teachers find that the technology is easy to access?
	Are you able to support teacher professional learning for digital technologies?
	Do you find the digital technologies support teacher planning and recording of evidence?
	Do teachers report positive impacts arising when using the digital technologies?
	Do teachers indicate they feel safe and responsible and that their security and privacy are ensured when using the digital technologies?
	Do you feel there is a positive school culture and climate towards digital technology use?
2.	What are your intentions for using digital technologies?
	Are digital technologies used to support information and data literacy?
	Are digital technologies used to support communication and collaborations?
	Are digital technologies used to support interactions with parents and guardians?
3.	What would you say are the effects and outcomes arising from uses of the digital technology?
	Do you feel there has been a positive impact on learning when using the digital technologies?
	Do you find the digital technologies support interactions in class and beyond?
	Do you find the digital technologies improve assessment and feedback?
	Do you find the digital technologies improve pupil/student behaviour?
	Do teachers feel motivated from using digital technologies?
	Do you feel teachers are more able to positively handle rapid change when using digital technology?
	Do you find the digital technologies reduce problems with parents or guardians?
4.	Do you find there are professional outcomes arising when teachers use the digital technologies?
5.	Do you find there are any effects on physical, social and psychological wellbeing from using digital technologies?
	Do digital technologies offer more opportunity to work independently?
	Do digital technologies reduce long weekday hours, or weekend working, or holiday working?
	Do digital technologies offer a better work/life balance, feeling more able to switch off and relax?
	Do digital technologies offer more time to be with family and friends?
	Do digital technologies enable more physical exercise?
	Do digital technologies reduce anxiety, depression, exhaustion or stress?
	Do digital technologies reduce workload?
	Do digital technologies reduce reliance on tools considered unhealthy?

Senior Leader

1.	In terms of digital technologies, which digital technologies do you use, and why do you use those?
	Do teachers have a choice of technologies to use?
	Do teachers find that the technology is easy to access?
	Are you able to support teacher professional learning for digital technologies?
	Do you find the digital technologies support teacher planning and recording of evidence?
	Do teachers report positive impacts arising when using the digital technologies?
	Do teachers indicate they feel safe and responsible and that their security and privacy are ensured when using the digital technologies?
	Do you feel there is a positive school culture and climate towards digital technology use?
2.	What are your intentions for using digital technologies?
	Are digital technologies used to support information and data literacy?
	Are digital technologies used to support communication and collaborations?
	Are digital technologies used to support digital content creation?
	Are digital technologies used to support problem solving?
	Are digital technologies used to support interactions with parents and guardians?
3.	What would you say are the effects and outcomes arising from uses of the digital technology?
	Do you feel there has been a positive impact on learning when using the digital technologies?
	Do you feel the digital technologies offer value for learning?
	Do you find the digital technologies support interactions in class and beyond?
	Do you find the digital technologies improve assessment and feedback?
	Do you find the digital technologies improve pupil/student behaviour?
	Do teachers feel motivated from using digital technologies?
	Do you feel teachers are more able to positively handle rapid change when using digital technology?
	Do you find the digital technologies reduce problems with parents or guardians?
4.	Do you find there are professional outcomes arising when teachers use the digital technologies?
5.	Do you find there are any effects on physical, social and psychological wellbeing from using digital technologies?
	Do digital technologies offer more opportunity to work independently?
	Do digital technologies reduce long weekday hours, or weekend working, or holiday working?
	Do digital technologies offer a better work/life balance, feeling more able to switch off and relax?
	Do digital technologies offer more time to be with family and friends?
	Do digital technologies enable more physical exercise?
	Do digital technologies reduce anxiety, depression, exhaustion or stress?
	Do digital technologies reduce workload?
	Do digital technologies reduce reliance on tools considered unhealthy?

Middle Leader

1.	In terms of digital technologies, which digital technologies do you use, and why do you use those?
	Do teachers have a choice of technologies to use?
	Do teachers find that the technology is easy to access?
	Do you find the digital technologies support teacher planning and recording of evidence?
	Do teachers report positive impacts arising when using the digital technologies?
	Do teachers indicate they feel safe and responsible and that their security and privacy are ensured when using the digital technologies?
	Do you feel there is a positive school culture and climate towards digital technology use?
2.	What are your intentions for using digital technologies?
	Are digital technologies used to support information and data literacy?
	Are digital technologies used to support communication and collaborations?
	Are digital technologies used to support digital content creation?
	Are digital technologies used to support problem solving?
	Are digital technologies used to support interactions with parents and guardians?
3.	What would you say are the effects and outcomes arising from uses of the digital technology?
	Do you feel there has been a positive impact on learning when using the digital technologies?
	Do you feel the digital technologies offer value for learning?
	Do you find the digital technologies support interactions in class and beyond?
	Do you find the digital technologies improve assessment and feedback?
	Do you find the digital technologies improve pupil/student behaviour?
	Do teachers feel motivated from using digital technologies?
	Do you feel teachers are more able to positively handle rapid change when using digital technology?
	Do you find the digital technologies reduce problems with parents or guardians?
4.	Do you find there are professional outcomes arising when teachers use the digital technologies?
5.	Do you find there are any effects on physical, social and psychological wellbeing from using digital technologies?
	Do digital technologies offer more opportunity to work independently?
	Do digital technologies reduce long weekday hours, or weekend working, or holiday working?
	Do digital technologies offer a better work/life balance, feeling more able to switch off and relax?
	Do digital technologies offer more time to be with family and friends?
	Do digital technologies enable more physical exercise?
	Do digital technologies reduce anxiety, depression, exhaustion or stress?
	Do digital technologies reduce workload?
	Do digital technologies reduce reliance on tools considered unhealthy?

Teacher

1.	Which digital technologies do you use, and why do you use those?
	Do you have a choice of technologies to use?
	Do you find that the technology is easy to access?
	Do you find you have the skills to deploy and use the digital technologies?
	Do digital technologies support your professional learning?
	Do you find the digital technologies support planning and recording of evidence?
	Do you find there are positive impacts arising when using the digital technologies?
	Do you feel safe and responsible and your security and privacy are ensured when using the digital technologies?
	Do you feel there is a positive school culture and climate towards digital technology use?
2.	What are your intentions for using digital technologies?
	Are digital technologies used to support information and data literacy?
	Are digital technologies used to support communication and collaborations?
	Are digital technologies used to support digital content creation?
	Are digital technologies used to support problem solving?
	Are digital technologies used to support interactions with parents and guardians?
3.	What would you say are the effects and outcomes arising from using digital technologies?
	Do you feel there has been a positive impact on learning when using the digital technologies?
	Do you feel the digital technologies offer value for learning?
	Do you find the digital technologies support pupil practice, interactions in class and beyond?
	Do you find the digital technologies support explanations and modelling?
	Do you find the digital technologies improve assessment and feedback?
	Do you find the digital technologies improve pupil/student behaviour?
	Do you feel motivated from using digital technologies?
	Do you feel personal or professional satisfaction from using digital technology?
	Do you feel positive emotionally from using digital technologies?
	Do you feel more responsible for your actions from using digital technology?
	Do you feel more able to positively handle rapid change when using digital technology?
	Do you find the digital technologies reduce problems with parents or guardians?
	Do you find using digital technology reduces manager demands?
4.	Do you find there are professional outcomes arising when you use the digital technologies?
	Using digital technology, do you gain more trust from managers?
	Does using digital technology reduce colleague bullying or discrimination?
5.	Do you find there are any effects on physical, social and psychological wellbeing from using digital technologies?
	Do digital technologies offer more opportunity to work independently?
	Do digital technologies reduce long weekday hours, weekend or holiday working?
	Do digital technologies offer a better work/life balance, feeling more able to switch off and relax?
	Do digital technologies offer more time to be with family and friends?
	Do digital technologies enable more physical exercise?
	Do digital technologies reduce anxiety, depression, exhaustion or stress?
	Do digital technologies reduce workload?

Do digital technologies reduce reliance on tools considered unhealthy?

Additional for all:

6. In situations where digital technologies have been identified to affect wellbeing negatively, how have you managed these situations?

7. Is there anything else you would like to highlight to me that you feel would be helpful to the context of this study?

Appendix 2 Mapping against the Conceptual Framework

Factors influencing teacher wellbeing	Features concerned with teacher wellbeing	Passey 2021 table sequence	Code	School 1 Agreed	School 2 Agreed	School 3 Agreed	School 4 Agreed	School 5 Agreed	School 6 Agreed
Support for planning	Activities and outcomes	12	D1	1	1	1	1	1	1
Feeling access is easily feasible	Activities and outcomes	13	D4	1	1	1	1	1	1
Improving assessment and feedback	Activities and outcomes	15	D9	1	1	1	1	1	1
Having ideas of how positive impact will arise	Activities and outcomes	23	D6	1	1	1	1	1	1
Support for professional learning	Activities and outcomes	27	D2	1	1	1	1	1	1
Feeling safe and responsible	Activities and outcomes	21	D3	1	1	1	1	0	1
Having access to digital technologies to support interactions in class or beyond	Activities and outcomes	22	D5	1	1	1	1		1

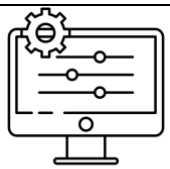
Supporting pupil practice	Activities and outcomes	29	D8	0	1	1	1	1	1
Supporting explanations and modelling	Activities and outcomes	28	D7	1	0	0	1	1	1
				8	8	8	9	7	9
Feeling that there has been a positive impact on learning	Digital agency	4	B4	1	1	1	1	1	1
Feeling more responsible for one's actions	Digital agency	14	B2	1	0	1	1	1	1
Supporting interactions with parents and guardians	Digital agency	26	B1	1	0	1	1	1	1
Feeling security and privacy are ensured	Digital agency	19	B3	1	0	1	1	0	1
				4	1	4	4	3	4
Having choice of digital technologies	Digital literacy	1	A1	1	1	1	1	1	1
Having skills to deploy and use	Digital literacy	2	A2	1	1	1	1	1	1

the digital technologies									
Supporting communication and collaborations	Digital literacy	3	A4	1	1	1	1	1	1
Supporting digital content creation	Digital literacy	25	A5	1	1	1	1	1	1
Supporting information and data literacy	Digital literacy	17	A3	1	1	1	1	0	0
Supporting problem solving	Digital literacy	31	A7	1	0	1	1	0	1
Supporting safety	Digital literacy	18	A6	0	0	1	1	0	1
				6	5	7	7	4	6
Feeling the use has value for learning	Digital wellbeing	6	C2	1	1	1	1	1	1
Feeling the school culture and climate is positive to the use	Digital wellbeing	7	C3	1	1	1	1	1	1

Supporting recording of evidence	Digital wellbeing	11	C8	1	1	1	1	1	1
Supporting collaboration	Digital wellbeing	20	C7	1	1	1	1	1	1
Feeling motivated from digital technology use	Digital wellbeing	5	C1	1	1	1	1	0	1
Feeling professional satisfaction	Digital wellbeing	9	C5	1	0	1	1	1	1
Feeling personal satisfaction	Digital wellbeing	8	C4	1	0	1	1	0	1
Feeling positive emotionally	Digital wellbeing	10	C6	1	1	0	1	0	1
				8	6	7	8	5	8
More positively handling rapid change	Effects on physical, social and psychological wellbeing	24	E14	1	1	1	1	0	1
Reducing stress	Effects on physical, social and psychological wellbeing	32	E9	1	0	1	1	1	1

Reducing problems with parents or guardians	Effects on physical, social and psychological wellbeing	33	E15	1	0	1	1	1	1
Improving pupil/student behaviour	Effects on physical, social and psychological wellbeing	15	E12	0	1	1	0	1	1
Gaining more trust from managers	Effects on physical, social and psychological wellbeing	34	E18	1	0	0	1	1	0
Reducing exhaustion	Effects on physical, social and psychological wellbeing	30	E8	0	0	0	0	0	1
Reducing reliance on tools considered unhealthy	Effects on physical, social and psychological wellbeing	35	E22	1	0	0	0	0	0
				5	2	4	4	4	5

Appendix 3 Digital Assets

Digital Agency		
Digital Literacy		
Digital wellbeing		
Activities and Outcomes		
Effects on physical, social and psychological wellbeing