Teacher Wellbeing from Engaging with Educational Technologies (TWEET): Case studies from across the island of Ireland

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from across the island of Ireland [SCoTENS Special Issue]. *Irish Journal of Education*, *47*, XX–XX. www.erc.ie/ije

Teacher Wellbeing from Engaging with Educational Technologies (TWEET): Case studies from across the island of Ireland

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Abstract

Post COVID-19, the role of educational technologies continues to challenge many educators. There is a lacuna of evidence considering the potentially positive contribution to teacher wellbeing that may be made through effective management of digital technologies in schools by school principals and teachers. This research explores and develops the link between educational technologies and teacher wellbeing to test Passey's (2021) conceptual framework and proposition, that effective or specific digital technological adoption in schools may benefit the wellbeing of teachers in a wide variety of different educational contexts. Three post-primary schools (two in Northern Ireland and one in the Republic of Ireland) and three primary schools (one in Northern Ireland and two in the Republic of Ireland) were engaged to provide a study basis for critical in-depth case studies focused on teacher wellbeing and digital technology adoption and use. Semi-structured interviews were carried out with senior- and middle-school leaders and with classroom teachers. Evidence from these case studies extends the research framework proposed by Passey (2021) by identifying additional circumstances and ways in which teachers perceive digital technologies as benefitting their wellbeing and pedagogical practices. Results suggest that teachers speak, with great readiness, on matters associated with the administrative aspects of their role, and with teaching or learning activities and outcomes, yet are considerably less likely to reflect upon and discuss matters linked to their physical, social, and emotional wellbeing.

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Keywords: teacher wellbeing, digital technologies, benefits of technologies in schools

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Teacher wellbeing, an important concept in schooling internationally, has been receiving attention within the literature since the 1930s (Orsila et al., 2011). Low levels of positive teacher wellbeing are typified throughout the literature as psychological conditions detracting from a teacher's performance through, for example, feelings of burnout and of being overloaded and under stress (Briner & Dewberry, 2007; Ross et al., 2012). McLeod and Wright (2016) assert that there is significant variation in how wellbeing is defined throughout the education literature. It is oftentimes described in deficit terms (Roffey, 2012) such as those pertaining to stress, depression, 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. Such simplistic definitions have evolved within the literature to provide consideration and recognition of wellbeing as 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).

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The hiatus of normal schooling and education due to the impact of COVID-19 has generated a marked surge in digital technology adoption within schools. Work on how this recent uptake in digital technologies might be associated with teacher wellbeing is therefore both timely and imperative for teaching and its stakeholders. Research has rarely considered how constructive productive applications of digital technologies, when effectively managed by leaders and teachers in schools, may benefit them in a variety of ways and be advantageous to their wellbeing. Passey (2021) indicates a scarcity of such research, while De Pablos et al. (2011) provide a study that has offered a specific focus in this field.

The study forming the focus of this paper was set in the context of uses of educational technology applications that seek to ensure or enhance educational practices in primary and post-primary schools on the island of Ireland. These applications, which are important elements of initial and continuing teacher education, include the use of a broad variety of software and hardware tools and resources to support, augment, and transform planning, communication, learning, teaching, and assessment. This study tested the existing findings and proposition proposed by Passey (2021), that specific technological adoption for educational purposes in schools may benefit the wellbeing of teachers across a wide variety of educational contexts, uses, and purposes. It is anticipated that the study will help support researchers and educators in their understanding of how teachers and schools can recognise, adopt, and use digital technologies in ways that can have a positive impact on teachers' wellbeing as they emerge and move forward from the COVID-19 pandemic.

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The current study is also set in a wider context arising from the work of Ryan and Deci (2000), who identified three important needs – competence, relatedness, and autonomy – that "appear to be essential for facilitating optimal functioning of the natural propensities for growth and integration, as well as for constructive social development and personal well-being" (p. 68). More recently, Acton and Glasgow (2015) distilled a considered definition of teacher wellbeing, reflecting the personal-professional (Jeffrey & Woods, 1996) and interpersonal (Holmes, 2005) nature of teaching. They concluded that teacher wellbeing may be defined as "an individual sense of personal professional fulfilment, satisfaction, purposefulness and happiness, constructed in a collaborative process with colleagues and students" (p. 102). This process is supported, or constrained, by contextual factors that enable teachers to realise their purpose and goals in teaching, provide realistic and manageable work demands to allow for autonomy, and value, respect, and celebrate teachers' professional expertise and work practice.

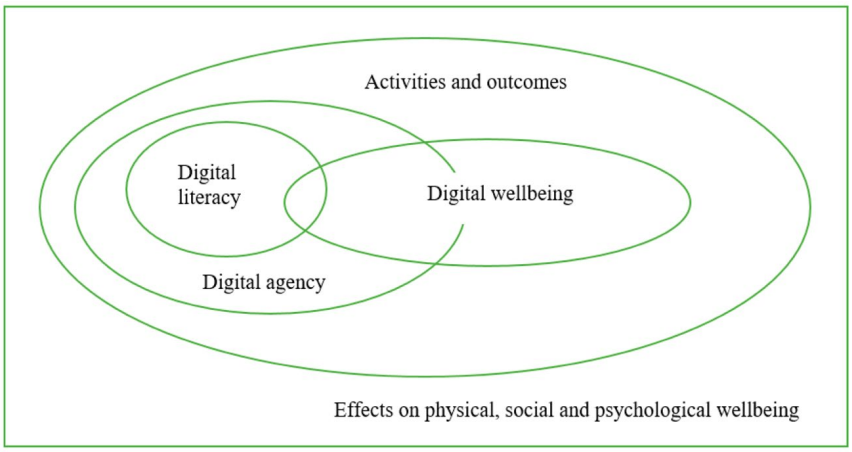
The Conceptual Framework - Teacher Wellbeing and the use of Digital Technologies

Passey (2021) provides a conceptual framework and research instrument to consider a broad range of features and factors relating to whether and how digital technologies may influence teacher wellbeing. Foundational to Passey's (2021) conceptual framework is the self-determination theory proposed by Ryan and Deci (2000) who identified three needs for personal wellbeing – competence, relatedness, and autonomy. The work of Dodge et al. (2012) and Longo et al. (2017) also informed the creation of Passey's original research instrument. Dodge et al. (2012) examined the relationship between an individual's resource pool and the challenges they face, while Longo et al. (2017) compiled a measurement instrument for wellbeing, consisting of 14 constructs: happiness, vitality, calmness, optimism, involvement, self-awareness, self-acceptance, self-worth, competence, development, purpose, significance, self-congruence, and connection.

Subsequently, Passey (2021) developed a proposition linking five key features affecting teacher wellbeing when using digital technologies. The features relate to digital literacy, digital agency, digital wellbeing, activities and outcomes, as well as effects on physical, social, and psychological wellbeing. The complexities of the interconnectivity in this conceptual model are shown in Figure 1, which is not intended to offer a view of interdependency on a quantitative basis. As digital technologies are evolving, and not static, it should be recognised that this diagrammatic representation can be detailed to a greater extent through focused study and should be reviewed at periodic intervals.

Figure 1

Conceptual Model of Features Affecting Teacher Wellbeing When Using Digital Technologies



Note. From "Digital Technologies – and Teacher Wellbeing," by D. Passey, 2021, *Education Sciences*, *11*(3), p. 9. Reprinted with permission.

To investigate aspects relating to these five features likely to affect teacher wellbeing, Passey (2021) used data from an evaluation of practices in classrooms in Northern Ireland and Germany to develop an approach that allows for structured identification of the specific factors, or components of these features, and which tests the efficacy of the conceptual framework. Table 1 shows the factors and features identified by Passey from his evaluation of classroom practices. Where factors are prevalent in all of the cases within his study, these are marked in the final column as 'yes'. Where 'no' is used, this indicates that the factor was identified in some, but not all, of the cases that contribute to Passey's framework. The factors identified to be common to all cases form the basis of the research instruments used within this study.

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Table 1

Conceptual Framework of Factors Influencing Positive Teacher Wellbeing When Using Digital Technologies

Features concerned with teacher wellbeing	Factors influencing teacher wellbeing	Code	Identified by Passey (2021) to be common to all case studies used to derive the framework
Digital literacy	Having choice of digital technologies	A1	Yes
	Having skills to deploy and use the digital technologies	A2	Yes
	Supporting information and data literacy	A3	Yes
	Supporting communication and collaborations	A4	Yes
	Supporting digital content creation	A5	Yes
	Supporting safety	A6	Yes
	Supporting problem solving	A7	Yes
Digital agency	Supporting interactions with parents and guardians	B1	Yes
	Feeling more responsible for one's actions	B2	Yes
	Feeling security and privacy are ensured	B3	Yes
	Feeling that there has been a positive impact on learning	B4	Yes
Digital wellbeing	Feeling motivated from digital technology use	C1	Yes
	Feeling the use has value for learning	C2	Yes
	Feeling the school culture and climate is positive to the use	C3	Yes
	Feeling personal satisfaction	C4	Yes
	Feeling professional satisfaction	C5	Yes
	Feeling positive emotionally	C6	Yes
	Supporting collaboration	C7	Yes
	Supporting recording of evidence	C8	Yes
Activities and outcomes	Support for planning	D1	Yes
	Support for professional learning	D2	Yes
	Feeling safe and responsible	D3	Yes
	Feeling access is easily feasible	D4	Yes
	Having access to digital technologies to support interactions in class or beyond	D5	Yes
	Having ideas of how positive impact will arise	D6	Yes
	Supporting explanations and modelling	D7	Yes

Features concerned with teacher wellbeing	Factors influencing teacher wellbeing	Code	Identified by Passey (2021) to be common to all case studies used to derive the framework
	Supporting pupil practice	D8	Yes
	Improving assessment and feedback	D9	Yes
Effects on physical, social, and psychological wellbeing	Feeling more able to switch off and relax	E1	No
	Reducing long weekday hours	E2	No
	Finding more time to be with family and friends	E3	No
	Reducing weekend working	E4	No
	Reducing holiday working	E5	No
	Reducing anxiety	E6	No
	Reducing depression	E7	No
	Reducing exhaustion	E8	Yes
	Reducing stress	E9	Yes
	Reducing workload	E10	No
	Offering a better work/life balance	E11	No
	Improving pupil/student behaviour	E12	Yes
	Reducing unreasonable manager demands	E13	No
	More positively handling rapid change	E14	Yes
	Reducing problems with parents or guardians	E15	Yes
	Reducing colleague bullying	E16	No
	Offering more opportunity to work independently	E17	No
	Gaining more trust from managers	E18	Yes
	Reducing discrimination	E19	No
	Enabling more physical exercise	E20	No
	Reducing reliance on ways to alleviate stress	E21	No
	Reducing reliance on tools considered unhealthy	E22	Yes

Note. From "Digital Technologies – and Teacher Wellbeing," by D. Passey, 2021, *Education Sciences*, *11*(3), p. 10. Adapted with permission.

It is important to emphasise that the role and purpose of this framework is to display a range of ways in which technologies have been shown to influence teachers positively in their wellbeing, so that these could be illustrated and better understood. It was neither intended by Passey, nor designed within this study, to be used as a checklist to rate effective

teacher wellbeing when using digital technologies or as a means of indicating weaknesses that need to be improved. Application in specific study instances will indicate those factors/ elements that are of importance to teachers regarding their individual wellbeing. This can then be used to inform and broaden understanding of what comprises the professional and personal wellbeing of teachers more generally.

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The Current Study

This research study recruited three post-primary and three primary schools in Northern Ireland and the Republic of Ireland as the basis for critical, in-depth case studies focused on teacher wellbeing and digital technology adoption and use.

The aims of the research were to:

- test the existing findings and conceptual framework proposed by Passey (2021) that considers how specific or effective technological adoption/use in schools may benefit the wellbeing of teachers in a variety of educational contexts, uses, and purposes;
- test how Passey's (2021) framework may assist understanding of the characteristics of technology adoption/use where there has been a beneficial impact on teacher wellbeing; and
- evaluate the research framework and instrument proposed by 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 in educational transformation, innovative teacher education, school improvement, ameliorating teacher workload (and associated stress), and in promoting the wellbeing of teachers.

Method

A case-study approach was adopted and data were collected from each of the six schools involved through semi-structured interviews with school leaders, classroom teachers, and those responsible for leading and shaping digital technology. This approach enabled both the in-depth study of this "real-life phenomenon" and the gathering of contextual information for each case (Yin, 2003, p. 18). Each school was a single case, a "bounded system", "a single entity, a unit around which there are boundaries" (Merriam, 1998, p. 27). Basing the study in six schools enabled evidence to be gathered "across sites and scales" (Bartlett & Vavrus, 2017, p. 15) to produce "a single set of 'cross-case'" conclusions (Yin, 2003, p. 20). Semi-structured interviews supported the case-study approach, granting researchers flexibility to react to participants' responses and allowing for a more conversational interview style (Rubin & Rubin, 205; 2012).

Interviews were held via Microsoft Teams. These took place individually, or in small groups, in each of the schools recruited. Two interview protocols were engaged, one for school leaders and the other for teachers. Both featured open-ended questions to ask participants about their perceptions of digital technologies and matters associated with wellbeing. The questions were designed to elicit information on:

- those features/factors that were found to be common to all case studies in Passey's (2021) study (Table 1);
- the digital technologies teachers and leaders had used and why;
- the intentions (e.g., are digital technologies used to support interactions with parents and guardians?), outcomes (e.g., do you feel more able to positively handle rapid change when using digital technology?), and effects of digital

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technologies on wellbeing (e.g., do digital technologies reduce anxiety, depression, exhaustion or stress?).

Information about school demographics was collected via a questionnaire completed by each school principal, and all participants completed a brief questionnaire to ascertain their teaching experience and roles within the school in advance of the interviews.

Ethical approval complying with the British Educational Research Association's (BERA) (2018) guidelines was sought through, and granted by, Ulster University and was formally agreed by Dublin City University. Informed consent was obtained digitally from the principal of each school and from each participant.

Participants

Three post-primary and three primary schools were recruited for the study – three in Northern Ireland and three in the Republic of Ireland (Table 2). A purposive sampling strategy was used, within which researchers approached schools known to demonstrate the following sampling criteria:

- a strong positive wellbeing culture for staff;
- a strong sense of leadership and innovation in the use of digital technologies;
- an openness to the use of digital technologies to support teacher practice and potential wellbeing; and
- strong home-school partnerships.

To do so, researchers applied their knowledge gained through involvement in digital technology support throughout Northern Ireland and the Republic of Ireland in 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.

Once schools were recruited, individual school principals and, in one case, a deputising senior school leader, purposefully identified teachers to participate in the study, based on their role and involvement with digital technologies, to represent senior- and middle-leadership levels as well as classroom practitioners. In total, 23 participants engaged with the researchers, comprising five school principals, three senior leaders, and 15 teachers; 13 of the participants identified as females and ten as males. The objectives of the study necessitated discussion with those in senior-, middle- and classroom-leadership roles. In the case of the smallest school, a single individual occupied both a middle- and a senior-leadership position due to small staffing numbers. The data collected reflect the dual nature of their role.

Table 2

Details of Participating Schools

School number	Jurisdiction	School type	Enrolment
1	Northern Ireland	Post-primary	≈1200
2	Northern Ireland	Post-primary	≈500
3	Republic of Ireland	Post-primary	≈1100
4	Republic of Ireland	Primary	≈70
5	Northern Ireland	Primary	≈400
6	Republic of Ireland	Primary	≈1000

Analysis

Data were analysed separately for each school using Passey's (2021) framework to identify and record how participating teachers were thinking about the ways digital technologies might be advantageous to their wellbeing. The focus of the analysis was not to draw comparisons, but rather to test the validity of the research framework and, where

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relevant, to extend the identification of ways in which technology might benefit the wellbeing of teachers.

A rigorous method was employed to ensure inter-operator reliability during the analysis of interview transcriptions. Initially, multiple interviewers were tasked with independently codifying the transcribed data, by assigning codes to significant factors and features that emerged from the interviews. Following this individual coding process, the interviewers convened to engage in a comparative analysis of their conclusions, to discuss any discrepancies, and to reach a consensus on the most appropriate code for each of the factors. This collaborative process not only improved the consistency of the coding but also facilitated a richer understanding of the data. To further verify inter-operator reliability, an additional member of the research team, blinded to the initial coders' process, was enlisted to review and assess the finalised codes. This additional evaluation provided an unbiased perspective on the reliability of the findings, ensuring that the conclusions drawn from the data were robust and credible.

Results

Data from the interviews were used to identify key characteristics, strategies, or approaches in effectively embedding technology in education in ways that might benefit the wellbeing of teachers within each of the schools. In School 1, there was a deliberate 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. The main characteristic that emerged in School 2 was the theme of "Resilient Teaching for Blended Learning" supported by a practical approach of "Invest to Save" which referred to the time and effort saved as a result of the initial effort required to post content online. In School 3, a strongly collaborative corporate culture was evident, enabled through reliable technology used in safe, secure, and professional ways. In School 4, the technology focus was on a

pedagogy-led innovative and impactful practice across the breadth of the curriculum. School 5 was focused on the theme of changing leadership from a recently-appointed principal. School 6 was undergoing transition with respect to embedding technology in practice, under the direction of a new principal leading improved digital technology resourcing in parallel with initiating developments in pedagogy, through a STEM-led approach. The identification of these key characteristics, as an outcome of the semi-structured interviews, emphasised the individual circumstances of each school and the breadth of means through which schools could seek to improve the wellbeing of teachers through utilising digital technology.

The unique characteristics of each school were recorded, mapped against the framework, tabularised, and summarised to reflect the frequency of each factor and feature noted by Passey (2021). Table 3 shows the elements of the framework identified throughout the six case studies, indicating how teachers perceived their wellbeing to be benefitting from the use of digital technology.

The results outlined in Table 3 illustrate how the most popular factors identified as beneficial for teachers' wellbeing can be mapped against the *activities and outcomes* feature of Passey's framework. Regarding the *effects on physical, social, and psychological wellbeing*, it is apparent that, compared to other aspects of the framework, teachers speak to a lesser degree about such factors. There is, for example, an apparent potential reticence amongst teachers to reflect and speak overtly about matters relating to exhaustion, trust, and health. Similarly, more personal factors relating to digital wellbeing, such as personal satisfaction and emotional positivity, are reported with less frequency.

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Table 3

Factors Influencing Teacher Wellbeing Based on Self-Reports and Listed by Frequency

Features concerned with teacher wellbeing	Factors influencing teacher wellbeing	*Total* number of schools where factor was recorded at least once (max. 6)
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

Features concerned with teacher wellbeing	Factors influencing teacher wellbeing	*Total* number of schools where factor was recorded at least once (max. 6)
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

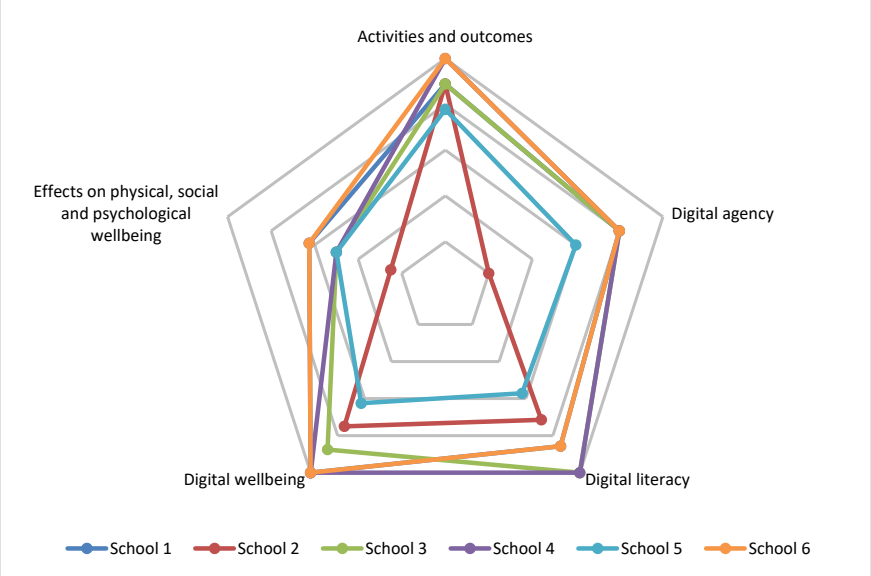
Features concerned with teacher wellbeing	Factors influencing teacher wellbeing	*Total* number of schools where factor was recorded at least once (max. 6)
Effects on physical, social, and psychological wellbeing	Reducing exhaustion	1
Effects on physical, social, and psychological wellbeing	Reducing reliance on tools considered unhealthy	1

Note. Colour used to show distribution by feature throughout the table.

To assist visualisation of the aspects of the framework on which those interviewed most prominently focused and reported their thinking on teacher wellbeing and digital technology use, each case study was summarised in a star-type figure. These figures map the recorded frequencies of factors per feature against the maximum number of factors per feature. Figure 2 shows an overlaid star-type diagram for all six schools. Data were standardised as percentages to enable visual comparisons across each of the features. For example, participants from School 6 reported on all factors within the framework related to the features *activities and outcomes*, as well as all factors pertaining to *digital wellbeing*. Conversely, School 2 reported on fewer factors in both these features, and slightly over a fifth of the factors associated with *digital agency*. It is important to emphasise that the percentage values have been deliberately excluded from this representation. As such, this analysis should not be interpreted as a metric of weaknesses or strengths in the attitudes or practice of schools, leaders, or staff members towards teacher wellbeing. The diagram is, instead presented as, a visual fingerprint of the responses linked to the framework from the participants in each school at the time of the study. The dominance of discussion relating to, for example, *activities and outcomes* is clearly evidenced across all schools, as is the marked lower reporting *effects on physical, social, and psychological wellbeing*.

Figure 2

Frequency of Factors Perceived as Influencing Teacher Wellbeing Identified by School and Grouped by Feature



The following section reports how teachers and school leaders perceived the links between their adoption or use of digital technologies and their wellbeing. Their responses are presented in Table 4 and evidence how teachers and school leaders perceive digital technologies to have positively impacted on their wellbeing. In so doing, they emphasise the value of using Passey's (2021) conceptual framework and research instrument to identify the range of ways in which technologies have been shown to positively influence teachers' wellbeing so that these can be better understood.

Table 4

Examples of Participant Quotations Linked to the Feature, Factor, and Relevant Code Influencing Teacher Wellbeing from Passey's (2021) Conceptual Framework

Feature	Factor	Code	Examples of participant quotations
Digital Literacy	Supporting information and data literacy	A3	"…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." (Principal, School 1)

Feature	Factor	Code	Examples of participant quotations
			"…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." (Principal, School 1)
Digital Agency	Feeling more responsible for one's actions	B2	"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."
		B2	"…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." (Principal, School 1)
	Feeling that there has been a positive impact on learning	B4	"'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." (Classroom Teacher, School 4)
Digital Wellbeing	Feeling motivated from digital technology use	C1	"…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." (Classroom Teacher, School 2)
	Feeling motivated from digital technology use Feeling the use has value for learning	C1 & C2	"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." (Classroom Teacher, School 2)
	Feeling the use has value for learning Supporting recording of evidence	C2 & C8	"…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." (Classroom Teacher, School 1)

Feature	Factor	Code	Examples of participant quotations
	Feeling personal satisfaction Feeling professional satisfaction	C4 & C5	"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." (Principal, School 1)
Activities and Outcomes	Support for planning	D1	"…aids lifework balance." (Digital Leader, School 3) "So in terms of teacher wellbeing, it reduces the workload on an annual basis." (Classroom Teacher, School 1) "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." (Classroom Teacher, School 1)
	Feeling access is easily feasible	D4	"…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. Just as I come in and out all day, [I] will answer emails or forward." (Principal, School 1)
	Having access to digital technologies to support interactions in class or beyond Supporting pupil practice	D5 & D8	"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 gos." (Classroom Teacher, School 2)
	Support for planning	D1 & D8	"…it's raised standards for everyone really... teachers and students alike. For teachers it's allowing us to be

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Feature	Factor	Code	Examples of participant quotations
	Supporting pupil practice		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 it's a really positive one." (Classroom Teacher, School 3)
Effects on physical, social, and psychological wellbeing	Reducing workload	E9	"…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." (Digital Leader, School 1) "…it's easily accessible for parent-teacher conferences. We can create their marks over the term, over the year and into a table or a grid that just opens at a parent-teacher meeting." (Classroom Teacher, School 1)
	Gaining more trust from managers	E18	"...within Microsoft Teams we've created dedicated channels… [and colleagues] have tasks to work on it, which I've given them dedicated hours. At the end of the day, I'm quite happy for them to go home and work independently without feeling the need to be in school and be interrupted because we have a shared OneDrive." (Principal, School 5)

Extension and Validation of the Framework

In addition to the identification of elements of the framework, the six case studies provided evidence extending Passey's original 2021 research framework by identifying seven additional factors or recurring subsets of existing factors reflecting ways in which teachers perceived their use of digital technologies to ease and enrich their pedagogic practices (see Table 5). These additions highlighted how, for some teachers, using digital technology enabled them to more positively augment their workloads through sharing workloads with colleagues and being able to offer students opportunities to access classwork more independently. Furthermore, teachers reported that knowing that technological failures can be fixed, usually through the availability of local technical

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support from teaching and support colleagues, was an important factor in reducing stressors linked to the use of educational technologies.

Table 5

Additional Factors, or Subsets of Existing Factors, Identified in Case-Study Schools Extending Passey's Original 2021 Framework

Additional factors/subsets of existing factors identified	New factor or subset of existing factor	Total number of schools in which these were identified
Improving student access to classwork	New	5
Reducing time in subsequent years	Subset of 'Reducing workload – E9'	4
Connecting or sharing with other educators beyond the school	New	4
Knowing technology issues can be fixed	New	4
Sharing of teacher workload	Subset of 'Reducing workload – E9'	4
Supporting student, class or group management	New	3
Reducing marking workload	Subset of 'Reducing workload – E9'	1

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The analysis of the six case studies also positively validated, strengthened, and extended the value of the research framework in three main ways. Firstly, findings confirm that there was a strong digital learning culture in all of the schools and this was reflected in the breadth of perceptions teachers demonstrated in relation to the benefits of digital technologies for their wellbeing. Constructive uses of digital technologies were also identified arising from perceiving the role of technologies as an aid to the professional duties of the teacher (in administration and management, pedagogy, and professional learning and development), rather than as a technology-led intrusion into their practices. Finally, it extended the agency

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

Conclusions and Implications

This study set out to evaluate Passey's (2021) framework through validation and, where relevant, to extend the identification of ways in which technologies might promote the wellbeing of teachers. The findings presented validate and strengthen the value of the research framework beyond Passey's (2021) case studies in Northern Ireland and Germany on which it was based. The findings also support an extension of the original research framework by identifying additional factors and ways in which teachers perceive digital technology to ease and enrich their professional practices; for example, through the sharing of teacher workload and by knowing that technology issues can be fixed.

Each case-study school was uniquely described through Passey's (2021) framework, with details provided of the approaches used to embed specific or effective adoption of digital technology that might (directly or indirectly) benefit the wellbeing of teachers. The findings illustrate that a variety of digital technology options are available to primary and post-primary schools which may benefit the wellbeing of teachers.

When the data were analysed, and factors influencing teacher wellbeing listed by frequency, it was apparent that factors concerned with the *activities and outcomes* feature, closely aligned with teaching and learning, were most commonly identified to be benefiting teacher wellbeing. Factors influencing a teacher's *physical, social, and psychological wellbeing* were least commonly identified 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.

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As a result of this research, several areas have been identified for future study. Firstly, research to date has tended to focus on teacher stress but not on teacher wellbeing; therefore, research identifying and addressing those issues negatively impacting on teacher wellbeing and how to overcome them is recommended. Secondly, it is important to investigate how digital technologies can be utilised to enhance the physical, social, and psychological wellbeing of teachers. Although these aspects of wellbeing did not feature much in the reports of participants, it is crucial to explore ways in which teachers can appreciate and benefit from digital technologies that promote all aspects of their wellbeing. Thirdly, future work could be based on a wider sample of schools with a focus on identifying those factors that are most directly associated with teacher wellbeing.

These findings may be particularly relevant to the concerns of those responsible for policy and practice development both at school and at regional levels, to help teachers and leaders to identify how the use of educational technologies may positively impact their wellbeing. Regionally, it would be beneficial to incorporate Passey's (2021) extended framework into teacher professional learning frameworks and to ensure that external support for school improvement and teacher wellbeing highlights constructive examples of practice. Similarly, schools could adopt the extended framework into their school self-evaluation and improvement process as a means of recognising and sharing examples of constructive practices. This would promote better understanding and adoption of digital technologies, thereby enhancing the professional and personal wellbeing of their teachers.

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