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D3.2. Digital Well-being Framework

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Executive Summary

The Digital Well-Being Framework has been developed through several steps in WINDEE project. First, WINDEE partners implemented theoretical literature review and prepared desk research report (D2.1 Literature review and desk research report by Mettis, Leoste, Vaat, 2025) which contains explanatory argumentation about the conceptual understanding of digital well-being, positive and negative effects of digital tools towards digital education ecosystem, students digital well-being, factors influencing digital well-being, as well as the role of digital competences, learning environments and curriculum designing in maintaining the state of being well in digital education. Therefore, the factors affecting digital well-being were taken from this report from the research references mentioned here, but also from the list of factors analysed in previous literature review. The same happened to the main strategies of digital well-being which were shaped in this report from the systematic analysis and content analysis implemented reading through previous three deliverables in WINDEE project: literature review, assessment of digital tools and technologies, as well as policy mapping in digital well-being in education.

In this way, the findings from all three previous deliverables went through meta-analysis and content analysis to find and identify:

- Epistemological approach to the argumentation of digital well-being concept and definition of the state of well-being and the problem field
- The choice of theoretical perspective of self-determination theory which is based on the competence, autonomy and relatedness
- The ten strategies enhancing and maintaining digital well-being at school, which had to be validated with the stakeholders through empirical research
- The factors affecting digital well-being at classroom level, as well as the indicators which are embedded in the theoretical chapters of this report.

These items appear as structural items of this report before validation with the updated and argued sequence leading to the digital well-being framework, which:

- Puts the student and the teacher in the centre of the classroom – they are in the epicentre of the digital well-being state, surrounded by other school stakeholders (leadership, parents, and other stakeholders)
- Each school needs to take into account the factors affecting student and teacher digital well-being, as well as the indicators showing when the state of well-being is in balance or not
- The school which is aware of the multiple strategies affecting positively digital well-being at school digital education might then seek of existing resources (training material, tools, resources, methodologies and frameworks, existing on European, regional, national or global levels) to work with the application of the strategy to bring the balance of this state back to the classroom, supporting students and teachers with their well-being state maintenance.

After the first draft of the Digital Well-being Framework was proposed, the framework has been validated with the stakeholders from all partners countries, implementing the focus groups with them through the discussion and open talks. The methodology of this research is presented in the chapter called "Validation of Digital Well-being Framework through Stakeholder Consultations".

The validated framework is presented in Chapter 6 "The Digital Well-Being Framework", and already contains additional strategies which were proposed through multiple iterations by the stakeholders, who said that leadership and management decisions and roles can never be underestimated (even though they are covered by other strategies, they do deserve as separate one), as well as parent education programs, integration of digital well-being into school curriculum, and, of course, the challenges experienced by students, teachers, school leadership, parents and all society members due to the leap of AI. These strategies were added to the framework after validation.

Finally, recommendations for school education stakeholders on how to use the framework are presented in chapter 7 "How to Use the Framework in Practice".

1 Definition of Digital well-being - research arguments

1.1 Digital well-being definition and problem field

Technological progress over the last two decades has transformed teaching and learning processes requesting to review the quality of digital educational practices that enhance students and teachers' digital well-being. We describe the concept of digital well-being following Abeele (2021) digital well-being dynamic model as "a subjective individual experience of optimal balance between the benefits and drawbacks obtained from mobile connectivity. This experiential state is comprised of affective and cognitive appraisals of the integration of digital connectivity into ordinary life. People achieve digital well-being when experiencing maximal controlled pleasure and functional support, together with minimal loss of control and functional impairment".

Research says that the problem of frequent and excessive use of technology is increasingly being observed in terms of its negative impact on people's daily activities such as:

- **Physical and psychological harm**, including brain and sight problems, caused by the length of the screentime and overuse of mobile devices. Research shows that students add learning / school screen/ mobile device time to their leisure time spent using screen/ mobile devices. Screen time has been negatively associated with the development of physical and abilities, and positively associated with obesity, sleep problems, depression and anxiety. **Physical** activity does not compensate for the adverse effects of screen time. However, researchers claim that multitasking and activities "ill-fitting the purposes" may be specific contextual factors negatively influencing physical and cognitive conditions among children, and thus wider range of user - focused research is needed to inform clear and unambiguous conceptualisation of screen time, including "goal - oriented behaviour".
- **Cognitive harm**, due to attention deficit, digital fatigue, brain fog caused by additive design of technologies (automatic play, endless scrolling, attention design, notifications, likes and more). Poor academic performance due to cognitive "failures" like fatigue and brain fog, loss of concentration and cognitive ability will affect lower academic achievements, as they have been proved to be interrelated. Moreover, academic success has bidirectional or reverse relationship with self-concept development. Poor academic performance and lower academic achievements consequently thus may trigger self-esteem of a personality.
- **Emotional and psychological harm**, including stress and prolonged anxiety due to addictive use of smartphones, internet and Facebook, which act as stressors if used, again, "ill-fitting the purpose". Due to the fact that we (and students) hardly "disconnect", we experience negative emotions such as emotional exhaustion and anxiety. And this applies to both students and teachers. Moreover, research findings

show that teachers present high levels of anxiety or stress due to their use of educational technology in the classroom. Researchers claim that there is the need to examine different strategies applied in the classroom to prevent the emergence of these anxiety and stress symptoms in teachers.

From the perspective of technology user, the problem of digital well-being is understood as a **loss of autonomy** and **control** over the use of technology. The user lacks self-regulation and control, frustration, stress and other problems arise (Cecchinato et al., 2019). Exploring the interaction between the person and technology (Vanden Abeele, 2021, Buchi, 2024), the development and implementation of self-monitoring tools (Diefenbach, Lukoff et al., 2023) the implementation of disconnected strategies (Radtke et al., 2022) emphasise balance established between the "burning with" and experiencing the pressure and the challenges and the resources and personal physiological, cognitive, emotional and psychological needs to disconnect and "breath in".

However, digital well-being in digital education ecosystem is not just an effort to spend less time online or satisfaction with technology use. A secure relationship with technology through the development of digital well-being competences and ethical problem - solving is obviously a part of the balanced state of the person, too.

1.2 Theoretical perspective to foster digital well-being through competence, autonomy and relatedness

Research theories closely linked with the problem field of digital well-being are based on three approaches:

1) User - technology interaction (Technology acceptance model, Human Computer Interaction theory by Davis, 1989, and others)
2) The needs and characteristics of the technology user, which are drawn from well-known theories of psychological well-being (e.g. Self-Determination Theory, by Ryan and Deci, 2017)
3) The commitment made by major technology companies, such as Google, to provide every user with the tools to develop their own sense of digital well-being (Al-Mansoori et al., 2023)

In Windee project, we consistently follow the understanding of digital well-being as a state of optimal psychological experience and functioning (Deci, & Ryan, 2008), considering that technology and its characteristics can promote greater engagement, as well as create addiction due to person, device and context specific factors. Therefore, **Self-Determination Theory is chosen for WINDEE framework of digital well-being** and will be explained in terms of crucial factors (grounded in research literature analysis implemented in WINDEE project and published in Deliverable D2.1), grouping them into person, device and context - specific factors in the framework.

A key feature of the Self-Determination theory (Ryan & Deci, 2017) is that it analyses these factors of personal motivation, needs and relationship development in social contexts and can be applied systematically in social contexts, including school, family, classroom, workplace, technology designing context, policy context and more. The theory covers both, the proximal context of the individual, as well as the political, cultural, economic context, and is based on the notion of the well-being and motivation of the individual depending on the satisfaction of basic psychological needs (autonomy, competence and relatedness).

In the context of digital well-being, technology design is classified as an independent variable, while basic psychological needs (autonomy, competence and relatedness) act as mediators that affect the dependent variables - motivation, engagement and well-being.

The following chapters of the Digital Well-being Framework structure explanatory document will be built upon explanation of:

- **Indicators** (based on WINDEE D2.1) that digital well-being state is balanced or at risk along with positive and negative effects of the application of technologies in education
- **The state of digital well-being and the personal needs** (autonomy, competence and relatedness elements) that are characterising it (ref. WINDEE Deliverable D2.1)
- Strategies to facilitate and maintain the state of digital well-being balanced in high quality digital education practices
- **Person, device and context specific factors** affecting the state of digital well-being at classroom level
- **The principles and practical recommendations** of application of the mode to maintain the digital well-being at school

2 Indicators of the balanced state of digital well-being

Many researchers described the state of digital well-being. WINDEE project Literature review and desk research report (Mettis et al., 2025) provides **a list of indicators when this state of digital well-being is achieved**: the learner demonstrates enhanced engagement and motivation, noticeable through interactivity, personal feedback, demonstrated confidence. The teacher and the learner can act autonomously, apply critical thinking and demonstrate their digital competences in selecting and applying suitable technologies for learning and teaching, implementing high quality digital pedagogy which leads to ethical, timely, balanced use of technologies, academic achievements bringing satisfaction to both, teachers and students, followed by academic integrity. School community demonstrates careful approach to psychological, physical and emotional needs of each other, critical awareness of balanced use of technology, psychological resilience to technostress and hype of technology immediate application or overuse of digital solutions with ill-purposes. Teachers and students are within digital balance when schools support and properly manage digital demands, ensure accessibility and flexibility of digital infrastructure meeting digital pedagogy needs, and EdTech solutions are sustainable and prove the added value to learning and teaching. Creative and ethical thinking of all school stakeholders result into socially - conscious and socio - emotional good.

The indicators described in detail in Literature review and desk research report (Mettis et al., 2025), describing when digital well-being state is balanced or at risk along with positive and and negative effects of the application of technologies in education are presented in Table 1. Each indicator is defined in terms of the personal state or ability (can be applicable to both, the student and the teacher):

Table 1. Positive and negative indicators of the state of digital well-being

No	Positive indicators (digital well-being is balanced)	Negative indicators (digital well-being is at risk or disbalanced)
1	Able to focus and pay attention	Reduced attention span
2	Feel emotionally well	Feel emotional fatigue, exhausted
3	Feel safe and confident in digital space	Feel vulnerable in cyberspace
4	Able to think fast and be cognitively active, stays efficient	Feel reduced cognitive capacity and overload
5	Feels well in social interaction	Feels social stress, demonstrates interpersonal conflicts
6	Academically is achieving well	Experiences educational gaps
7	Is not stressed about learning tasks	Feels anxiety and overload, delayed with tasks

8	Is satisfied with learning or teaching activities	Feels reduced satisfaction with learning or teaching
9	Feels confident and well with social media	Feels stress about social media use
10	Is able to detach from technologies any time	Feels addicted to technology and experiences constant online expectations
11	Feels that the use of technologies is balanced	Feels excessive use of technologies and overload of digital content, feels constantly connected and needs to check updates
12	Receives adequate support	Does not receive adequate support
13	Feels digitally competent	Feels lack of digital competences
14	Have sufficient accessibility to digital content	Feels lack of digital accessibility
15	Is satisfied with the choice of technologies	Feels overwhelmed with technologies and inadequate choice
16	Uses technologies for a purpose	Observes obsessive use of technologies

These digital well-being state indicators can be grouped into inter-related categories of the essential personal needs of the individual (the learner, but also the teacher) in terms of their satisfaction and well-being - competence, autonomy and relatedness, which is described in the next chapter and is effective during the interaction with other people and technology.

3 The strategies to enhance and maintain Digital Well-being at school

WINDEE Digital Well-being Framework suggests that schools familiarise themselves with the Strategies that enhance and maintain students and teachers digital well-being and prepare the resources (in terms of training material, instruments, procedures and supporting resources, as well as guidelines, measurement instruments and other means) to monitor the state of digital well-being and apply interventions needed to prevent negative effects of application of technologies in education.

The challenges caused by a variety of person, device or context specific factors, should be immediately considered as a serious load for students and teachers that they cannot tackle with and support from school, school stakeholders and policy makers is needed. The state of digital well-being is achieved when the challenges and the resources are within the balance (see Figure 1):

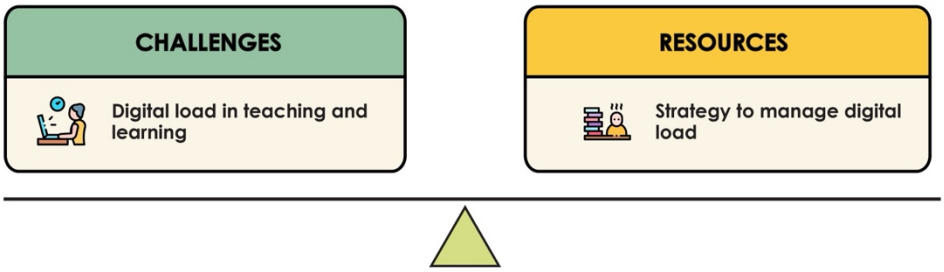

Figure 1. The balance ensures digital well-being.

However, if any of the negative indicators are observed (listed, but not limited to those in Table 1), strategies to balance the challenges with the resources need to be applied.

WINDEE literature findings and deliverables recommend the following Digital Well-being Strategies which would respond to the essential needs of the individual well-being of students and teachers at schools (see Table 2):

Table 2.

Essential needs of the individual well-being (students and teachers)	**Competence**	**Autonomy**	**Relatedness**
They learn and teach at school which properly manages digital demands (digitally competent school)			
Teachers create and students follow high quality digital learning and teaching practices			
Teachers and students are digitally competent			
Teachers and students have critical awareness on the balanced used of digital technologies			
School community nurture healthy habits			
School community demonstrates psychological resilience			
Teachers and students maintain physical and mental health			
Teachers and students enhance socio-emotional good			
Digital technologies contribute to better academic achievements, foster academic integrity and ethical thinking			
School community is able to select high quality sustainable EdTech solutions supportive for learning, teaching and assessment			

Even though the student and the teacher are in the epicentre of the classroom and the ones who directly may observe if the digital well-being state is balanced, peer support and school community support, including parents and school founders play a very important role in the framework.

Each strategy conveys already numerous existing instruments and resources to track and monitor digital well-being of students and teachers. Some of them are described below under each Strategy short description with the references to existing policy, research and practice instruments and models that can immediately be applied to support schools with digital well-being.

Sometimes high-quality digital education practices that enhance digital well-being enable monitoring of digital well-being state with the purposefully designed EdTech solutions (please, see Best practice examples at the Case study report D3.1. High – quality Digital Education

Practices). All subjective and objective data is important in diagnosing negative digital well-being balance or disbalance and preparing and implementation of the intervention with the purpose to enhance and facilitate digital education practices so that their participants feel digitally well.

On the other hand, giving full recognition to the EU frameworks and models to support school high quality digital education practices, as well as research and practice models on national and institutional levels, we may state with confidence that ignoring or missing these Strategies affects negatively the state of digital well-being. However, it is not sufficient to be familiar with the Strategies suggested, they should be supported with the resources and practical applicability developing best practices and case study examples.

Short overview of the Strategies suggested in the framework will not elaborate the need for the Strategy application in more detail but rather refer to existing European models and frameworks that can serve as the potential and best practice examples. The link with other Strategies will also be shortly referred to, as some Strategies overlap and have similar elements, but they are more explicitly addressed in WINDEE Case study report (D3.1).

3.1 Managing Digital Demands

Digital demands for school education refer to the changing demands that educational institutions must meet to prepare students for a world increasingly dominated by technology. These demands encompass a variety of aspects, including the integration of digital tools and effective learning strategies, the attitudes and readiness of educators to develop digital competencies, and the overall need for institutions to adapt their curricula to meet modern pedagogical needs. One of the key aspects of digital demands is the integration of digital educational technologies into school management, teaching, learning, and assessment. The effective use of technology can improve students' and teachers' digital competences, which are essential for success in today's digital age.

The European Framework for Digitally Competent Educational Organisations (DigCompOrg) provides a comprehensive framework designed to enhance the management and integration of digital demands within educational institutions. By fostering a structured approach to digital transformation, DigCompOrg offers crucial insights into how organizations can adapt and thrive in an increasingly digital environment. The main purposes of DigCompOrg framework are (i) to encourage self-reflection and self-assessment within educational organisations as they progressively deepen their engagement with digital learning and pedagogies (ii) to enable policy makers to design, implement and evaluate policy interventions for the integration and effective use of digital learning technologies (Kampylis, 2015).

The DigCompOrg framework is complemented by the digital SELFIE (Self-reflection on Effective Learning by Fostering the use of Innovative Educational Technologies) tool. SELFIE is a self-assessment tool that allows educational organizations to collect feedback and improve their digital capabilities, thus managing digital needs more effectively. Thanks to it, schools can gain valuable insights into their digital technology implementation and the competence of staff

and students, to measure strengths and weaknesses of their use of digital technologies and teachers' digital competences.

3.2 Digital Pedagogy

A key feature of digital pedagogy is its emphasis on integrating technology into educational systems to promote active student engagement and success. It involves teachers in new forms of teaching that respond to the lived experiences and technological realities of learners. This includes multimedia, social networks and collaborative platforms that facilitate peer interaction and collective knowledge creation.

One of the key aspects of digital pedagogy that directly relates to student well-being is the creation of learning experiences that prioritize engagement and inclusion. The connection between digital pedagogy and digital well-being is inseparably linked and crucial to creating effective learning experiences. By focusing on inclusive, engaging learning models, addressing the psychosocial challenges associated with the use of technology, and ensuring a supportive environment for both teachers and students, educational institutions can successfully improve learning outcomes and well-being in a digital context

Research is rich with the findings on when digital pedagogy meets high quality learning and teaching experience. Practical instruments exist on institutional or national levels rather than EU level, including instruments to measure the quality of learning design. High quality digital pedagogy is directly linked and affected by digitally competent teachers and students.

3.3 Student and Teacher Digital Competences

The Digital Competence Framework (DigComp) is a comprehensive framework developed by the European Union to improve citizens' digital competence. It categorizes essential digital skills into five main areas: information, communication, content creation, security and problem solving. It also describes eight proficiency levels, examples of knowledge, skills and attitudes, and use cases in education and employment contexts.

One of the most important frameworks is the Digital Competence Framework for Educators (DigCompEdu), which defines the necessary skills and competences that educators need to develop in order to effectively integrate digital technologies into their teaching practices. This framework specifically aims to improve the capabilities of educators, thereby improving the overall digital competence of their students.

Recently proposals on how both, DigComp and DigCompEdu frameworks may be updated with Artificial intelligence competences and data literacy competences. European Digital Education Hub Squad and Community of Practice work made tremendous contributions to the updates of these frameworks and instruments.

3.4 Critical Awareness on the Balanced Use of Digital Technologies

A critical understanding of balanced digital technology use is becoming increasingly important in our networked and technology-driven society. As we become more dependent on digital tools for everyday tasks, understanding how to consciously manage these technologies is essential for maintaining well-being and efficiency.

Critical awareness on the balanced use of digital technologies is suggested by research which recommends approaching it in the following ways:

- Personal awareness of balanced use of digital technologies - personal understanding of balanced use of digital technologies includes developing digital awareness, understanding digital citizenship, recognizing the need for purposeful use of technology, and understanding the importance of privacy issues
- The role of education in promoting awareness of the balanced use of technologies - the role of schools, parents, teacher training institutions, universities, other education institutions cannot be overestimated when it comes to the conscious and responsible use of technology.
- Community engagement for balanced use - promoting a culture of thoughtful and conscious use, the negative impact of technology on personal well-being and societal functioning can be effectively managed creating a modern competitive society.

3.5 Physical and Mental Health

As already mentioned in other Strategies, mobile devices, especially smartphones, encourage constant connectivity, which can lead to excessive screen time and addiction, ultimately leading to a variety of physical health problems. For example, prolonged smartphone use has been linked to musculoskeletal problems, particularly in the neck and shoulder area, and can contribute to digital eye strain.

Digital games have complex effects on both physical and mental health. While games can promote social interaction and provide cognitive benefits, excessive gaming is associated with negative consequences such as social isolation and increased anxiety and depression. Educational initiatives aimed at both youth and parents can play an important role. Parental involvement in monitoring gaming activities significantly reduces the risk of developing addictive tendencies among youth.

Schools can significantly mitigate the negative impacts of digital interactions and improve students' physical and mental health in the digital age by implementing comprehensive programs that prioritize physical activity, emotional health education, community engagement, parental involvement, mindfulness practices, and ongoing evaluation of health initiatives. By addressing these factors, schools not only improve students' digital well-being, but also prepare them to succeed in an increasingly digital world.

3.6 Academic Achievements and Academic Integrity

The joint effort of digital technologies and academic integrity presents both a challenge and an opportunity. Educational institutions need to refine their integrity policies to encompass new technological realities and actively promote a culture of ethical academic practices that will allow them to reap the benefits of digital technologies while mitigating the risks associated with them. This comprehensive understanding is already very important for educational institutions and academic communities that face complex academic issues in an increasingly digitized world.

Academic achievements, academic integrity and digital well-being are deeply interconnected; promoting one supports the other. By understanding and addressing the concerns surrounding both aspects, educational institutions can create an environment that not only discourages dishonesty but also enhances student engagement and success. This comprehensive approach ensures that students navigate the digital world with integrity and confidence, leading to more ethical, responsible, and fulfilling academic experiences.

There are considerable contributions in Europe made by the European Commission to address ethical use of digital technologies, especially artificial intelligence and data in teaching and learning. The "Ethical Guidelines on the use of AI and data in teaching and learning for educators" was published for primary and secondary teachers with little experience in digital education.

3.7 Healthy Habits

Healthy habits in the context of digital technologies include not only the effective use of health-related digital resources but also maintain a balanced approach to technology use to prevent adverse effects such as digital addiction and to enhance overall health outcomes through effective digital engagement. Digital tools motivate individuals to adopt healthier habits, such as regular physical activity and balanced nutrition, also empower them to maintain these behaviours over time. Digital tools such as fitness trackers, health apps, and remote healthcare platforms are increasingly being used to promote healthy lifestyles. These tools facilitate self-monitoring and habit tracking, encouraging users to engage in physical activity, maintain a balanced diet, and effectively manage their overall well-being.

Healthy habits have direct impact upon other Strategies suggested in the Framework and solve the following challenges:

- Sleep quality
- Excessive use of social networks and mobile devices
- Attention span and focus
- Physiological posture issues related with headaches and musculoskeletal disorders
- Psychological problems and cognitive problems.

Promoting healthy habits through digital tools, encouraging real social interaction, and striking a balance between being connected and disconnected are essential strategies for improving overall well-being in our increasingly connected world.

3.8 Psychological Resilience

Psychological resilience, defined as an individual's ability to adapt and recover from setbacks, provides individuals with the skills necessary to maintain psychological health when faced with digital stressors such as cyberbullying, information overload, anxiety related to social media, rapid technological change, digital infrastructure.

Digital stressors can manifest in a variety of ways, including information overload, social media fatigue, digital fatigue, cyberbullying, misinformation and the constant need to be connected, all of which contribute to increased anxiety, exhaustion, and poorer mental health. One of the main factors contributing to stress in educational institutions is *technological stress*, which arises from the enormous pressure to constantly adapt to new virtual environments, technologies, and digital tools. Research shows that many educators experience high levels of technostress, especially during rapid transitions to digital learning environments.

Resilience is associated with strong social support networks and positive interpersonal relationships. Social connections appearing in families, groups, organizations, and communities and their psychological impacts serves as criterion for resilience assessment. The main strategy for strengthening psychological resilience is to develop effective coping skills, especially in relation to digital stressors such as social media addiction. It has been found that individuals with higher psychological resilience tend to use functional coping strategies in stressful situations compared to individuals with lower resilience.

Developing digital competencies not only enables people to use technology effectively but also promotes coping strategies that strengthen psychological resilience. The development of digital competencies plays an important role in enhancing psychological resilience, as it enables individuals to manage digital stressors, use emotional and problem-solving strategies, and adapt to their environment. Future educational initiatives should prioritize the development of these competencies so that students are prepared for the various challenges posed by the digital environment.

3.9 Socio - Emotional State

There are no clear answers about the benefits of digital technology for socio-emotional outcomes of young children. It must be acknowledged that, although technological innovations offer many benefits for education and social development, it can also have a harmful effect on older student 's social and emotional well-being. This negative impact comes in a few ways, mostly including cyberbullying, spending too much time in front of a screen, less face-to-face interaction, and mental health issues. On the other hand, research findings say that emotional self-regulation apps and interactive games, can significantly improve key social and emotional skills, such as empathy and self-control, among students.

One of the main ways in which digital technologies promote social and emotional development is through tailored educational programs that use emotional self-regulation tools and interactive learning experiences.

A growing trend of digital storytelling and narrative structures are important tools for improving digital competences, while also relying on emotional narratives that resonate with students. Digital storytelling not only promotes digital competences but also improves social and emotional skills by encouraging students to delve deeper into content and reflect on personal experiences.

The European Commission developed "Guidelines for teachers to foster digital literacy and tackle disinformation" to ensure the effective development of digital literacy and tackling disinformation through the education and training process, teachers and educators need further support with guidance and hands-on examples. These guidelines serve as the mostly referred to guidelines and can serve as a powerful instrument to support schoolteachers in maintaining socio-emotional good.

3.10 Sustainable and Learning Supportive EdTech Solutions

High-quality educational technology (EdTech) solutions provide educators and learners with innovative methods for engagement in learning and teaching but also address critical needs for accessibility, inclusivity, and adaptability in various educational contexts.

Research suggests that sustainability is one of the crucial elements in selecting high quality EdTech solutions. However, countries have guidelines on the national level, often based with research recommendations, to select EdTech solutions based on the following criteria:

- Engagement and self-regulated learning
- Adaptive problem - solving
- Ethical aspects embedded
- Dialogue with research
- Legal compliance with the EU AI Act
- Sustainability solutions
- Accessibility and flexibility solutions
- Proven added value to education

4 Factors affecting Digital Well-being at Classroom Level

Digital well-being is always affected by person - specific, device - specific and context - specific factors. These may be personal state of the art on a specific day which is reasoned by family or personal life circumstances, as well as emotional state caused by device or context specific factors. It is difficult if not impossible therefore to align all digital well-being Strategies with the factors because of their different nature, but it is important to know the factors related with the school and classroom environment to prepare to minimize their effect for the balanced digital well-being state.

Table 3 shows the three categories of factors:

a) Person-specific factors including digital competences and the factors related with health considerations, individual and personal needs, ethical and legal application of digital technologies, social behaviour and ill- purposed application of technologies, as well as habits related with digital well-being.

b) Context-specific factors involving educational environment, learning design and digital pedagogy, and school culture related with ethical and legal use, digital well-being habits and socially conscious behaviour, technology regulation and managing digital demands.

c) Device-specific factors pertaining to the types of digital devices and best practices for safe and balanced use, including age policies, digital well-being features, compliance with EU regulation, cybersecurity provisions, and other features.

WINDEE project Literature review and desk research report (Mettis et al., 2025) provides **a list of factors** which can be consequently translated into the following categories of their nature (see Table 3). Some of the factors may already become obvious indicators of disbalanced digital well-being in the classroom, or, for example, can cause another negative effect, however, let's take them as the state-of-the-art outcome from literature analysis. The same factor can belong to more than one factor category:

Table 3. The factors from the school environment affect digital well-being in the classroom.

Factor	Person - specific	Device - specific	Context - specific
Smart phone age limit			
Balanced use of technology			
Social media use in classroom			
Excessive screen time			
Institutional support			

Digital competences			
Ill-purposed used of technologies			
Overwhelmed technology features			
Sustainability of EdTech			
Tech-overload			
Poor / inadequate infrastructure			
Cybersecurity			
Addiction to technologies			
Assistive technologies			
Inclusive pedagogy			
Well-being habits			
Digital pedagogy			
Socially conscious behaviour			
Ethics			
Legacy			
Individual needs			
Multiple learning environments			
Learning design			

The list of factors may be increased taking into consideration any geographical, regional, national political, social, cultural, economic and other factors. However, the concise list of the factors is not visible in the framework and is flexible for each school or its community to refine and adopt.

5 Validation of Digital Well-being Framework through Stakeholder Consultations

The suggested WINDEE Digital Well-being Framework was opened for expert and stakeholder consultation to refine and validate the framework, as well as to ensure that the framework is adaptable for different educational settings, demographics, and institutional context.

Framework draft was suggested first for partner institution internal reviewing and feedback. After the first feedback was received, partners discussed the methodology which would be appropriate to proceed with validation. With the agreement of the consortium, focus group discussions with the stakeholders was selected as the most suitable data collection method for qualitative research. This method was chosen to ensure that the Framework is validated with as broad representation of the stakeholders, as possible, including teachers, teacher trainers, school leadership, parents, associations of schoolteachers, EdTech representatives, university teachers and teacher trainers, researchers, VET school representatives, policy makers and decision makers in school education and other stakeholders.

The aim of the Framework validation was to identify which digital well-being strategies applied at school level are successful and relevant to ensure digital well-being at school, as well as to disclose the challenges of digital well-being which still raise many concerns for high quality digital education practices at school.

5.1 Methodology

Qualitative data was collected using the focus group discussion method. The discussion consisted of three questions which were prepared by researchers based on literature review, best practice collection and framework concept proposition. The discussion questions were formulated in English, considering that the participants in the research will be international, and the discussion will be held in English.

Given the complexity of the research aim, the purpose was to form groups comprising participants from different fields, i.e., school education, vocational training, and/or higher education teachers/lecturers, students, parents, policymakers, and EdTech providers and others.

Research participants were invited by sending a written invitation to participate in a focus group discussion. The invitation was distributed by project partners who shared it with schools, teachers, students, parents, policymakers, and EdTech providers and other stakeholders in their countries and networks.

Focus groups ensured that the Framework was validated by stakeholders coming from very different educational settings, demographics and different institutional contexts.

Invitation was sent by each consortium partner to their networks, indicated that:

- WINDEE project aims to define high quality digital education practices that enhance digital well-being and
- project team would like to validate Digital Well-being Framework which is being developed
- stakeholders who are related with the topic of digital well-being at school were identified by each partner institution and invited to participate in the focus group discussion
- the participation in the focus group is completely voluntary, with the opportunity to withdraw from the discussion at any time, along with the information about the anonymity of the participation, as well as confidentiality and personal data protection
- the data will be recorded and transcribed and then analysed solely for the aim of this research.

All participants joined the focus groups voluntarily and signed informed consent forms receiving the following focus group discussion guiding questions in advance:

1. *What is your current experience with digital well-being strategies applied at school level or teacher training in education?*
2. *Which digital well-being strategies are successful and relevant to ensure digital well-being at the school level?*
3. *Which digital well-being challenges still raise many concerns and issues at the school level? Which kind of strategies are needed to solve them?*

5.2 Stakeholder consultation demographics

All in all, 12 focus groups were conducted online, using MS Teams, with 60 participants and covering 9 countries' representation from November 18, 2025, until January 12, 2026. The most convenient time and place for the group discussion were agreed upon with those who responded to the invitation. Before the group discussion began, study participants were asked to sign an informed consent form. The duration of the group discussion was 60 minutes.

Focus group ID, country coverage and the numbers of participants per group are presented in Table 4:

Table 4. Focus group geographical representation.

Focus group ID	Countries participating	Organizing partner	Number of participants	Date, location
1. VMU - 1	LT	VMU	6	2025.11.18
2. VMU - 2	LT	VMU	6	2025.11.14
3. Educraftor - TLU	EE (3), FI (2)	Educraftor, TLU, VMU	5	2025.11.24
4. TLU - Educraftor	EE (4), FI (1)	Educraftor, TLU, VMU	5	2025.12.02
5. EDEN	LT (3), AZ (2)	EDEN, VMU	5	2025.12.01
6. NŠA	LT (6)	NŠA, VMU	6	2025.12.02
7. EUN	FR (1), BE (1), UK (1), RS (1), FI (1)	EUN, VMU	5	2025.12.03
8. VMU - 3	LT	VMU	6	2025.11.14
9. VMU - 4	LT	LieDM, VMU	6	2025.11.18
10. VMU - 5	LT	LieDM, VMU	6	2025.11.21
11. KIC	SI	KIC	4	2026.01.12
12. UOC	ES, DE	UOC	5	2025.12.16
	11 countries		**65 participants**	

Despite the fact that groups had from 4 to 6 participants, participants were invited to introduce themselves in the very beginning indicating their affiliation and the perspective of the stakeholder from which they could comment and discuss the questions raised. All in all, 12 stakeholder roles were found analysing the data from all 11 focus groups. They are presented along with the acronyms used further in Table 5:

Table 5. Stakeholder roles identified per focus group and their acronyms.

Stakeholder	Acronym used	Number in all focus groups	Countries represented
Teachers	T	26	LT, EE, UK, RS, DE
School leaders	SL	15	LT, EE, FI, ES
Parents	P	7	EE, LT, FI, ES
Students at HEI	SHE	1	EE, FI, LT

Teachers at HEI	THE	10	EE, FI, LT, ES
Teacher trainers	TT	13	BE, FI, EE, LT, ES
VET teachers	VETT	3	EE, ES, SI
VET school leaders	VETL	2	ES, SI
VET school students	VETS	1	SI
Policy / decision makers	PM	8	EE, LT, AZ, SI, FR, BE, FI
Teacher association representatives	TA	5	EE, LT, BE, FI, SI
EdTech representatives	EdTech	4	EE, LT, SI

Table 6. The following table shows how each role is represented in each focus group.

FG	T	SL	P	SHE	THE	TT	VETT	VETL	VETS	PM	TA	EdTech
1	3	3	-	-	-	-	-	-	-	-	-	-
2	4	2	-	-	-	-	-	-	-	-	-	-
3	1	-	1	-	2	2	1	-	-	-	-	1
4	-	1	-	1	3	4	-	-	-	1	1	-
5	-	-	1	-	2	2	-	-	-	2	1	-
6	3	1	2	-	1	-	-	-	-	3	1	2
7	1	1	1	-	-	3	-	-	-	1	1	-
8	5	1	-	-	-	-	-	-	-	-	-	-
9	3	3	-	-	-	-	-	-	-	-	-	-
10	5	1	-	-	-	-	-	-	-	-	-	-
11	-	-	-	-	-	-	1	1	1	1	1	1
12	1	2	2	-	2	2	1	1	-	-	-	-
	26	**15**	**7**	**1**	**10**	**13**	**3**	**2**	**1**	**8**	**5**	**4**

5.3 Summary by groups

Each focus group conducted for the framework validation and consultation on the high-quality digital education practices enhancing digital well-being was introduced with the proposal of the Digital Well-being Framework design proposed in the WINDEE project. Then focus group participants were invited to reflect on what digital well-being means for them, which strategies that they see in the framework are relevant and useful, which are still raising challenges for digital education in the school ecosystem, and how they see the concept of digital well-being shaping up.

First, the results from each focus group were summarised from the note taking done during the discussion. This summary was presented to the focus group members so that they approve and confirm that the main considerations are summarised correctly. They were also invited to add in case something is missing or if they want to add any reflections or comments to that.

Secondly, each audio recording was used to prepare the transcript record so that it is exactly matching the audio record. After the transcript was clean and exact, it was analysed to identify the prominent themes and patterns. Audio recording, text transcript and discussion notes were then taken together and analysed along with the quotes that reflect participants' statements.

Finally, a comprehensive overview of the main themes and patterns resulted from the discussion. Here are the main take aways from each of the focus groups presented in the summary table below:

Table 7. Statement and proposal summary per focus group.

1. VMU - 1
• **Digital competences** are very important for teachers and students to decide which technologies to use and which not to use in the classroom and outside the classroom • Multiple companies come to schools to present their solutions, but teachers cannot use all technologies, teachers need to select which technologies are useful for learning, and it takes time • **Limitation of mobile phones** at school should be discussed with the community, limitation is useful, but not banning technologies at all • The strategies suggested in the framework, namely, **healthy habits, psychological resilience, physical and mental health and socio-emotional** state are very important for digital well-being • An hour with the teacher (specific extra curriculum for schools in Lithuania), integrated subject classes, development of emotional intellect, integration of well-being into school curricular, participation in project work, international mobility - all such activities contribute to these strategies as **resources** for teachers
2. VMU - 2
• There are **dedicated applications and programs** like Lion Quests which develop socio - emotional skills, as well as books on the topic are **great resources** for teachers to keep digital well-being for themselves, and for the students • **Competence development** via peer learning is a great method to develop digital well-being competences • Classes for **digital hygiene** integrated into each subject are very useful **method**

- Schools need more awareness and training on digital competences of the school, the teachers and the students
- Social and emotional wellbeing is already a big step for digital well-being, but students and teachers **need more resources** to develop emotional intelligence, digital competences, as well as **technology application literacy skills** (how to stay safe on the internet, how to set up certain technologies, including AI features on computer, etc)

3. Educraftor - TLU

- **AI leap and human connection issues,** and AI in connection with the teacher, student and the human in general
- AI leap is related with the digital competences, but not only, as it is related with other system factors that are not specific, and AI may be considered as cross - area specific factor, sometimes could be considered as personal
- **Age specific curriculum**, the younger the people are they are usually trained with **social skills,** but the older they, they are trained with **digital skills**
- The emphasis was made on teacher digital competences and skills and student digital competences and skills
- Digital well-being should be as a part of school curricular integrated into different subjects on school level
- There is a **need that students have similar type and level of skills** to prepare for exams, for example, or **to work on the same level of curriculum** - that would enhance digital well-being
- Digital well-being could be a part of sustainability policy at school
- Digital well-being **should be better clarified at school level**; there is the need for this clarification
- The questions were raised: how purposeful use of technologies is represented in the framework and how technology is represented as a reward at the end of the class? Instead of a more complicated tool for learning
- Young people lack knowledge and experience to set the limits for their behaviour in digital world due to their age and development psychology and physiology
- Digital well-being includes personal, but also effects on other people's state of balance due to our **behaviour, and this concerns ethics and privacy issues in digital world** - people need to understand where **there is the limit to one's privacy**
- We all should understand that the digital world happens in the physical world, and **what happens in the digital world affects physical real life**, too. Online life is offline life, too
- **Adults should protect younger people against harmful social network** content affecting their behaviour, as younger people do not have abilities to protect themselves yet
- Digital well-being is **mental well-being**
- People need **digital channels t**o **express themselves** if they do not have these channels in real life
- **Mistakes in digital world** may cost the price that people cannot anticipate
- Different schools' behaviour and consequences for using smart phones in the classroom raise misunderstanding for families, teachers and students
- **Out of school is out of reach,** habits at school may be completely different from habits in the family and society
- Behaviour and **examples from parents and teachers** about work - life balance are very important
- Meaningful use of technologies and meaning use of self-regulated learning
- There **are no clear policies and policy documents** about the use of technology at operational levels

4. TLU - Educraftor

- **The importance of age** - it should never be underestimated, and practices should be age - specific
- **How to capture disbalance** - identifying that one is in disbalance is very important
- Self-regulation of students and the ability to manage disbalance through metacognition, meta-awareness
- Concern about the new technologies and AI - how to support students in these processes and to continue with change management in tech area
- A lot of statements and requests were mentioned for **parent education programmes** because overuse and misuse and not meaningful use happening at home and out of school
- the suggestion came to have leadership and management education programs
- **school autonomy raises issues of iniquity** because all schools might have different digital competence as well
- Society was mentioned for several times, how digital well-being as the balance comes in general in the society.
- **students** not only as users, but as **meaningful applicants of technologies** with a purposeful application of technologies to regulate their skills for the future
- Teachers need a lot of support how to integrate technologies in teaching and how to manage AI strategies
- **Managing AI at the school level** was mentioned several times as an issue
- a very interesting idea was related with the **responsibility of EdTech companies** and how they support us with the many challenges we have at early education, even in the kindergartens, and how they help us to cope with tech addiction
- Edtech companies may work on programs and edtech solutions for parents and children education
- A better attention is needed to clarify and enhance **visibility of relatedness** in the framework following the habits to be constantly online, as the solution to being online constantly may come from **one child inspiring other community members**, or one family to other families, etc.
- Primary school should be included as digital well-being culture should be started the earlier
- challenges with the "At home" approach of using technologies may be simply regulated and solved, but should be addressed as early, as possible

5. EDEN

- Digital well-being now is mostly associated with the restrictions to use mobile phones, smart watches and headphones in the class, and the consequences are positive, because these restrictions help students to stay focused, to have live interactions, stay safe and have more equal environment
- **Digital platforms for learning administration gives clear structure,** easy access to learning resources and transparent communication with the teacher and parents
- **The amount of screen time** is kept quite low up to grade five. However, digital learning becomes much more intensive with several platforms and more screen-based homework
- **school should raise awareness** about online safety and appropriate device use, sufficient physical activity
- there is **little communication** about overall digital well-being strategies
- it would be helpful to have clearer guidelines on homework, screen time and more cooperation between school and parents
- **Some countries do not have policies** but regulations for private schools, only for public schools
- sometimes **policies are created** within schools and screen time and whatever students **do with technology depends on school**

- In some schools, most of the books are digital and uploaded and students have to be on their device almost all the time
- Some countries have well-being policy and guidelines in school, but they do not reflect any use of devices or technology.
- In research, **self-determination theory,** as well as **TPACK** model both are very useful as resource reference, because there is a lot of digital well-being already embedded in these models
- **Soft skills development and collaboration models** among schools and teachers could be great resources to foster the culture of digital well-being at school for all all strategies

6. NŠA

- **Technological infrastructure** should be adjusted the way that it ensures and secures safety for schools, teachers, students and all school community from disbalanced state, as well as from technical triggers
- **Accessibility and equality** - each student having equal access to technologically enhanced learning
- **School should have proper rules and regulations** taking into consideration different age groups and limitations
- Teacher training on digital well-being as a part of the policy
- Schools should have **similar or equal policies** so that families are able to follow similar standards and digital well-being cultures
- **Different school policies raise challenges** to parents and family policies, also parents cannot undergo parental education programs with different points of view
- **Parents should receive guidance and training** on their responsibilities about home work and mobile tools usage
- **School supporting stakeholders** should be a part of digital well-being strategy
- Teacher digital well-being before student digital well-being to ensure digital well-being climate in the classroom
- **Leadership and administration** clearly visible in the model
- School competences, IT support competences are a part of competences required
- **Financial resources** as a part of model implementation plan

7. EUN

- **The holistic approach to digital well-being** refers to creative, social, economic and planetary well-being, when we have to consider human connections to the environment and sustainability, nourishing the values of planetary well-being more and more
- School, but also parents have their role in green thoughts and sustainability competence development beside digital competences for students and teachers
- **Leadership and management roles** cannot be stressed enough, as their thoughtful and attentive decisions facilitate teachers' work in the classroom, foster understanding of common goals and are very essential to the outcomes of education
- **Critical awareness and understanding** should be **the aim of policy,** too, in order to understand and build the cultures of digital well-being in digital education, instead of building restrictions
- **Restrictions are needed** if we cannot build the culture to bring a good change, but restrictions should be built for meaningless things - **meaningful use of technologies for learning should not be restricted**
- **Healthy habits should start with society members, with parents and us - adults.** A lot of meaningless use of technologies stay outside of school during the free time of children and their parents
- Schools do not have resources enough to tackle the overuse of technologies or unhealthy habits

- Useful tactics develop healthy habits at school level and beyond
- **Guidance for teachers and for school leadership** remains a great need, as well as for parents and their collaboration with teachers to support children with the proper use of technologies, helping them to develop healthy relationships with each other, to regulate their use of technologies and motivate children to be physically active
- Teachers think digital well-being as a topic can be easily integrated into school curricular
- Besides digital competences, physical, psychological, cognitive and other transversal aspects, **existential aspect should be a part of digital well-being, along with spiritual aspect** and training about one's core beliefs, **understanding the globality of digital technologies** and align their use with a better meaning, aligned with moral and ethical norms of society
- **Student notion should be differentiated i**n the resources available for digital well-being balance restoration: student **gender, age, special needs** related with behavioural and intellectual problems
- **Students agency should be recognised** in digital well-being policy development
- **Tricky digital contexts need to be recognised** and carefully approached, taking into consideration messages to schools, policy makers, teacher educators, to avoid extremely big contrast between school and social, home environment. Definition of harmful AI and social media world and its usefulness for school education should be revisited.

8. VMU - 3

- There are many good developments at schools, but **systematic trainings and competence development** of all school community in a systematic way is missing
- **Students and teachers need critical thinking skills, creative application of technologies,** not only for technical skills, but how to create new tasks, new pedagogical activities in a creative way
- Schools need training and **competence development on the limits of the use of AI,** the balanced use of AI and purposeful use of AI for learning and teaching
- Teachers need support to **tackle digital stress**, as well as pressure to keep up to date with technologies, with digitalisation which is not always necessary for the learning process
- **Digital transformation raises stress** and challenges at school if the balance between digitalisation and **human and emotional literacy,** responsibility and conscious application of technologies is lost
- Digital well-being is possible only when **the balance is maintained between the wish for the progress and the needs by humans**, by us, but not for the sake of the use of technologies

9. VMU - 4

- The most important thing is when **teachers reflect upon and share their practices** when, why they used technologies in teaching and if these technologies were useful for the classroom
- **When technologies are useful,** teachers and students are feeling well about them
- **Critical thinking, critical awareness** are most important for the digital well-being
- Walk15 application was very useful for our school community to **nurture healthy habits** and physical and mental health (the application counting steps and allowing competition among members)
- **Students should be critical and aware** about how technologies support their learning and foster their engagement, as well as teachers should be convinced that technologies and AI really engage students for learning
- School needs more often to analyse who need digital competence development and ensure that students and teachers are digitally competent
- **Choosing technologies**, especially from such big offer, is very challenging and difficult

10. VMU - 5

- Teachers and school leaders feel bad when there is **cyber security risk, the risk of the leak of personal data** and when the school does not control which technologies are safe and which not
- **Recommendations for application of technologies should be concrete**, as well as school regulations - they **need agreement by the whole schoo**l which technologies and when can be used, and agreements should be implemented by all, students, teachers and with the knowledge of parents
- **Best practice sharing** is a good method and resource for digital competence development - teachers can better learn from each other
- **School needs slow down with technologies**, because we are running from one seminar to another, and it is difficult to experiment, to even remember all technologies and to find their added value for teaching and learning
- **Overuse of technologies** and overload of resources decreases motivation - teachers just do it formally to meet the requirements, but not by their own initiative or need
- In some schools, teachers have the overload of technologies, while some say that they need better information on which technologies are useful for learning and teaching so that they can apply them
- **Clear communication channels** are very helpful for the whole school community
- Teachers claim that **students should spend less time on the internet** and applications, but better communicated and clear decisions on that need to be reached at school

11. KIC

- **Advocated for balanced, safe, meaningful** use of digital technologies
- Digital education should ensure **mental, emotional, social and cognitive well-being**
- **Digital technologies should support learning, relationships, focus, healthy development**
- We should use **digital technologies** in the way that they **reduce overload, stress and negative effects of excessive and inappropriate use** of digital tools
- **Digital well-being is the concept** that is familiar to only part of the teachers and parents, as well as society members, and it has impact upon mental health, satisfaction, safe internet use and feeling good when using technologies
- **Negative impact to students comes through nonchemical additions**
- **Digital competence** development has strong relationship with digital well-being
- **Digital strategy** at school is needed to ensure digital well-being which monitors the use of digital devices, social networks, communication channels, safety regulations
- **Age groups** are important and have direct link with digital well-being, unmatured young people should not be allowed to use social networks to experience negative impact
- **Digital devices should be used in the classroom for the purpose** and student engagement
- **The limits of using digital technologies and social networks**, as well as screen time spent during the day are very important for digital well-being and cognitive development
- **Student awareness** is very important for digital well-being
- **All school communities following similar rules** may achieve positive impact
- Balance between **physical writing and typing** is important
- **Legal base is not adjusted to ensure digital well-being** or digital education properly
- Main problems and habits **issues start with the family** and at a very early stage - education should start with parents and kindergarten age
- **The gap of understanding**, being aware, focused and satisfied increases over years
- **Awareness about negative impact** and behaviour is observed very broadly

- **Digital service providers do not care about human interest** and digital well-being, so **EU regulations come as a great help here**, for humans to remain themselves and follow their own needs and interests rather than directions suggested by digital media services

12. UOC

- Decreasing of the number and the variety of digital tools contributes to digital well-being
- Agreement about the tools used for communication and working/ business hours for such communication among school community reduces the pressure and stress caused by the overuse of technologies
- **Asynchronous communication** through digital communication channels contributes to better digital well-being and address the issue of time management by individuals
- The school should have digital **well-being strategy**
- **Family and school agreements** on strategies are very important
- **Most effective strategies** are critical awareness of balanced use, the development of digital skills and the promotion of healthy habits
- **Limitation of the use of mobile phones** contributes to better atmosphere in the class and less conflicts, as well as to better ethical behaviour
- **Limitation of mobile devices** sometimes **has to be regulated** by regional and local decision makers and education policy makers
- Students need trainings on digital ethics
- **Support and communication** through formal educational channels **should be discussed and agreed** by the community in terms when it should happen and though which channels
- School communities do not have understanding about what digital well-being is
- **The state of being constantly online and connected does harm** to individual's life and meaningful social and personal life
- Agreement about the same digital technologies to be used throughout school decreases the stress and digital overload
- **Technologies should work** in the classroom to avoid harassment
- Teachers should have similar level of digital competences at school to foster teacher and peer collaboration
- Digital and digital well-being coordinator is very helpful for schools
- **Schools experience the challenges** for democratic and psychological decisions and their policies regarding the use of digital technologies
- Digital competences are and should be transversal
- **Digital well-being should be a part of curriculum** including digital citizenship, digital identity and digital coexistence
- AI should not replace students' entire reasoning process
- Redefinition of teaching and learning activities is challenging for teachers using digital technologies and AI

5.4 Findings and Synergy with the Framework

Individual groups reports were systematically analysed using the key focus group questions and reflections, statements from the participants of all focus groups. Once the report from each focus group was prepared, the key statements and patterns were merged and the summary of the findings was prepared to reflect on the cross-cutting themes, to identify the main categories which would align with the strategies, to define each sub-category that would align with strategy sub-category items, as well as to prepare a list of person, device and context specific factors that would be added to the first version of the framework.

Any other important insights from the participants of the focus groups were also taken into consideration regarding the scope of the topic, resources mentioned by the groups, as well as other important information related with the indicators of digital well-being and the development of the culture of digital well-being at large.

The synergy of the findings is presented in the table below:

Table 8. Categories and sub-categories of statements and proposals.

Strategy: 1. School leadership and management level decisions (previously - Managing digital resources)	
Sub-category	• **Limitations of mobile technologies** should be discussed and agreed with the whole community • **Limitation of the use of mobile phones** contributes to better atmosphere in the class and less conflicts, as well as to better ethical behaviour
	Schools need more awareness and training about digital competences of school (SELFIE), teachers and students
	Digital well-being could be a part of sustainability policy at school
	Digital well-being **should be better clarified at school level**
	The school should have digital **well-being strategy**
	Family and school agreements on strategies are very important
	Different schools' behaviour and consequences for using smart phones in the classroom **raise misunderstanding for families, teachers and students**
	There **are no clear policies and policy documents** about the use of technology at operational levels
	How to capture disbalance - identifying that one is in disbalance is very important
	leadership and management education programs on digital well-being

	• **school autonomy raises issues of iniquity** because all schools might have different digital competence and policies • Schools should have **similar or equal policies** so that families are able to follow similar standards and digital well-being cultures • **Different school policies raise challenges** to parents and family policies, also parents cannot undergo parental education programs with different points of view • **All school communities following similar rules** may achieve positive impact
	Primary school should be included as **digital well-being culture** which should be started the earlier
	Digital platforms for learning administration gives clear structure, easy access to learning resources and transparent communication with the teacher and parents
	it would be helpful to have **clearer guidelines on homework, screen time and more cooperation** between school and parents
	Soft skills development and collaboration models among schools and teachers could be great resources to foster the culture of digital well-being at school for all strategies
	Technological infrastructure should be adjusted the way that it ensures and secures safety for schools, teachers, students and all school community from disbalanced state, as well as from technical triggers
	School IT administrator competences are crucial to the school digital well-being
	Accessibility and equality - each student having equal access to technologically enhanced learning
	School should have proper rules and regulations taking into consideration different age groups and limitations
	Agreement about the tools used for communication and working/ business hours for such communication among school community **reduces the pressure and stress caused by the overuse of technologies**
	• **Asynchronous communication** through digital communication channels contributes to better digital well-being and address the issue of time management by individuals • **Support and communication** through formal educational channels **should be discussed and agreed** by the community in terms when it should happen and though which channels
	• Teacher training on digital well-being as a part of the policy • Teachers need support to **tackle digital stress**, as well as pressure to keep up to date with technologies, with digitalisation which is not always necessary for the learning process
	School supporting stakeholders should be a part of digital well-being strategy
	Stakeholder roles, responsibilities and financial resources should be planned for digital well-being strategy implementation
	Leadership and management roles cannot be stressed enough, as their thoughtful and attentive decisions facilitate teachers' work in the classroom, foster understanding of common goals and are very essential to the outcomes of education
	Restrictions are needed if we cannot build the culture to bring a good change, but restrictions should be built for meaningless things - **meaningful use of technologies for learning should not be restricted**

	Digital transformation raises stress and challenges at school if the balance between digitalisation and **human and emotional literacy,** responsibility and conscious application of technologies is lost
	School needs slow down with technologies, because teachers are running from one seminar to another, and it is difficult to experiment, to even remember all technologies and to find their added value for teaching and learning
	Digital and digital well-being coordinator is very helpful for schools
	Schools experience the challenges for democratic and psychological decisions and their policies regarding the use of digital technologies
Strategy: 2. Digital well-being integration in school curricular	
Sub-category	***Age specific curriculum**, the younger the people are they are usually trained social skills, but the older they, they are trained with digital skills, these should go in parallel*
	*Digital well-being should be as a part of school curricular **integrated into different subjects** on school level*
	*There is the **need that students have similar type and level of skills** to prepare for exams, for example, or **to work on the same level of curriculum***
	*Teachers think **digital well-being as a topic can be easily integrated into school curricular***
	***Existential aspect should be a part of digital well-being, along with spiritual aspect** and training about one's core beliefs, **understanding the globality of digital technologies** and align their use with a better meaning, aligned with moral and ethical norms of society*
	***Digital well-being should be a part of curriculum** including digital citizenship, digital identity and digital coexistence*
Strategy: 3. High quality digital pedagogy (previously - maintain **high quality digital learning and teaching** practices)	
Sub-category	**Limitation of mobile** technologies is useful, but not banning technologies
	Teachers need more resources to develop emotional intellect of students
	Use technologies as reward at the end of the class instead of a more complicated tool for learning
	Technology application should be purposeful, not only sustainable or supportive
	Meaningful use of technologies and meaning use of **self-regulated learning**
	The importance of age - it should never be underestimated, and practices should be age - specific
	Self-regulation of students and the ability to **manage disbalance through metacognition, meta-awareness**
	Teachers need a lot of support how to integrate technologies in teaching

	Restrictions to use mobile technologies in class help students to stay focused, to have live interactions, stay safe and have more equal environment
	Digital learning becomes much more intensive with several platforms and more screen based **homework**
	In some schools, most of the **books are digital a**nd uploaded and **students have to be on their device almost all the time**
	Teacher digital well-being before student digital well-being to ensure digital well-being climate in the classroom
	Students and teachers need critical thinking skills, creative application of technologies, not only for technical skills, but how to create new tasks, new pedagogical activities in a creative way
	• The most important thing is when **teachers reflect upon and share their practices** when, why they used technologies in teaching and if these technologies were useful for the classroom • **Advocated for balanced, safe, meaningful** use of digital technologies
	Overuse of technologies and overload of resources decreases motivation - teachers just do it formally to meet the requirements, but not by their own initiative or need
	Balance between **physical writing and typing** is important
	Redefinition of teaching and learning activities is challenging for teachers using digital technologies and AI
Strategy: 4. Digitally competent teachers and students (ensure that teachers and students have digital competences)	
Sub-category	Digital competences are very important for teachers and students **to decide which technologies to use, and which not**
	Digital **competence development via peer learning** is a great method to develop digital well-being competences
	Teachers need more resources to develop technology application literacy, including literacy on selecting AI
	systematic trainings and competence development of all school community in a systematic way is missing
	Students need trainings on digital ethics
	Teachers should have similar level of digital competences at school to foster teacher and peer collaboration
	Digital competences are and should be transversal
Strategy: 5. Parent education programs	
Sub-category	• **parent education programmes** because overuse and misuse and not meaningful use happening at home and out of school • **Parents should receive guidance and training** on their responsibilities about homework and mobile tools usage • Main problems and habits **issues start with the family** and at a very early stage - education should start with parents and kindergarten age

	Digital well-being is the concept that is familiar to only part of the teachers and parents, as well as society members
Strategy: 6. (measure) **Critical awareness on the balanced use** (of digital technologies)	
Sub-category	Classes for **digital hygiene** integrated into each subject are very useful **method**
	Schools need more awareness and training on digital competences of the school, the teachers and the students
	The digital world happens in the physical world, and **what happens in the digital world affects physical real life**, too. Online life is offline life, too
	How **digital well-being** as the balance is understood in general **in the society**
	Students not only as users, but as **meaningful applicants of technologies** with a purposeful application of technologies to regulate their skills for the future
	School should raise awareness about online safety and appropriate device use, sufficient physical activity
	There is **little communication** about overall digital well-being strategies
	The gap of understanding, being aware, focused and satisfied increases over years
Strategy: 7. (maintain) **Physical and mental health**	
Sub-category	Digital well-being is **mental well-being**
	Guidance for teachers, parents and school leaders needed to **support school children** helping them t**o develop healthy relationships with each other**, to regulate their use of technologies and **motivate children to be physically active**
Strategy: 8. (assess the added value of digital technologies to) **Academic achievements and academic integrity**	
Sub-category	**It takes time** to prove which edtech is useful for learning and teaching
	People need **digital channels t**o **express themselves** if they do not have these channels in real life
	We should use **digital technologies** in the way that they **reduce overload, stress and negative effects of excessive and inappropriate use** of digital tools
Strategy: 9. (nurture) **Healthy habits**	
Sub-category	**Out of school is out of reach,** habits at school may be completely different from habits in the family and society
	Behaviour and examples from parents and teachers about work - life balance are very important
	Being online constantly may come from **one child inspiring other community members**, or one family to other families

	Challenges with the "at home" approach of using technologies may be simply regulated and solved, but **should be addressed as early, as possible**
	Healthy habits should start with society members, with parents and us - adults. A lot of meaningless use of technologies stay outside of school during the free time of children and their parents
	Schools do not have resources enough to **tackle the overuse of technologies** or unhealthy habits
	Useful tactics develop healthy habits
	The state of being constantly online and connected does harm to individual's life and meaningful social and personal life
Strategy: 10. (foster) **psychological resilience**	
Sub-category	Young people l**ack knowledge and experience to set the limits for their behaviour in digital world** due to their age and development psychology and physiology
	Adults should protect younger people against harmful social network content affecting their behaviour, as younger people do not have abilities to protect themselves yet
	Student notion should be differentiated in the resources available for digital well-being balance restoration: student **gender, age, special needs** related with behavioural and intellectual problems
	Digital well-being is possible only when **the balance is maintained between the wish for the progress and the needs by humans**, by us, but not for the sake of the use of technologies
Strategy: 11. (monitor and enhance) **Socio-emotional state**	
Sub-category	***Programs are available*** *to develop socio - emotional skills which are very useful and great resources*
	Digital well-being includes personal, but also effects on other people's state of balance due to our ***behaviour, and this concerns ethics and privacy issues in digital world*** *- people need to understand where* ***there is the limit to one's privacy***
	Mistakes in digital world *may cost the price that people cannot anticipate*
Strategy: 12. (select) **high quality sustainable and learning supportive EdTech solutions** (for learning, teaching and assessment)	
Sub-category	Teachers need to select which technologies are **useful for learning**, they cannot use all technologies
	Decreasing of the number and the variety of digital tools contributes to digital well-being
	Concern about the new technologies and AI - how to support students in these processes and to continue with **change management in tech area**
	the **responsibilities of EdTech companies** and how they support schools and teachers with the many challenges at early education, even in the kindergartens, and how they help users to cope with tech addiction

	Edtech companies may work on **programs** and edtech solutions **for parents and children digital-wellbeing education**
	Some countries have **well-being policy and guidelines** in school, but they **do not reflect any use of devices or technology**
	When technologies are useful, teachers and students are feeling well about them
	Digital **technologies** should **support learning, relationships, focus, healthy development**
	Agreement about the same digital technologies to be used throughout school decreases the stress and digital overload
	Technologies should work in the classroom in order to avoid harassment
Strategy: 13. AI jump management	
Sub-category	AI is a cross-specific factor and can be considered as personal, as well
	Managing AI at the school level was mentioned several times as an issue
	Teachers need a lot of support how **to manage AI strategies**
	Schools need training and **competence development on the limits of the use of AI,** the balanced use of AI and purposeful us of AI for learning and teaching
	AI should not replace students' entire reasoning process
Other important reflections from FGs which are broader than the scope of WINDEE Framework, but should be taken into further policy discussions	
Sub-category	**The holistic approach to digital well-being** refers to creative, social, economic and planetary well-being, when we have to consider human connections to the environment and sustainability, nourishing the values of planetary well-being more and more
	School, but also **parents have their role in green thoughts and sustainability competence development** beside digital competences for students and teachers
	Critical awareness and understanding should be **the aim of policy,** too, in order to understand and build the cultures of digital well-being in digital education, instead of building restrictions
	Guidance for teachers and for school leadership remains a great need, as well as for parents and their collaboration with teachers to support children with the proper use of technologies
	Tricky digital context needs to be recognised and carefully approached, taking into consideration messages to schools, policy makers, teacher educators, to avoid extremely big contrast between school and social, home environment. Definition of harmful, AI and social media world and its usefulness for school education should be revisited
	Students agency should be recognised in digital well-being policy development
	Negative impact to students comes through **nonchemical additions**
	Legal base is not adjusted to ensure digital well-being or digital education properly
	Awareness about negative impact and behaviour is observed very broadly

	Digital service providers do not care about human interest and digital well-being, so **EU regulations come as a great help here**, for humans to remain themselves and follow their own needs and interests rather than directions suggested by digital media services
	Limitation of mobile devices sometimes has to be regulated by regional and local decision makers and education policy makers

Focus groups and stakeholder consultation results suggest the Framework edition adding three new strategies to the Framework, namely, integrating digital well-being into school curricula, preparing parent education programs, and adding AI - jump management strategies. These strategies were regularly mentioned through statements and proposals during discussions with stakeholders and argumented as very important strategies to maintain digital well-being. Moreover, the stakeholders emphasised that the role of the leadership and school management cannot be stressed enough. Many statements and proposals from focus groups members indicated that the first strategy is not related only with the management of digital resources, but should be taken broader and higher, on the decision-making level at school. Thus the first strategy scope was also revised as validated in the framework.

6 The Digital Well-being Framework

As the results of the focus groups and consultation with the stakeholders suggests, three new strategies are added to the list of essential needs of the individual well-being. Therefore, the first list of essential needs as described in chapter 3 of this document above was updated. Moreover, the titles of the strategies to satisfy the essential needs have been shortened and revised following the data from the consultation. The validated list of the essential needs and their alignment with the self-determination elements, namely, competence, autonomy and relatedness are now presented in Table 9:

Table 9. Essential needs of the individual aligned with the competence, autonomy and relatedness.

Essential needs of the individual well-being (students and teachers)	**Competence**	**Autonomy**	**Relatedness**
School leadership and management level decisions			
Digital well-being in school curricular			
High quality digital pedagogy			
Digitally competent teachers and students			
Parent education programs			
Critical awareness on balanced use			
Physical and mental health			
Academic achievements and academic integrity			
Healthy habits			
Psychological resilience			
Socio-emotional state			
High quality sustainable and learning supportive EdTech solutions			
AI leap management			

Accordingly, the final and validated Framework of Digital Well-being in WINDEE project is also updated with the revised list and titles of the strategies that should be applied to satisfy the

main and essential needs of an individual to maintain the state of digital well-being in the classroom (see Figure 2):

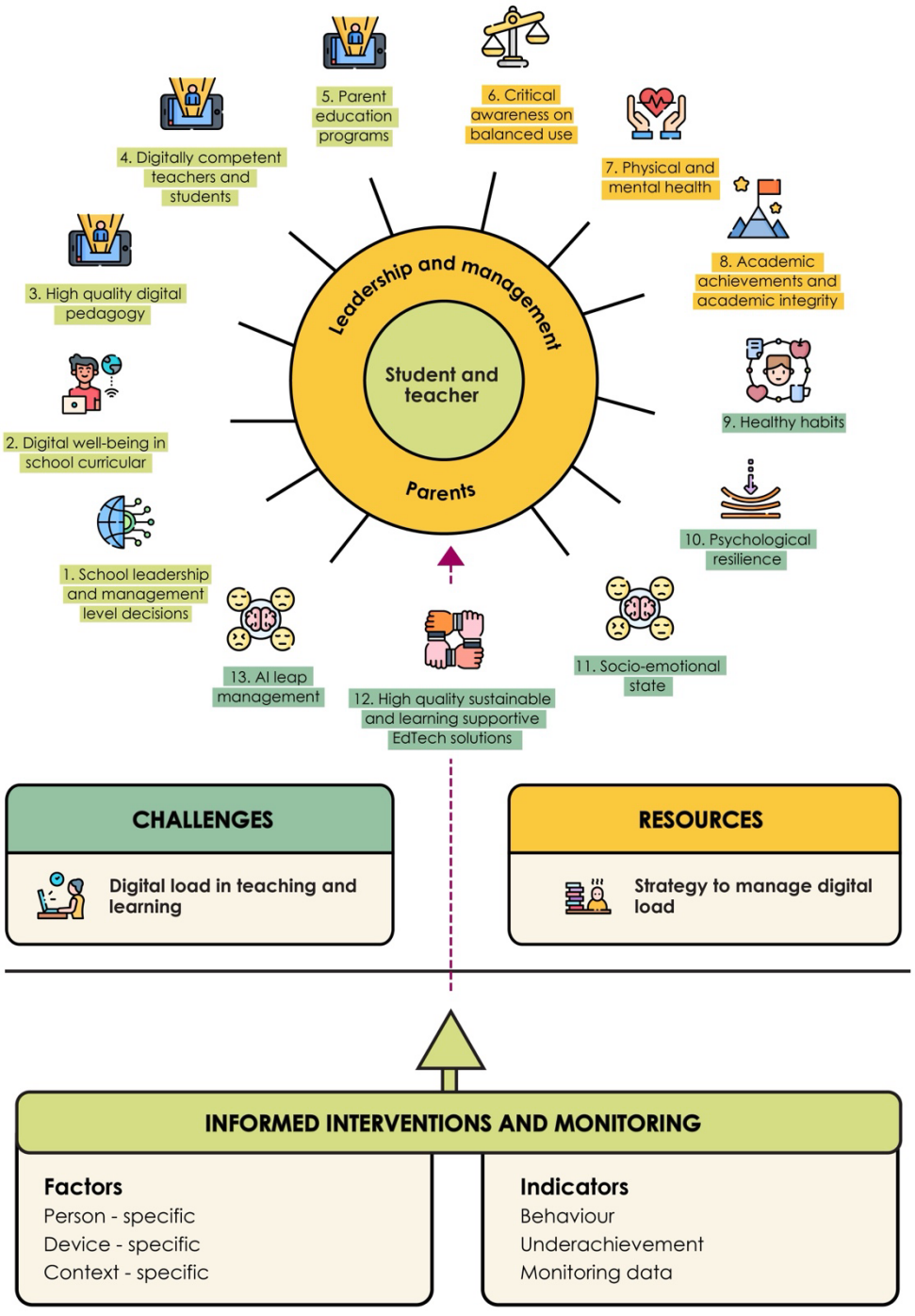

Figure 2. The Digital Well-Being Framework.

The framework (Figure 2) is based on **the main principles** that clarify the **synergy of the foundational strategies** to be implemented for student and teacher digital well-being, as well as ***allow preventing and informed intervention*** based on the ***monitoring the state of well-being*** in the following way:

- The digital load for teachers and students is measured against the resources applied to manage this load
- Different factors affecting the balanced state are familiar to school community along with the indicators of the disbalanced state
- The strategies to enhance digital well-being are considered by the school
- The strategies to enhance digital well-being are supported with the resources to be applied (instruments, methods, training material, regulations and policies, and others)
- Preventing and informed interventions are implemented by the school leadership and other stakeholders to bring the balance back to maintain student and teacher digital well-being.

Digital well-being strategies should also be supported with instruments, models, training material and guidelines for schools, for teachers and students, as well as parents. Multiple examples exist in Europe, and multiple initiatives already are at hand, e.g. EdTech solutions, Safe Internet for Kids, European Digital Education Hub Community of Practice, not to mention SELFIE, Selfie for Teachers, and other frameworks. The Case study examples elaborate on those and other best practices already available on different levels of school and policy initiatives. Framework validation clarifies those still needed for schools in Europe to maintain digital well-being.

WINDEE project Case study report (D3.1) suggests Case study examples built from best practices, as well as interviews with teachers and stakeholders on which of these practices work best and under what conditions. We recommend schools to read Case study examples that may help to identify the ones working for specific school communities easier and apply them.

7 How to Use the Framework in Practice

The Digital Well-being Framework is intended for the use by schools and school stakeholders, first, to review which digital well-being strategies are familiar to schools already and which are not and which best practices are available for application if not applied already. The ten strategies suggest a very comprehensive approach to digital well-being, and schools may consider those to identify small, but very important steps that they take already to enhance digital well-being for students and teachers.

Here are the practical steps suggested for application of WINDEE Digital Well-being Framework for Schools:

1) Familiarise with the Strategies suggested by the Framework and consider which of the Strategies are already implemented by the school.

2) Identify the best practices within the school mapping them with the ten Framework Strategies. Discuss which best practices work at school, and which Strategies in the Framework are not supported by any methodology, training material, instrument or other resources that you are familiar with

3) Read WINDEE project Case study report (D3.1) and familiarise yourselves with the Case study examples about the best practices coming from European schools, EdTech providers, teacher training institutions and other school stakeholders. Read why each practice works well and what positive changes it brings to student and teacher digital well-being.

4) Analyse the list of factors suggested in this Framework to identify which of them are still very relevant to your school. Analyse the situation when these factors negatively affect your students and teachers and align them with the indicators of digital (dis)balance that you can observe. Make a list of high-risk indicators and factors that you should address as the priority.

5) Decide which of the Strategies in the Framework need to be applied first considering the needs of your school. Choose the resources that are suggested by the Case study report (D3.1) or use best practice examples coming from your school community, from other schools, teacher training institutions, or from the national and EU policy initiatives.

6) Select and plan interventions, involving all school community into the process. Prepare the plan how you will monitor the impact of these interventions along with the monitoring of digital well-being state.

7) Prepare a plan how comprehensive application of all Strategies may be implemented throughout the academic year at school, following the plan or as ad-hoc initiative based on informed and evidence supported need for interventions.

8) Involve all stakeholders into implementation of the preventive and informed interventions, as well as into the monitoring the state of digital well-being of students and teachers at school.

Discuss what their roles should be, what data can be collected and how in order to support monitoring process with the indicators, what kind of behaviour would signal as disbalance indicators, which factors can be controlled by school leadership, stakeholders, parents, and which by the students and the teachers on the classroom level. Use the ten Strategies suggested in the Framework to communicate these agreements to school community and involve them into monitoring and supporting the balanced status of digital well-being at school.

8 Recommendations for Policy Discussions

Stakeholders from international groups brought many very important insights into the topic of digital well-being in terms of scope and depth. It could hardly be described in words how rich discussions were conveyed and with what dedication and personal involvement into the topic the stakeholders participated demonstrating that the theme of digital well-being is important to them and they are looking forward to WINDEE project results.

The statements and proposals from some focus groups participants suggested very important thoughts that are broader than the scope of WINDEE Digital well-being framework but are very much worth of further policy discussions on all levels:

- **The holistic approach to digital well-being** refers to creative, social, economic and planetary well-being, when we must consider human connections to the environment and sustainability, nourishing the values of planetary well-being more and more
- School, but also **parents have their role in green thoughts and sustainability competence development** beside digital competences for students and teachers
- **Critical awareness and understanding** should be **the aim of policy**, too, to understand and build the cultures of digital well-being in digital education, instead of building restrictions
- **Guidance for teachers and for school leadership** remains a great need, as well as for parents and their collaboration with teachers to support children with the proper use of technologies
- **Tricky digital context needs to be recognised** and carefully approached, taking into consideration messages to schools, policy makers, teacher educators, to avoid extremely big contrast between school and social, home environment. Definition of harmful, AI and social media world and its usefulness for school education should be revisited
- **Students' agency should be recognised** in digital well-being policy development
- **Negative impact** to students comes through **nonchemical additions**
- **Legal base is not adjusted to ensure digital well-being** or digital education properly
- **Awareness about negative impact** and behaviour is observed very broadly
- **Digital service providers do not care about human interest** and digital well-being, so **EU regulations come as a great help here**, for humans to remain themselves and follow their own needs and interests rather than directions suggested by digital media services
- **Limitation of mobile devices** sometimes has to be regulated by regional and local decision makers and education policy makers

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WINDEE

Short description of WINDEE

WINDEE is a policy experimentation project aimed at improving the digital well-being of students and educators in educational settings across Europe. It addresses the lack of understanding, strategic approaches, and coherent policies concerning the mental, emotional, physical, and cognitive impact of digital education.

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