Teachers' and school leaders' competences and support for effective blended learning

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INTRODUCTION

This research paper - together with similar papers developed in parallel by other research teams on various subtopics - aims to offer a basis for policy development and implementation at different governance levels and inform the work of the European Commission (EC) on teachers and school leaders towards a sustainable whole school approach for quality and inclusive education in all European Union Member States. To do this, we bring together recent education research with inspiring practice and policy and the views of various education stakeholders.

It has been developed by members of the European Education Policy Network (EEPN) project partnership, based on resources and examples identified by partnership members. The paper aims to offer a policy and research framework for the analysis of practical examples of inspiring practice, especially for policy transfer and policy learning.

The current paper, together with similar research carried out in interlinked fields related to teachers and school leaders towards a sustainable whole school approach for providing quality and inclusive education for all, feeds into the work of EEPN to formulate and promote policy recommendations in the field as well as to the future work of EEPN until the end of 2023. The primary aim of this work, starting with desk research, is to promote cooperation, policy development and implementation at different governance levels. It supports the European Commission's policy work to assist teachers and school leaders by providing research evidence and evidence-based policy recommendations for European, national, regional and local levels.

Research question

When bringing together research, policy, and practice, we are aiming at offering an analysis of various approaches and frameworks in order to identify

- What defines "blended learning"?
- What are the types of teachers' competencies for effective blended learning?
- What are the types of school leaders' competencies for effective blendedc?
- How can school leaders and teachers be supported?

INTERNATIONAL AND EUROPEAN POLICY CONTEXT

What is "blended Learning"

According to the European Commission (2021), blended learning in formal education and training involves a diversity of approaches and is to be understood as a school (in primary and secondary education, including vocational education and training), teacher and trainer or learner taking more than one approach to the learning process:

- blending school site and other physical environments away from the school site (either with the presence of a teacher/trainer, or separated by space and/or time in distance learning);
- blending different learning tools that can be digital (including online learning) and non-digital.

For this reason, it is important to consider blended learning within the ongoing development of the whole school and all of its associated stakeholders.

Well-organised blended learning can have a number of benefits. Garrison and Kanuka (2004) argue that blended learning is effective because it questions the traditional lecture-based teaching model. Garrison and Vaughan (2008) stress that blended learning does not simply represent an "add-on" to traditional teaching strategies; rather, the redesign of teaching and learning that blends distance with face-to-face encounters creates new possibilities for learning. A blend of in-school and distance learning can help teachers to personalise the learning of their students – that is, to customise learning to each student's strengths, skills and interests, and create inclusive learning environments by offering a variety of learning paths that could be followed to achieve learning objectives. Blended learning classes offer flexibility for teachers in how they present material, and for students in the pace and variety of the learning approaches they experience.

Blended learning is a flexible model that can support a project or course of study to progress whilst not requiring teachers and learners to be in the same physical space at all times. On a practical level, this is useful for times when attending a school site is not possible, or when other sites are more appropriate for the learning approach. At the same time, European Commission (2021) states that while fully recognising the value of face-to-face learning, learning in different ways and in different environments, including the school site, the home, the outdoors, cultural sites, workplaces and digital environments, can motivate children and young people to enhance their broad competence development. It demands a careful consideration of pedagogical approach by requiring decisions to be made about how and when to best use the different environments for independent study, collaborative enquiry, social interaction, and practical application. It encourages a review of what the school site is and can be for the learner and its community, and how in-school time is best utilised. It also prompts a review of national and school curricula as the expectations set down for learner competences affect the design of pedagogical approach, including assessment.

Blended learning is not merely combining virtual plus shared physical space learning; it is a teaching and learning process integrating various factors: learning environments (home, online, school, workplace, other), competence development process (lifelong learning and professional); affective domain (motivation, satisfaction, discouragement, frustration), and people (learners, teachers, parents, other staff). For this reason, it is important to consider blended learning within the ongoing development of the whole school and all of its associated stakeholders. The concept of "schools as learning organisations" is another useful frame of reference that can help schools and systems plan for and manage innovation and change

According to the European Commission (2021), blended learning happens when an educator or learner takes more than one approach to the learning:

- Blending school site and distance learning environments;
- Blending different tools for learning that can be digital (including online) and non- digital.

Using their professional judgement, teachers and schools will select and facilitate the use of these in a variety of combinations as part of engaging and effective learning tasks that support broad competence development, as appropriate to the age, capacity and circumstances of the learners and intended learning outcomes.

In a blended learning approach, all environments that are an effective shared space for learning are given equal importance and consideration, in order to make the most of the opportunity for interaction between pupils, between staff, and between pupils and staff.

According to the European Commission Directorate-General for Education, Youth, Sport and Culture (2021), blended learning strongly relies on the capacity of teachers and learners to be able to use and adapt the environments and tools as appropriate

to the learning task and desired learning goal. Specifically, teachers and learners need to be able to:

- Work confidently and competently with peers and independently when necessary;
- Manage the learning process for oneself or on behalf of others;
- Be familiar with, and safe within, a range of environments and tools;
- Communicate ideas and ask for assistance when needed, either in person or via communication tools;
- Trust and collaborate with others in the wider school community, for example cultural professionals or work-place mentors;
- Carry a sense of learning and development across a number of different occasions, recognising how one has developed and where to progress next.

A blended learning approach can be applied at the micro level – designed as a learning process with a group of learners - the meso level - a strategic approach by a school to facilitate blending learning -, and the macro level – embedded as a system-wide approach.

According to the Council Recommendation on blended learning approaches for high-quality and inclusive primary and secondary education on blended learning for high quality and inclusive primary and secondary education, the council of European Union recommends that member states

1. Support teachers and trainersby considering the following measures:

As a direct response to the crisis:

a) Supporting teachers' self-assessment on use of digital technologies, as well as upskilling courses and other forms of professional learning for teachers and trainers to help them use andembed digital programmes and tools in teaching. Developing and disseminating online and on-site pedagogical modules and resources to help teachers and trainers adapt their teaching methods and practices to blended learning approaches, based on their experience and feedback, and engage with them in the use of new tools and materials, including how to operate safely and ethically in digital environments and how to support students in doing so

b) Increasing focus on the well-being and quality of professional life of teachers and trainers, school leaders and other educational staff in order to mitigate stress and prevent burnout. Thiscould include: facilitating access to qualified mental-health and support professionals and services; promoting the development and/or organisation of peer support to mitigate stress; and providing enhanced opportunities for training in resilience/mental well-being in initial teacher education and continued professional development programmes.

To support recovery and the longer-term preparedness of teachers and trainers:

c) Embedding blended learning approaches in initial teacher education and continued professional development programmes to help educational staff to adapt learning design as appropriate to their professional contexts and help them to become competent in facilitating learning in a range of indoor and outdoor environments, tools and tasks.

d) Providing access to centres of expertise and to appropriate resources for guiding and enhancing blended learning approaches. Supporting education and training staff to develop blended learning approaches in their specific contexts through staff exchanges and peer learning, creating strong school teams through collaborative learning, networks, collaboration projects, and communities of practice.

e) Developing guidance on new approaches to assessment and final examinations, including online, with suitable tools for formative and summative assessment that are appropriate for

different levels and learning settings of education and training.

f) Encouraging educational staff to participate in exploratory projects and research, including testing the use of tasks in other learning environments and the use of digital technology to support teaching and learning processes.

2. Support schools by considering the following measures:

As a direct response to the crisis:

a) Providing tools and resources for blended learning approaches, as well as guidance to schools on how these can be used effectively.

b) Mobilising or recruiting additional staff to allow more time for individual support at school and in after-school activities, if possible.

c) Supporting effective partnerships for infrastructure and resources between different education and training providers, including from local and regional authorities, business, professional associations, arts, cultural heritage, sport, nature, higher education and research institutes, civil society, the educational resources industry (including technology, publishing, and other curriculum equipment) and educational research.

d) Supporting schools in monitoring and self-evaluation of their inclusion strategies and practices regarding blended learning approaches and in taking measures necessary to remedy shortcomings, including the use of EU tools.

e) Improving parents', legal guardians' and families' understanding of learning environments, tools and tasks via systematic communication and guidance, without creating additional burdens for them.

To support longer-term recovery and to improve capacity for organisational change

f) Investing in high-speed internet connectivity for school-site and distance learning environments, on which online learning depends, accompanied by plans for maintenance and modernisation of the technical infrastructure.

g) Allowing, where possible and in line with national and regional legislation and circumstances,an appropriate level of autonomy for school-level decision-making (by school boards, heads, leaders), in order to facilitate innovation, responsiveness and adaptation to local and regional needs.

h) Supporting school leaders, who are key in managing organisational change and ongoing improvement, with dedicated professional development and guidance for their roles. Supporting schools and associated education and training providers in reflecting on blended learning approaches in their strategic planning and school improvement processes, which may include the use of self-assessment tools.

i) Supporting dialogue and networking between a range of stakeholders, including families, engaged in learning at school sites and other physical environments and in distance learning, in order to generate feedback and ideas for future development from different sources. This should also include dialogue, guidance and strategies to protect children's and young people's safety and to ensure the confidentiality and protection of their data, and their security and privacy in the digital world.

j) Using, where possible, part of the internal and/or external review and quality assurance mechanisms of a school for the blend of learning environments and tools, incorporating

evaluation of/via other providers than the school.

Teachers and school leaders' competences and support for effective blended learning

Blended learning should not only be linked to digital or online learning or the use of only digital tools. The notion of blended learning has been in place long before digitalisation. Nevertheless, in the framework of this section, the European Framework for the Digital Competence of Educators as well as the SELFIE self-reflection tool are presented as they are well established standards that support the definition of teachers competences as tools for effective blended learning.

European Framework for the Digital Competence of Educators

The European Framework for the Digital Competence of Educators (DigCompEdu) is a scientifically sound framework describing what it means for educators to be digitally competent. It provides a general reference frame to support the development of educator-specific digital competences in Europe. DigCompEdu is directed towards educators at all levels of education, from early childhood to higher and adult education, including general and vocational education and training, special needs education, and non-formal learning contexts.

DigCompEdu was published in late 2017 by the Joint Research Centre of the European Union (JRC). Its main objective is to align the European educational policies with such reference framework. Moreover, it is a synthesis of scientific studies at the local, national, European and international level. DigCompEdu is a digital competence model with 6 differentiated competence areas. Each area has a series of competencies that "teachers must have in order to promote effective, inclusive and innovative learning strategies, using digital tools". DigCompEdu areas and levels, depending on the module's context and the training activities. DigCompEdu details 22 competences organised in six Areas (see Figure 1). The focus is not on technical skills. Rather, the framework aims to detail how digital technologies can be used to enhance and innovate education and training. The DigCompEdu different Areas are presented below.

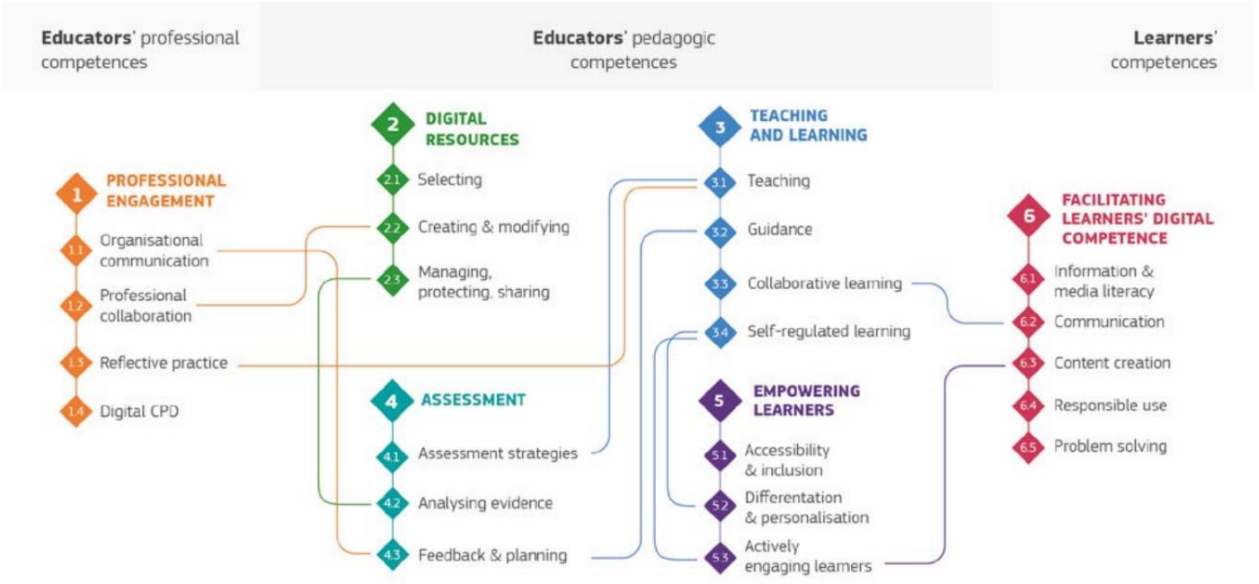

Figure 1. DigCompEdu areas and competences

- Professional engagement: Capacity to use digital technologies to improve the teaching process and interact professionally with colleagues, students, parents and different agents of the educational community. Furthermore, this communication through technology allows for individual professional development and collective and continuous innovation in the educational organisation.
- Digital resources: Identifying quality educational resources. Teachers must also be able to modify, create and share these resources to adjust them to their objectives, students and teaching styles. Likewise, they must know how to use and administer the digital content responsibly, respecting the author rights and protecting personal data.
- Digital pedagogy: Knowing how to design, plan and implement the use of digital technologies in all the phases of the teaching process, promoting student-centred approaches and methodologies.
- Evaluation and feedback: Digital technologies can improve the existing evaluation strategies and pave the way for new and better evaluation methods. Moreover, after analysing the large amount of available data (digital) about the individual interactions of students, teachers can provide more specific comments and support.
- Empowering the students: One of the key strengths of digital technologies in education is their potential to boost the collaboration of students in the teaching-learning process and their autonomy in it. Moreover, digital technologies can be used to pro- vide learning activities adapted to the competence level, interests and learning needs of each student.
- Facilitating the competence: The capacity to facilitate the digital competence to the students is an integral part of teacher competence in ICT and the main theme of this competence area.

The core of the DigCompEdu framework is defined by Areas 2-5. Together these areas explain educators' digital pedagogic competence, i.e. the digital competences educators need to foster efficient, inclusive and innovative teaching and learning strategies. Areas 1, 2 and 3 are anchored in the stages characteristic of any teaching process, whether supported by technologies or not. The competences listed in these areas detail how to make efficient and innovative use of digital technologies when planning (Area 2), implementing (Area 3) and assessing (Area 4) teaching and learning. Area 5 acknowledges the potential of digital technologies for learner-centred teaching and learning strategies. This area is transversal to Areas 2, 3 and 4 in the sense that it contains a set of guiding principles relevant for and complementary to the competences specified in these areas.

DigCompEdu distinguishes six stages or levels (see Figure 2) along which educators' digital competence typically develops. For each stage, a role descriptor is provided which reflects the particular focus of digital technology use typical for the competence stage. These role descriptors also relate to an educator's relative strengths and roles within a professional community.

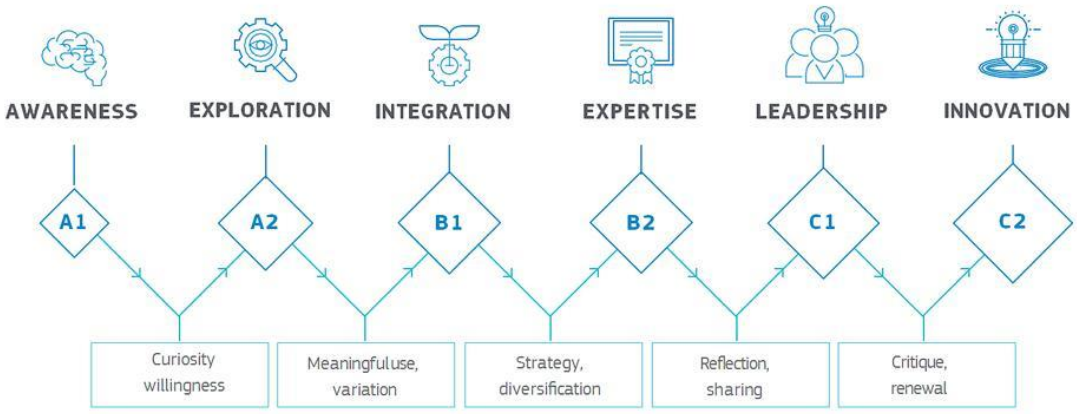

Figure 2. The levels of competences of DigCompEdu

The proposed progression model is intended to help educators understand their personal strengths and weaknesses, by describing different stages or levels of digital competence development. For ease of reference, these competence stages are linked to the six proficiency levels used by the Common European Framework of Reference for Languages (CEFR), ranging from A1 to C2. These stages and the logic of their progression are inspired by Bloom's revised taxonomy1. It is widely accepted that this taxonomy explains the subsequent cognitive stages of any learning progress well, from "Remembering" and "Understanding", to "Applying" and "Analysing", and finally to "Evaluating" and "Creating". Similarly, in the first two stages of DigCompEdu, Newcomer (A1) and Explorer (A2), educators assimilate new information and develop basic digital practices; at the following two stages, Integrator (B1) and Expert (B2), educators apply, further expand and reflect on their digital practices; at the highest stages, Leader (C1) and Pioneer (C2), educators pass on their knowledge, critique existing practice and develop new practices.

The labels for each competence level were selected to capture the particular focus of digital technology use typical for the competence stage. For example, to be at, say, Integrator (B1) level as concerns teaching practices (Area 3), means that the educator's current competence development focus is on integrating a range of digital technologies in teaching and learning. It implies that the next step for this person's digital competence development would be to move to the Expert (B2) phase, i.e. to gain more confidence, to better understand what works, when and why, and to be able to find suitable and innovative solutions, including ones for tricky situations.

In this sense, the descriptors also relate to an educator's relative strengths and roles within a professional community. For example, within a team of educators collaborating on a project, an Integrator (B1) is ideally suited to sourcing new ideas and tools, whereas the colleague at Expert (B2) level may be better at deciding how to go about implementing these; the colleague at Explorer (A2) level can best identify the possible problems learners may encounter in the use of the digital technologies involved, and the role of the Leader (C1) or Pioneer (C2) of the team would be to shape the project so as to seize the innovative potential of digital technologies in enhancing learning and empowering learners.

iNACOL Blended Learning Teacher Competency Framework

The iNACOL Blended Learning Teacher Competency Framework identifies 12 specific competencies, which are organized into 4 larger domains—mindsets, qualities, adaptive skills, and technical skills. These domains are distinguished not only in content (the type of competency and how is it expressed) but also in how they are developed in individuals. A brief description of each domain follows.

- **mindsets:** Mindset competencies include the core values or beliefs that guide an individual's

thinking, behaviors, and actions, and that align with goals of educational change and mission. In blended learning, practitioners need to understand, adopt, and commit to mindsets that help them shift towards new forms of teaching and learning.

- **Qualities:** Quality competencies are those personal characteristics and patterns of behavior that help academic staff make the transition to new ways of teaching and learning. These qualities, like grit, flexibility, and transparency, need to be coached, reinforced, and developed over time.
- **Adaptive skills:** Adaptive skills are generalizable skills that apply across roles and subject areas. These skills—which include things like collaboration and problem-solving—are complex; they help practitioners tackle new tasks or develop solutions in situations that require organizational learning and innovation. Theyare mastered through modeling, coaching, and reflective practice.
- **Technical skills:** Technical skills are domain-specific "know-how" and expertise that educators used to execute against the known tasks in their jobs. They are acquired and mastered through instruction, training,and practice.

Figure 3. The iNACOL Blended Learning Teacher Competency Framework

The *Framework* focuses mainly on the competencies deemed most essential with the goal of creating a tool that would be streamlined and implementable. The following implicit assumptions about effective blended learning teachers are embedded within other explicitly stated competencies:

- **high expectations and commitment to achieving equitable outcomes.** Teachers create rigorous but supportive environments in which students are held to high expectations academically and behaviorally. They seek evidence of achievement of goals. Further, in order to help all students meet these high expectations, teachers move beyond a traditional notion of providing each student with the same and equal inputs

  towards a focus on equity in both inputs and outcomes. They are willing and able to apply more and

different resources to certain learners who need them to achieve.

- **desire to move towards competency-based learning.** Teachers recognize that not all students learnat the same pace, and that mastery of knowledge and skills is a better measure of learning than time on task. given this, teachers measure progress against competency attainment and find ways to meet students where they are along their learning path rather than adhere to one-size-fits-all schedules or sequences of instructional events.
- **valuing all learners—including those with different skills, exceptionalities, and needs.** In seeking to personalize their instruction, teachers recognize that all students bring different strengths and needs to the table, including those with identified disabilities. They are aware of different learning preferences, diversity, and universal design principles and appropriately differentiate and adapt to meet these differences.

The use of Self Reflection Tools to support teachers and school leaders

Innovation and systemic change in education can be slow to take root. Developing the innovative potential of schools, or successfully integrating digital technologies, requires a holistic approach. This means planning for innovation and change in, for example, pedagogies, infrastructure, organisational capacity, human resource management and institutional strategies. There is a considerable need to support and involve a broad set of stakeholders (eg educational leaders, educators, administrative staff, students and external stakeholders) so that each institution can respond to the need for institutional change and development in a meaningful, comprehensive and strategic way. Improving and modernising education and training systems is a key priority for the EU. The Europe 2020 strategy acknowledges that a fundamental transformation of education and training is needed to provide the knowledge, skills and competences required for Europe to remain competitive. Educational organisations such as schools and universities have to evolve and adapt in order to achieve their core mission: to educate students to be successful in a complex and interconnected world that faces rapid technological, cultural, economic and demographic change. The use of self-reflection tools can be a way to support organisational change towards identifying goals of sustainable innovation, defining actions and achieving improved learning outcomes.

According to the European Framework for Digitally-Competent Educational Organisations (DigCompOrg)[1] education institutions - to consolidate progress and to ensure scale and sustainability - need to review their organisational strategies in order to enhance their capacity for innovation and to exploit the full potential of digital technologies and content. The primary 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.

SELFIE is a free, customisable tool to help schools reflect on how they use digital technologies to support teaching and learning. The SELFIE tool is one of the 11 initiatives set out in the Digital Education Action Plan of the European Commission to promote the effective use of digital technologies in schools by supporting innovation in teaching and learning practices. SELFIE stands for *Self-reflection on Effective Learning by Fostering Innovation through Educational Technology,* and it addresses digitally-based innovation right across the school organisation. The tool is based on the *European Framework for*

[1] https://ec.europa.eu/jrc/en/publication/eur-scientific-and-technical-research-reports/promoting-effective-digital-age-learning-european-framework-digitally-competent-educational

Digitally-Competent Educational Organisations (DigCompOrg) and has been developed in a participatory manner, involving schools, policy makers, and researchers from across Europe.

SELFIE focuses on learning rather than technology. As such, it considers all school dimensions: school strategies; teaching, learning and assessment practices; technological and physical infrastructure; curricula; and student experience. It is by no means directed towards technologically advanced schools. In fact, SELFIE is especially helpful for schools whose infrastructure is still fairly rudimentary and where the use of digital technology is quite limited. As a tool and associated reflection process, SELFIE is designed to support systematic and transparent development of ongoing practice through reflection, thereby improving student, professional and organisational learning. SELFIE can enable school communities to periodically self-reflect on their progress and help them plan future steps in realising effective digital-age learning.

SELFIE comprises distinct self-assessment surveys respectively addressing school leaders, teachers, and students at different levels of compulsory education. These respondents are requested to reflect on their experience of how digital technologies are used for teaching and learning within their school's learning community. Each survey comprises a set of core items (most of such indicators are common to all education levels); it can also include some optional items (selected from a pre-defined set of optional indicators that the school can opt to add to its questionnaire according to specific needs) and the possibility to create its own self-defined items for its own particular needs, using a standard template form. Participation in SELFIE is on a voluntarily basis, and all data collected is anonymous and safely stored on European Commission servers.

When participating school leaders, teachers and students have provided their questionnaire responses, the school automatically receives a detailed, tailor-made report, called the SELFIE School Report (SSR). This captures participants' view of their school's use of digital technologies for learning, highlighting perceived strengths in technology use and areas for improvement. Like the pixels in a photographic selfie, the more school leaders, teachers, and students participate in SELFIE, the clearer and more accurate the SSR of their school will be.

Only the participating school itself has access to its SSR, which provides the overall results (and associated breakdown) of the information that the school's leaders, teachers, and students have provided. The school's report is automatically generated on the SELFIE platform, once the participating students, teachers and school leaders staff the have replied to their questionnaires.

The SELFIE School Report (SSR), which contains 5 sections, is an interactive document that highlights perceptions of what is working well at the school and where improvements may be needed. The data are displayed in different ways, allowing for various comparisons and analyses at different levels of granularity.

General tips that the EC gives for analysing SELFIE results suggest focusing on (a) high or low aggregate scores, and (b) any discrepancies in how students, teachers and school leader-staff view technology use. This should help the school to gain better understanding of where action might be needed.

It is up to the individual school to decide how the wish to use their results. The SSR can be employed to kickstart an internal dialogue within the school community, possibly with the aim of devising an action plan to improve the use of digital technologies for teaching and learning. The opportunity is available to compare year-on-year results and thereby to track medium term trends and improvements.

1. Overview of SELFIE results

This section of the report shows the average rating each user group gave in each of SELFIE's eight thematic areas:

- (A) Leadership,
- (B) Collaboration and Networking,
- (C) Infrastructure and Equipment,
- (D) Continuing Professional Development,
- (E) Pedagogy: Supports and Resources,
- (F) Pedagogy: Implementation in classroom,
- (G) Assessment Practices,
- (H) Student Digital Competence.

For each area, the number of questions answered by each user group is also displayed.

2. Results per Area

This section shows the average rating for each statement within a given area (Leadership, Infrastructure and Equipment, etc.). For each area, the questions answered by each user group are also shown.

3. Results per User

Overall results are also displayed for each specific user type. Results for each area are grouped in colour-coded sections, with each numbered spoke of the wheel representing a specific SELFIE question. The light grey segments in the graph indicate core questions that were either not posed to this user group or, alternatively, received a "not applicable (N/A)" answer from every single respondent in that group.

4. Statements defined by the school

In addition to results related to SELFIE-standard (core and optional) item questions, the results for any statements that the school itself created for inclusion are also given. These are displayed as separate bar charts for each user group. Each bar shows the average rating given for that statement and indicates the number of users who responded to it.

5. Additional Areas

Ratings are also displayed for the six additional areas that are featured in SELFIE questionnaires to provide the school with more details. These are:

1. Usefulness of Continuing Professional Development (CPD) activity
2. Individual teacher confidence in the use of technology
3. Percentage of time spent teaching through digital technology
4. Factors inhibiting the use of technology
5. Approach to the adoption of new technologies
6. Student use of technology within and outside of school

RESEARCH DESIGN, METHODS AND MATERIAL

The current research is a result of a mix of internal and external desk research. For internal desk research, partners in the EEPN network provided descriptions of current research as well as inspiring practices and policies in their own fields and/or countries. Some of the material provided was only

available in the form of internet links, and thus the internal desk research was directly linked with the external one: internet search for more research and practices for comparison, as well as analysis of existing EU documentation in the field. In the case of resources available in languages beyond the linguistic scope of the research team, we were relying on details provided in English by network partners.

The choice of examples analysed for the current research was based on the recommendations of EEPN project partners rather than on the research into the effectiveness or impact of the practices. At the same time, the main focus was on offering a diverse pool of examples to show diverse approaches leading to similar results to raise awareness of diversity and cultural differences.

When designing the research, the above listed crucial aspects were taken into consideration. An effort was made to choose examples for analysis in all fields and with different scopes (local, regional, national). The guiding principle at analysing the practices was to explore how various examples are related to and rooted in research evidence. The aim was to offer an analysis on the basis of the methodological framework Theory of Change (ToC). This methodological tool is used by many different organizations ranging from governmental bodies to (large) corporates and NGOs to support the processes of policy and project development. However, ToC was initially developed as an evaluation tool. In this process, the ToC model's outcomes – and with that, impact – in an 'outcome pathway' (Taplin et al. 2013). The ToC framework works as follows:

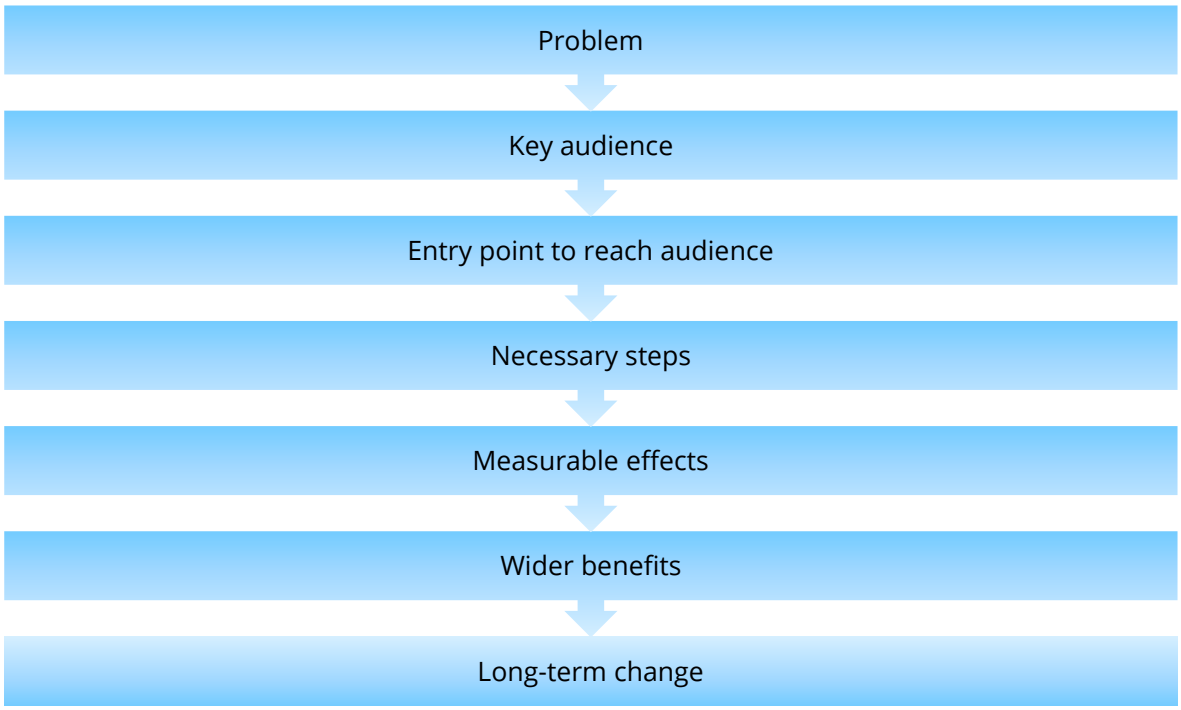

Figure 4. Theory of Change Model

An important step in evaluating projects from the framework of the ToC is identifying what (pre-) conditions must be put in place to reach these goals. The success of this model is to be able to demonstrate progress by evaluating the outcomes as evidence to what extent the goals are achieved. Through six different questions, key assumptions will be defined that together answer the question: "What is the long-term change you see as your goal?" In this way, the ToC methodology provides a structured description and elaboration on the questions what, how and why. In doing so it shows how

a specific project contributed to a desired change and how that development can be expected in a particular context.

Our scope was limited, thus the choice of examples analysed does not indicate that they are to be considered 'the best', but rather as an inspiring collection. However, the added value of the current research is that it is based on the knowledge and experiences of the diverse network of EEPN, and thus not restricted to the outreach of the research team.

ANALYSIS OF CHOSEN EXAMPLES

Analysis of distance education during the first wave of the covid-19 epidemic in Slovenia

The basic goal of the research was to find out how teachers carried out distance education in the conditions of school closure, how distance education was perceived and experienced by students and how the work of collectives was organized and directed by principals. In this context, from three perspectives (teachers, students and principals) was explored how the work was organized in schools or. lessons on how the educational goals were achieved, how the knowledge was tested and assessed, how the safety and stimulation of the learning environment were ensured, and what problems the various stakeholders faced and what they perceive as an opportunity in this way of education.

Learning points:

The results of the research showed that the majority of teachers (a little less than two-thirds in secondary schools, a little less than half in primary schools) conducted lessons during distance education in a way that equally combined videoconference delivery of lessons with guidance of students with written instructions for independent learning. The authors state a slightly different sequence, in which parents reported that teachers most often contacted students with written instructions for learning, followed by video conferences and, lastly, telephone dialogue. Similar results were also obtained in the students' answers. Also, the results of the research remind us that teachers who established contact with students via video conference most often used the explanation method, which was combined with educational conversation and demonstration. In teaching methods, learning and teaching activities are intertwined.

BlendVET. Project Blended learning in vocational education and training

Digital competencies are key to today's and tomorrow's world of work, and Vocational Education and Training (VET) needs to keep pace with these developments. It is not enough to introduce digital competencies into the curricula, but education itself needs to be redesigned, as education is currently not keeping pace with the potential of digital developments. A didactic solution that addresses this issue is blended learning (any educational activity that combines traditional classroom activities (in person, book and pencil) with activities that use digital technology). The project therefore addresses the need of VET providers to get focused professional support to introduce blended learning in their daily practice.

Learning points:

The project provides several concrete results among which the most important are training for teachers and headmasters to support the implementation of blended learning, evaluation of piloting of blended learning at schools, compendium of best practices of teacher plans and developed digital teaching and learning materials. Outcomes: Improved skills and competencies of staff and students involved in blended learning. Teaching and learning practices in blended learning improved and knowledge and best practices shared with donor states institutions

DesignCT

The Design-CT project aims at supporting schoolteachers, of all grade levels and with various digital competency proficiency levels, to become authors and designers of pedagogically- sound blended- and

digital-lessons and resources. The Design-CT project offers six teacher and peer-to-peer training programmes available in English, French, German, Greek and Portuguese, and co-designed with and for teachers of diverse digital competency profiles: beginner, advanced and proficient users of educational technology. Furthermore, the Design-CT Ecosystem provides an authoring tool with smart support and recommendations for content creation which facilitates the conversion of traditional learning content into a digital one.

Learning points:

The Design-CT project produces 45 Design-CT Kits with pedagogically designed and selected scenarios, tools and templates, and 150 exemplary lessons that teachers can readily re-use, re-purpose and implement in their teaching practices. Supported by the authoring tool, the content of the kits can be translated into any language, eliminating the language barrier in sharing and re-using educational resources. Design-CT applies cutting edge teacher training methodologies and instruments, empowering teachers in the implementation of innovative pedagogical approaches, but also in designing their own digital lessons.

Digipadevus. Teachers' digital competence model & self-evaluation questionnaire

This model has created sample questionnaires for teachers of general education schools (in Estonian and Russian) and university professors and supervisors to analyze their digital competence. Questionnaires consist of statements to be answered based on a given scale. Self-assessment statements are based on the European Commission's framework for educators DigCompEdu, according to which digital competence is divided into six application areas:

- professional development and engagement
- digital learning software
- teaching and learning
- evaluation
- empowering learners
- development of learners' digital competence

Learning points:

Different formats of self-assessment questionnaires have been created (Google Forms, Lime Survey, Microsoft Excel Worksheet, TAO), which you can download to set up the questionnaire in an environment that suits you. If necessary, use the help of the school's educational technologist or IT manager.
For the teacher (Google Forms, Lime Survey., MS Excel, TAO)
For the teacher in Russian (Google Forms, Lime Survey, MS Excel, TAO)
For teachers (Google Forms, Lime Survey, MS Excel, TAO)

ETUCE position on the Proposal for a Council Recommendation on blended learning for high quality and inclusive primary and secondary education

ETUCE acknowledges the importance of enabling teaching and learning methods in education to evolve – with adequate support and sustainable public funding - in accordance with the challenges of the 21st century in order to ensure quality and inclusive education to all, including in the context of the digital and green transition. Education trade unions point out that the current use of blended learning in primary and secondary education is still substantially characterised by the emergency settings of the COVID-19 pandemic. Besides, in the primary and secondary education sectors, the social contact between

teachers and students and the face-to-face teaching has proved to be of irreplaceable value to ensure the best pedagogical methods and students' outcomes as well as to foster the full development of the children's potential.

Learning points:

The adoption of a blended learning approach within the emergency teaching and learning during the COVID-19 pandemic has posed unprecedented challenges to the education sector. Among the main concerns of education trade unions, are inadequate infrastructure, lack of sustainable public funding to education and increasing privatisation, increased workload for teachers and education personnel, deteriorated working conditions, lack of support and training on digital education, challenges to the mental health and well-being of teachers and students, e.g. increased risks of stress factors, hindered work-life balance, social exclusion. While blended learning is a tool to innovate teaching and learning, the enormous difficulties encountered during emergency teaching and learning have clearly shown that teachers still miss adequate tools to overcome the challenges deriving from blended teaching and learning. These include access to digital equipment, shortage of teachers and supporting staff, increasing workload and deteriorated working conditions for teachers, increasing student drop-out and new challenges on health and safety of teachers and students.

Lideratge de l'estratègia digital i Competència digital del professorat / Leadership of the digital strategy and Digital competence of the teaching staff

This is an inspiring practice in policy implementation or policy advice. The Department of Education must provide all schools with access to a set of digital and telematic services aimed at improving the development of educational activity, ensuring the equity and inclusiveness of all students, with special attention to vulnerable students. The digital center strategy (DCS in English, EDC in Catalan) defines and specifies the lines of action of a center that make it possible for teachers, students and the center to achieve digital competence. To achieve this digital competence, the EDC includes all areas of the center: organizational, methodological, curricular and communicative, which must necessarily be involved and, where appropriate, transformed, from a perspective of innovation and continuously improve.

Learning points:

To develop the Leadership of the digital strategy and the digital competence of teachers, a Territorial Network of Digital Culture has been organized, which is a meeting point and support in the process of digital transformation of schools in Catalonia. The aim of this proposal is to exchange and share classroom and school experiences, add and enrich the work that is already being done in the territory, promoting networking and facilitating, from the Digital Culture Area, spaces for coordination and documentation on specific topics. As a dynamizing element, the Digital Culture Territorial Network, programs several sessions distributed throughout the course. The Department proposes to the teaching community: seminars and webinars, Conferences, Working Groups (e.g., in Leadership in Digital Strategy, Scratch, Computational Thinking), and World Cafés.

mSchools - Higher quality, more sustainable, inclusive education for everyone / mSchools- Una educació de més qualitat i més sostenible per a tothom

mSchools was founded as a public-private partnership between GSMA (GSM Association, is a global mobile ecosystem organization), the Catalan Department of Education and the City Council of Barcelona. mSchools is a global community of teachers, researchers and policy-makers committed to driving change in education through leveraging technology in learning. Built on innovation, collaboration and open communication, mSchools exists to support educators everywhere in using

technology to make transformation a reality in their classrooms, hence enabling their students to become active and responsible digital citizens with the necessary skills to navigate today and tomorrow's world. The aim is to share in community the best classroom resources and practices to accelerate digital skills.

Learning points:

- mSchools identifies, showcases and shares new ideas, best practices, learning resources and tools that use mobile technology in the classroom with content that is open and accessible to educators everywhere.
- There are: 8000 teachers and 2600 schools involved and 300.000 students impacted.
- In 2019, mSchools was officially recognised by UNESCO as a pioneer and world leader in mobile learning, digital transformation and educational inclusion.
- The participation of the GSMA is at the same time a great opportunity to expand blended learning and, at the same time, an element that bases its interest in the initiative as a way of giving visibility to mobile technology, as a business sector.

Nationell digitaliseringsstrategi för skolväsendet/National digitalization strategy for school system

In October 2017, the government adopted a national strategy for digitizing the school system. The government wants the Swedish school system to be a leader in using the possibilities of digitization in the best way to achieve a high level of digital competence and to promote the development of knowledge and equality. One purpose of the strategy is to contribute to development work being carried out strategically, systematically and cost-effectively within the entire school system and with all principals. The strategy extends up to and including the year 2022. The strategy contains three focus areas, all with sub-goals, which together are deemed to lead to the overall goal of the strategy being achieved by 2022. This national strategy has three focus areas: Digital competence for all in the school system; Equitable access and use and Research and follow-up regarding the possibilities of digitalization.

Learning points:

- All school staff, from school organizers to teachers and other professions in schools have a joint responsibility for digitalization in schools.
- Main challenges are related to the expansion and use of digital technologies in schools, including issues of equity and access.

Švietimo portalas: Nuotolinis ir hibridinis ugdymas. (LT)/(EN) Education portal: Distance and Hybrid Education.

Education portal e-mokykla /e-school collects different recommendations/guides on the issue of distance and hybrid education developed by practitioners, researchers, politicians in 2020-2021. The documents have been initiated, developed and supported by National Agency for Education.

Learning points:

- Support to teachers and school leaders competences development and practical implementation of digital and hybrid education in schools.
- Classes need to have special equipment. National Agency for Education supports schools with the equipment.

- Guide for competence development, good practice examples, theoretical support, etc.

Reflecting4Change

The Reflecting for Change (R4C) project aimed at proposing an advanced support framework, as well as a set of core policy recommendations, to schools seeking to introduce a type of holistic change that will ensure a meaningful uptake of sustainable innovation, with an emphasis on achieving improved learning outcomes as set by the Europe 2020 strategy. R4C was a Forward-Looking Cooperation Project that promotes the use of self-reflection tools to support innovation and systemic change in education and training institutions. In R4C approach, innovation is understood in terms of a school's pathway to digital maturity (e-maturity) and its comprehensive relationship to the use of ICT, as well as a school's pathway to openness demonstrated in its relationship with external stakeholders, in parental engagement, in fostering the well-being of its community as a whole, in its ability to combine the delivering of the curriculum with a study of local challenges, in its willingness and capacity to share its achievements with other schools and in its engagement with contemporary Responsible Research Innovation (RRI) challenges.

Learning points:

Assessing the effectiveness of the R4C Innovation School Model in schools needs an appropriate tool that is sensitive to analyse the key characteristics of these environments. The development of the R4C Self-Reflection Tool was the response to follow the organisational change during the implementation based on the recent methodologies for assessing the impact of RRI in education it analysed the school community engagement in research and innovation as well as the assessment of schools' openness. By focusing on three identified areas of 'growth' – school management, school process and teachers' professional development– the specific instrument is offering the opportunity to the school community stakeholders to describe in detail the current situation in their school while at the same time they are able to translate the findings to specific recommendation for future actions and development. More specifically the tool aims to support the school heads to identify the status of their school in the following key areas (levels of innovation):

- Management
- Process
- Professional Development

REVIEW / CONCLUSIONS

Blended learning instructional models are among the fastest growing trends in education today. The popularity of blended learning is no surprise; it offers an alternative way to engage students with a remarkable array of learning experiences, particularly for students who struggle in traditional classrooms.It also gives teachers an opportunity to facilitate learning in innovative ways.

But the presence of technology alone is no guarantee that students will succeed. Strong, effective blended learning doesn't justhappen. It requires the work of thoughtful, engaged teachers who leverage the best of technology and face-to-face instruction toaddress the unique learning styles of their students.

Teachers foster school innovation with the help of technology in blended learning classrooms. Teachers are knowledge facilitators, mentors, and coaches in these environments. They assess, analyze, and synthesize student work and data todevelop unique learning plans for each student, while monitoring and working with small groups and entire classes. They identify learning opportunities for students, engaging them in complex activities and holding them to ever higher expectations. In short, these educators are "becoming true educational designers," harnessing the power of these online tools to make their curriculum resonate with students.

When educational technology is combined with strong, competent teachers, it makes for a classroom where teachers are able to buildpowerful relationships and direct their attention where students need them most. Teachers can spend their time communicating,connecting, facilitating, providing feedback, and ultimately helping all students learn.

The acquisition of digital competences by teachers is a rather crucial aspect in the quest for digitaldevelopment and maturity by our schools. A key element in this process is the continuous updatingand enhancing of such competencies and the appropriate framework and pathways that this could be achieved. There are 3 rather important avenues that can may support this process according to the relevant research:

- Formal Continuous Professional Development
- Self-assessment tools
- Teacher networks

Continuous Professional Development**.** In the majority of European countries some form of compulsory continuing professional development is organized centrally by the relevant educational authorities, offering a variety of training courses (traditional face-to-face training, online courses, Massive Open Online Courses) designed and delivered by different public or private CPD providers such as schools, universities, teacher associationsor private institutions and covering a range of topics, from basic skills in IT to targeted training on howto use advanced digital technologies and content in the classroom. Priorities tend to be heavily influenced by national policies and agendas with a number of countries allowing for schools to set their own digital training agenda according to their needs, while other opt for a more top-down approach

Self-assessment tools**.** A specific reference is made to the value of self-assessing digital competencies. Self-assessment tools facilitate the appropriate evaluation of the use of ICT tools and digital skills of teaches and may detect certain areas that improvement is needed, and in a way that allows for the consideration of professional development targets.

Teacher networks**.** Teachers often report involvement in professional development activities that are organised and delivered by communities of peers and networks.

Teacher networks may reinforce collaboration and facilitate the exchange of teaching practices, experiences and methods. They are often used to share teaching materials and didactical resources. Usually teacher-specific digital communities operate on-line and are part of wider digital resource platforms or portals that provide other types

ofsupport such as digital learning resources, including open education resources (OER), and informal online professional development opportunities.

Aside from the obvious areas of intervention, such as curriculum, teacher training and assessment,there are few other steps that could accelerate this process. A number of these are rather crucial towards digitally mature open and blended schooling settings:

- investment in IT infrastructure
- requirements for school digital plans
- digital leadership in schools (school heads and digital coordinators)
- parental involvement
- availability and quality of digital learning resources
- the place of digital education in external school evaluation frameworks

A wealth of recent research in cognitive psychology and the neuroscience of learning presents new pathways to efficient and meaningful education: leveraging such techniques as blended-learning scenarios allows schools to operate more effectively. From whole-of-school transformation to innovative learning solutions, open and creative environments can cultivate effective and engaging learning. A commitment to personalized learning includes providing solutions that empower all students. Inclusion, accessibility and sustainability should be included in the key functionalities of the educational activities in the open school environment. In our view the school environments should provide more challenging, authentic and higher-order learning experiences. It should enrich and transform the students' concepts and initial ideas, which could work either as resources or barriers to emerging ideas. The schools' environments should offer opportunities for teaching tailored to the students' needs while it should provide continuous measures of competence, integral to the learning process that can help teachers work more effectively with individuals and leave a record of competence that is compelling to students.

Before schools can embark on change, they need a clear vision and leadership. More specifically school leaders need to create a shared vision for how science education best can meet the needs of all learners and to develop a plan that translates the vision into action. This vision and planning processes should be based on holistic view of the current innovation status of the school. This transparent overview will allow for more targeted planning to address the specific issues that each school is facing, thus optimizing the efforts to overcome them. The vision begins with a discussion of how and why a school's community wants to transform learning. Once these goals are clear, the findings from the Self-Reflection process can be used to open new possibilities for accomplishing the vision that would otherwise be out of reach. Responsive and creative use of the self-reflection process is a powerful way to improve curriculum and assessment outcomes for students, teaching practices and for the school as organisation. Focused assessments and support mechanisms based on analytics could support learning and teaching by communicating evidence of learning progress and providing insights to teachers; school leaders, policy makers; parents; and, most importantly, the learners themselves. These assessments can be embedded within learning activities to reduce interruptions to learning time.

RECOMMENDATIONS BASED ON THE CONCLUSIONS

1. Blended learning has the potential for teachers to redefine their practice using a range of tools, including digital technology, where learners can engage in self-directed learning around issues that are meaningful to them. This embraces the contemporary educational perspective that students are not merely passive receivers of information and the teacher is not the only facilitator. Tools that facilitate greater student autonomy in the learning process can stimulate and support student agency (sense of own competence), personalised learning, and intrinsic motivation. Where relevant tools are used, it can also support the development of digital competences.
2. A blended learning approach recognises the value of school education as a collection of shared spaces for personal and social interaction, which itself is important for learning as a way of understanding and making meaning in the world. In a blended learning approach, shared-space learning – whether the same physical space or online - makes the most of the opportunity for interaction between pupils, between staff, and between pupils and staff.
3. Teachers and school leaders have a key role as change agents at school, local and regional, or national level. The prior experience and current competence (knowledge, skills and attitudes) of the teacher will have a significant impact on the effectiveness of their own individual, their school's, or their system's approach to blended learning not least because of their empathy for the learners, colleagues and other members of the local community. This aligns with the understanding that teachers are not merely passive facilitators of learning, rigidly following a prescribed curriculum, but are designers, constantly adapting their own approach based on the needs of others – some with a strong capacity for more provocative change and innovation.
4. Encouraging teachers and schools leaders to be change agents requires a level of autonomy for schools to make some of their own decisions about their strategy for a blended learning approach. The variety of education systems in Europe should always be taken into account as there are major differences in terms of autonomy granted to each education institution. Not every situation or opportunity can be predicted or planned years in advance; hence schools and their staff need some liberty with guidance to act as they see appropriate for their learners in any given context.
5. Combining effective school site teaching and facilitating flexible distance learning for all pupils in a way that functions as a coherent pedagogical approach requires a high level of competence of teachers and school leaders**.** This needs to be coupled with clear guidance, some degree of autonomy, and sufficient time and other resources to create an appropriate learning design in advance.
6. School self-evaluation has emerged as a key mechanism to support whole approaches to change and innovation. School self-evaluation and the diagnosis of school needs, insight and understanding followed by action for improvement and review can be effective in implementing a blended learning approach.
7. School self-evaluation has been shown to lead to greater sensitivity about areas in need of improvement. It is found to lead to more frequent and open consultation about the quality of education and more classroom visits by the school leader. The process of school self-evaluation allows teachers to develop a perspective beyond their own classroom, particularly when they are involved in decision-making. In addition, policy makers can also provide various tools, guidelines and approaches, adapted to local contexts and needs, which can support schools in their self-evaluation and organisational development. Human and financial resources and time also needed to be made to conduct effective school strategies for blended learning

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