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PART 3/5

COMMISSION STAFF WORKING DOCUMENT

Accompanying the document

Proposal for a Council Recommendation

on blended learning for high quality and inclusive primary and secondary education

{COM(2021) 455 final}

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3. What has been learnt from European stakeholders

3. What has been learnt from European education stakeholders

In order to support the statements of the Recommendation and to support action following its adoption, this chapter discusses recent evidence from research together with European stakeholder opinions and experiences.

Where possible, this Staff Working Document provides examples of existing policies and projects supporting blended learning specifically. However, it is not an exhaustive review of literature or project examples regarding teaching and learning in primary and secondary education. Given that blended learning is a constantly-evolving field – particularly in the context of school closures due to the COVID-19 pandemic – it should be acknowledged that new evidence and perspectives are always emerging.

3.1   Stakeholder groups and modes of communication

An ongoing dialogue with different education stakeholder groups involved is important in any change or reform process, not least with a blended learning approach that involves all parts of the school education system. This is important to recognise and value not just in the context of this Recommendation but also taking the work further at a national, regional, and local level in the future.

The European Commission has consulted with ministry of education representatives, European network organisations (of teacher educators, parents, students, employers, and trade unions), educators, school pupils, and other members of the public.

Various methods have been used to better understand the challenges and possibilities in this area:

- **online meetings and webinars:** allow different representatives to share and discuss experiences in depth, reacting in real time to each other's views

- **surveys to a targeted school education audience:** asking a small number of focused questions to a specific stakeholder group gives voice to a large number of practitioners and generates useful data to understand needs and possible solutions

- **public consultation:** allowing a broad set of opinions to be expressed can help decision-makers see an issue from a range of perspectives

- **research projects:** primary research (generating new data) can help understand the impact of a current or new approach, which can be complemented by secondary research (reviewing previous research) can give light on recent developments in the light of new contexts.

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In 2020, the Commission undertook a number of supportive and consultation activities, notably during the early months of the pandemic focusing on school site closure and reopening, for the Digital Education Action Plan, and at the start of the new academic year regarding ongoing school education development.

- The Commission hosted an online **Distance Learning Network** (April-June) with two subgroups - School Education and Higher Education - for Member States ministry representatives to exchange approaches on the continuity of education in their systems during the first months of the COVID-19 pandemic. Participants discussed and shared approaches on key topics, including assessment and examinations, well-being, and quality assurance. Representatives also gave their input to "Blended learning in school education: guidelines for the start of the academic year 2020/21" which were published online in July.

- **Exchange of information** and ideas on online and distance learning took place via the ministerial videoconferences organised by the Council presidency, and at the levels of Directors General for Schools, Higher Education, and Vocational Education and Training, the ET2020 Working Groups, and European stakeholder network events.

- A broad **public consultation** took place on the Digital Education Action Plan 2021-27 between June and September 2020. The Open Public Consultation results[1] found that almost 60% of the respondents had not used distance and online learning before the crisis and yet 95% consider that the COVID-19 pandemic marks a point of no return for how technology is used in education and training. The new Digital Education Action Plan 2021-2027 outlines the European Commission's vision for high quality, inclusive and accessible digital education in Europe. It is a call to action for stronger cooperation at European level to learn from the COVID-19 pandemic and make education and training systems fit for the digital age. One of the Action Plan's two strategic priorities is fostering the development a high-performing digital education ecosystem, under which the Recommendation is proposed.

- Additional communication with stakeholders on this topic was undertaken in April and September 2020 in the form of two **European online surveys** via the Commission's School Education Gateway platform, which highlighted the growing confidence of teachers and their capacity to innovate, but also still highlighted their urgent need for professional development opportunities.

- In August to October 2020, the Commission facilitated a series of online discussions with members of the **ET2020 Working Group Schools** (representatives of ministries and

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[1] Available at https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/12453-Digital-Education-Action-Plan/public-consultation

stakeholder organisations) specifically focused on blended learning in the current school education context.

In 2021, the Commission undertook further stakeholder consultation via:

- **two online workshops with Ministry of Education and European network organisation representatives**;
- **a consultation with over 100 school pupils[2] via the eTwinning community of teachers and schools:** A short questionnaire was designed with 5 questions: 4 as a mixture of multiple choice and open text responses, and 1 drawing task. eTwinning teachers were invited to volunteer to complete the questionnaire with their students. The teachers also provided an initial analysis of the student responses by completing a teacher summary. These summaries were the main source of the Commission analysis, complemented by analysing individual student responses.
- **inviting the public to comment on the broad description of the aims and key ideas of the Recommendation ("Roadmap")** with responses from international organisations as well as individual citizens.

Additional research that has taken place by the Joint Research Centre of the European Commission includes:

- A survey focusing on families with children and how they perceived remote schooling activities (11 countries)[3]

- Interviews with teachers, school heads, other stakeholders in 5 countries[4]

During 2020, many countries and international organisations, such as OECD, UNESCO, the European Distance and e-Learning Network, European Alliance for Apprenticeships, and the European Parents Association, held their own various events and research exercises, which the work on the Recommendation has benefitted from.

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[2] From the initial list of volunteers, 7 teachers took part from 5 countries (EL, DE, FR, HR, IT) with a total of 104 student responses – 38 primary and 66 secondary.

[3] How families handled emergency remote schooling during the Covid-19 lockdown in spring 2020 by Vuorikari, R., Velicu, A., Chaudron, S., Cachia, R. and Di Gioia, R., EUR 30425 EN, Publications Office of the European Union, Luxembourg, 2020, ISBN 978-92-76-24519-3 (online), doi:10.2760/31977 (online)

[4] European Commission / Joint Research Centre (forthcoming) *What did we learn from schooling practices during the COVID-19 lockdown? Insights from five EU countries*

3.2   Main findings during the consultation process

Through the different modes of communication listed above (section 3.1) the European Commission has explored with stakeholders these key questions:

- What are the opportunities for school education when adopting a blended learning approach?
- What are the challenges?
- How can blended learning as a concept be supported in a practical sense within and across national systems (i.e. how can it be not only better understood but implemented more in school education)?

From the open public consultation on the Digital Education Action Plan 2021-27, the majority of respondents from education and training across all sectors/levels were happy with the measures taken to ensure the continuity of education during the COVID-19 pandemic. However, the level of satisfaction appears to be greater in higher education compared to other educational levels, especially compared to early childhood education and care, and primary education.[5] Therefore it was critical to explore all aspects of this topic in as much depth, and from as many perspectives, as possible in order to fully understand the challenges and opportunities going forward.

The discussions and findings fall into different thematic areas. All are interlinked and are b a core understanding of the school being a learning organisation within a wider community:

- Design and management of learning
- Teachers
- School leaders
- Inclusion and targeted support to learners
- Well-being of staff and pupils
- Quality assurance

The following sub-sections discuss the evidence regarding challenges and possible solutions within each thematic area.

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[5] There was strong support for the approaches taken during the first months of the pandemic among respondents from non-formal education, higher education, adult education and vocational education and training. The proportion of negative opinions was larger (around 30%) among respondents from early childhood education and care, primary education, secondary education and the residual education category.

3.2.1 Design and management of learning

Image: https://rijdendeschool.nl/

This section provides recent evidence both about well-established approaches to the design of a blended learning approach, as well as the lessons learned from Emergency Remote Teaching in 2020, which can inform the approaches to design of blended learning.

There have been four decades of experience of designing online learning for schools, universities, vocational learning, individual and informal learning. At the school level, online programmes have been designed for a range of needs: as a replacement for mainstream schools, for elite athletes, to support school refusers, or those with difficulty in attending mainstream schools. Over the last 20 years there has been increasing use of blended learning as well as online learning in schools.

The COVID-19 pandemic necessitated a sudden switch for a great many students from classroom learning to forms of online and blended learning necessitated by the crisis but the design of which was not always ideal (Emergency Remote Teaching[6]).

When designing such blends, schools need to consider, at a minimum, the following ingredients[7] for their blended learning: learning environments – **where** learning will take place - ; and the tools that teachers and students will use – **what** types of devices and communication they use. These are embedded within the learning tasks that teachers and students will use – **how** learning will take place – in order to shape the learning design as a process towards intended learning outcomes.

This section takes an in-depth look at evidence supporting the following within a blended learning approach:

- Environments: where learning takes place

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[6] https://er.educause.edu/articles/2020/3/the-difference-between-emergency-remote-teaching-and-online-learning

[7] Presented by Michael Hallissy in the School Education Gateway webinar, "Blended learning: creating your unique blend", 15 March 2021, with an Introduction by Mariya Gabriel, the European Commissioner for Innovation, Research, Culture, Education and Youth. Recording available at: https://www.schooleducationgateway.eu/en/pub/teacher_academy/webinars/blended-learning-your-blend.htm

- Tools – types and access
- Tasks: how learning takes place
- Assessment

▪ *Environments: where learning takes place*

As blended learning takes place in a combination of -school site and distance[8] environments, schools may be (newly) responsible for both. Regardless of how public authorities (and legislation) define legal responsibility, all stakeholders need to benefit from both types of environment, and all types need to be functioning and accessible enough to support the learning experience to its full potential.

According to new research under development, valuing of out-of-classroom learning and ensuring equitable access to it is a common feature across all "high performing" systems. The challenge is an increasingly demanding curriculum but working in partnership with others (the work place, cultural and social organisations) is considered highly effective.[9]

> *"It's hard to talk about silver linings in a pandemic … but … it gives us an opportunity to reflect on our practice and learn. And getting kids outside leads to more active, experiential learning. Most kids thrive on that."* (Perspective of an education consultant[10])

Learning indoors on the school site

In a 2019 European survey on learning environments, two thirds of respondents thought that their school does not have an environment conducive to 21st-century education. Most classrooms are set up for 21-30 students and the most common seating layout is pairs of desks in rows. Respondents disagreed that changes to learning environments distract students or create stress for teachers but rather that innovation in teaching and learning is facilitated by the school's learning environment. Most believed that it is possible to change the learning environment in their school and that there are simple, low-cost steps to do so. However, 8 out of 10 respondents agreed that

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[8] The distance learning environment is often assumed to be the home, but could include: public libraries, museums and galleries; farms and factories; parks, forests and waterways; cafes and other social spaces (often with free Wi-Fi), hospitals (in the case of sick or injured children), or sports centres and film studios (in the case of children on professional contracts). In the case of a pandemic or other crisis, some or all of these may be closed except for emergency access.

[9] National Centre on Education and the Economy in conjunction with the Australian Council for Education Research. Part of a panel discussion at the Educa Conference – Helsinki, 28-29 January 2021. Programme available at
https://educa.messukeskus.com/programmes/?lang=en#programmeStage=Equity

[10] https://fordhaminstitute.org/national/commentary/outdoor-learning-can-help-students-during-covid-19-and-beyond

ministries and regional/local authorities are not supporting schools enough in creating an optimal environment for modern teaching and learning.[11]

"Education in which children have to sit still on a chair during a whole day is outdated and unhealthy." (Teacher)

In the 2021 student consultation (see 3.1 above for details), students were asked what was good and not so good about learning in the **classroom**. Many students (from multiple schools) said they enjoyed being in the same space as fellow students and working in groups. Some considered it easier to ask questions to their teachers and peers when they are in the same (physical) place. For a number of students, learning in the classroom made it easier to concentrate and stay focused, although others considered it a more chaotic and noisy environment.

"Good thing is that you can ask [the] teacher if you don't understand something; you meet and interact with your peers … sometimes it is too loud because of some who are not interested in learning or you get bored." (Student responses reported by their teacher in consultation)

The constraints of the school timetable was a challenge highlighted by one teacher: "They have difficulties to do work at a specific time."

Reflecting on when they learn in **other places around the school** (gym, library, playground), many positive factors were reported by students, such as fresh air in outdoors spaces, more team activities, and less stress.

"…it is good because the lesson is fun, interesting, motivating, exciting, training mind and body, they blow off steam, they have more space to move, they have access to books (other than course books)." (Student responses reported by their teacher in consultation)

As with classroom-based tasks, noise and distraction seem to be an issue for some students, whilst others feel these activities were too short and would need more time.

Learning outdoors

The COVID-19 pandemic restrictions brought renewed attention to the possibility and benefits of learning outdoors, and many schools around the globe actively planned to move learning outside of the walls of the classroom, notably in Denmark.[12]

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[11] https://www.schooleducationgateway.eu/en/pub/viewpoints/surveys/survey-on-learning-environment.htm
[12] https://www.washingtonpost.com/world/2020/09/16/outdoor-school-coronavirus-denmark-europe-forest/

Germany today has over 1500 nature and forest kindergartens[13] where children are encouraged to play, explore and learn in a forest or other natural environment. The idea has been replicated in neighbouring countries, and today there are associations in the UK and Switzerland: Forest School Association, Chouette-Forêt, and Waldkindergarten [14]. It is believed that not only do forest kindergartens allow children to reconnect with nature, they also teach them how to play together, how to be inquisitive, creative and innovative, and how to respect their environment.[15]
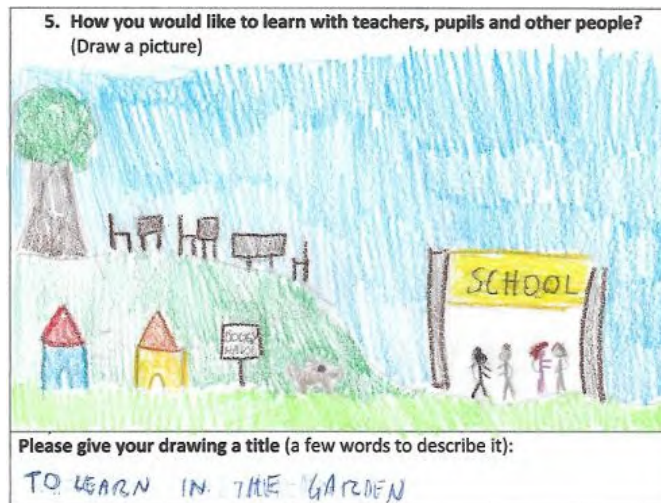
In the 2021 student consultation, a number of students (from multiple schools) said they were more interested and motivated when they were learning outdoors. Enjoying nature and fresh air were mention by a number of students to be a benefit.

"They like large spaces, discovering many things/places. They don't get bored and feel free to act." (Teacher report on student consultation)

A number of students said they found learning outdoors to be relaxing and good for concentration, although the presence of insects or cold weather were mentioned by some as negative factors.

"Learning in outdoor places seems to have human and social effects on the students' behaviour: they said they can escape, be in peace, relax, learn in silence and have a maximum of concentration." (Teacher report on student consultation)

Being closer to nature was a common theme in the survey picture task with some student pictures showing learning in an outdoors setting (gardens, trees, park, sun, flowers).

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[13] http://bvnw.de/

[14] http://www.forestschoolassociation.org/ ; http://chouette-foret.ch/index.php/accueil-4 ; http://www.waldkinderbasel.ch/

[15] https://www.schooleducationgateway.eu/en/pub/latest/news/early-years-education-in-the-f.htm
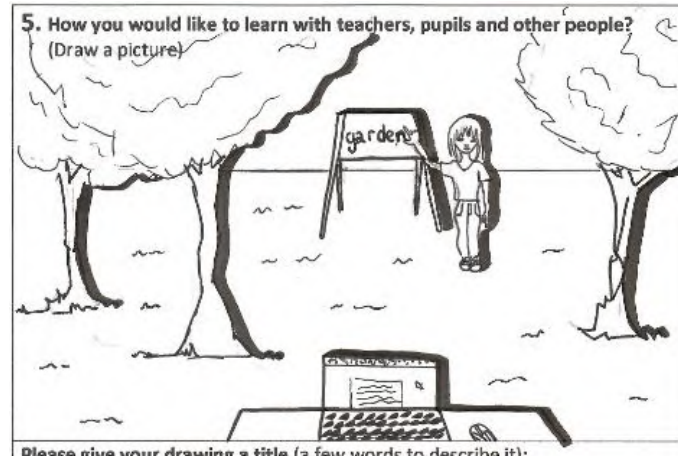
Figure 12: Student drawings as part of the 2021 consultation survey

Aside from the 2021 Student Consultation, there are pre-pandemic examples of school practice, such as from Italy where the approach to learning environments and tools was modified (see Example A, below).

EXAMPLE A: Comprehensive School Giovanni XXIII of Acireale, Italy

This school wanted to promote the active participation of students; foster inclusion; and nurture autonomy and a sense of responsibility. They adopted various approaches in re-designing learning environments and tasks:

• Outdoor schooling (nursery school): to stimulate sensory experiences by encouraging direct contact with nature.

• Bag-less learning (primary school): students only wear a light purse to hold their personal belongings and a notebook for homework tasks while school is furnished with various learning tools.

• Workshop rooms and flipped classrooms (secondary school): teachers personalise their working space in terms of furniture and other tools. In a flipped classroom approach, students prepare to lead their own class discussion by watching a pre-recorded lecture.

https://www.schooleducationgateway.eu/en/pub/resources/toolkitsforschools/detail.cfm?n=6084

Visits to other sites as part of the school day

Research and expert knowledge reveal that visits to **museums** can be powerful learning experiences. They are brought to life for children by specially trained museum educators and are highly engaging when collections are hands-on and are used by the children during the activities.

Narrative is an important feature and where the activities fit into a storyline that is packed with details, it stimulates both engagement and memory.[16]

When asked in the consultation about school trips to other sites, such as **museums, factories or sports centres**, a number of students said that the trips were stimulating and allowed them to learn new things in a different environment:

> *"[They] discover new things in a different place. New ways to learn … it is original." (Teacher)*

A number of students criticised, however, that the visits can also be boring, and they do not like the fact they needed to be quiet on these trips.

> *"The organization doesn't help them to discover by themselves. They think they are not being able to walk around and to see what interests them most."(Teacher)*

Visits to **farms** can also be an enriching experience for young people. As part of their school education, pupils can be introduced to different animals, including facts about their natural habitat and their role in food production. They can develop a more tangible understanding of the importance of healthy eating habits and can healthy eating habits. They can also be introduced to issues such as local food chains, organic farming, sustainable production or food waste. These are recognised benefits of the European Union School Fruit, Vegetables and Milk Scheme.[17] There are numerous examples of farms and ecological centres opening up their sites for educational visits. However, equal access to these opportunities relies on sufficient funding, either regionally or nationally, and synergies between education and agricultural policies. Without these, the risk is that only those who can afford such visits, or who are situated near a facility that has received special education funding, will benefit.[18]

Diversifying and opening up school and community facilities

A makerspace is typically a room or studio inside a school, library or other community building for making objects using tools. Theses spaces are open to people of different ages and skill level and have a variety of equipment that is not typically available in every home or classroom, including full sets of drivers and drills, 3D printers, laser cutters, and soldering irons for circuit boards.

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[16] https://www.schooleducationgateway.eu/en/pub/viewpoints/experts/what-a-visit-to-a-museum-can-m.htm
[17] Information about the EU School fruit, vegetables and milk scheme is available at https://ec.europa.eu/info/food-farming-fisheries/key-policies/common-agricultural-policy/market-measures/school-fruit-vegetables-and-milk-scheme/school-scheme-explained_en
[18] Wetzels, H. (2020) "Changing the Way Children Learn About Farms & Food". Available at https://www.arc2020.eu/changing-the-way-children-learn-about-farms-food/

Makerspaces - also known as FabLabs or Hackerspaces - are collaborative workspaces for making, learning, exploring and sharing and much of the literature describes a pedagogy of "creativity", "informal", "without pressure", and "try-and-fail-and-try-again"[19]. They are open to children, young people and adults. The term refers to a variety of spaces that can be a gathering point for tools, people, projects and expertise. The concept involves participation, collaboration, information sharing and spontaneity. Makerspaces provide a welcoming space for learning new literacies, and developing new skills by exploring ideas, concepts and technologies. Three unique aspects of makerspaces can be outlined for education and training purposes in the future. Firstly, making activities naturally combine disciplines that are traditionally taught separately; secondly, while exploring real world problems individuals acquire new knowledge and create meaning from the experience; and thirdly, due to informal ways of social interaction in makerspaces, a diversity of flexible learning arrangements are created, e.g. peer learning and mentoring, peer coaching.[20]

EXAMPLE B: Makerspaces – guidelines for schools and case studies

In 2020, the Interactive Classroom Working Group (ICWG) of European Schoolnet (EUN) published practical guidelines for school leaders and teachers. The guidelines have been based on research and experiences observed and analysed in projects conducted by the Italian Government's National Institute for Documentation, Innovation and Educational Research (INDIRE) in recent years. They were further informed by desk research and the experiences of schools in nine countries (Austria, Belgium, Czech Republic, Ireland, Italy, Luxembourg, Portugal, Switzerland and Turkey) that have created their own makerspaces as documented in the case studies below, which are based on interviews with the schools' principals and teachers.

https://fcl.eun.org/makerspaces-practical-guidelines

One such example is Base 1, is located within Forum Geesseknäppchena, a resource centre for work with youth in Luxembourg City, and situated very near to three secondary schools. During school hours it is visited by primary and secondary classes and outside of school hours it is open to the general public. The makerspace aim is "to provide a boundary free environment for students where they can evolve their own project ideas in a creative manner" provides students with opportunities to use equipment and materials that they may be unfamiliar with and also to learn new skills, such as coding and design.

https://www.base1.lu/

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[19] Fourie, I. and Meyer, A. (2015) What to make of makerspaces: Tools and DIY only or is there an interconnected information resources space?, *Library Hi Tech*, 33(4). Available at https://www.emerald.com/insight/content/doi/10.1108/LHT-09-2015-0092/full/html

[20] Vuorikari, R., Ferrari, A. and Punie, Y. (2019) Makerspaces for Education and Training: Exploring future implications for Europe, EUR 29819 EN, Luxembourg: Publications Office of the European Union. Available at: https://europa.eu/!xG98yQ

Whilst some teaching and learning may shift away from the school site, the school site may positively change its role in the community as a site for more than just young pupils and their teachers. Schools that have invested in community libraries, sports centres, and other shared facilities may have the capacity to promote extended-hours access to their premises for members of the wider community. Opening up school facilities outside of school hours for outreach and extra-curricular activities can be highly advantageous. It encourages community empowerment and helps to bridge the gap between schools and parents, particularly those who are unfamiliar with the school system.

In the 2021 student consultation, some students specifically referred to wanting more opportunities for school trips, engaging with professional speakers, and international projects.

The Council of Europe describes how the creation of learning opportunities in "overlapping communities" has important implications for educational institutions and the way they relate to other agents of education for democratic citizenship in society (see Figure 12, below).[21] This is based on the premise that "strengthening democracy means far more than encouraging participation in formal processes such as voting: it means advancing a form of association or "way of life" which has its roots in community and neighbourhood life and relationships."[22]

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[21] Hartley, M. and Huddleston, T. (2010) School–community–university partnerships for a sustainable democracy: Education for democratic citizenship in Europe and the United States of America. Council of Europe Publishing. Available online at https://rm.coe.int/16802f7271

[22] Ibid and Dewey, J. (1916) *Democracy and Education: An Introduction to the Philosophy of Education*. New York: Macmillan
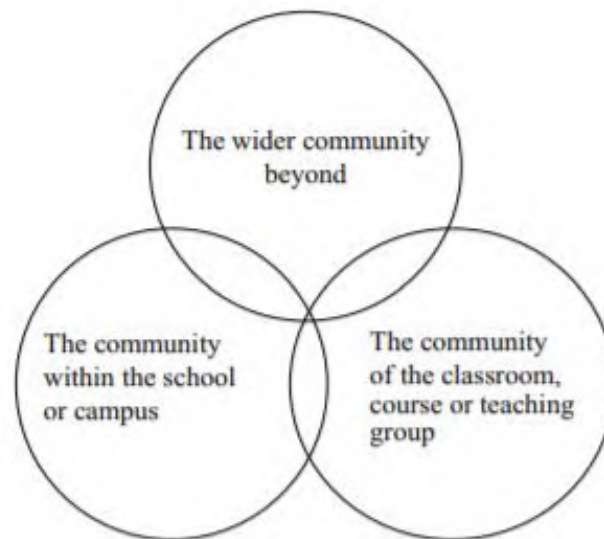
Figure 13: Overlapping learning communities as a powerful environment for development

"Collaboration is vital... The Recommendation should foster the creation of partnerships between private sector, national and local authorities, training and education providers, as well as NGOs." (European association)

Learning from and managing VET and work-based learning

Blended learning is a widely established practice in Initial Vocational Education and Training. VET's unique feature of requiring learners to apply the abstract knowledge gained in formal educational settings in a work-based context, makes it particularly suited for blended learning.[23] The most common blended approaches combine elements of digital-based distance learning for the theoretical part of the curriculum, with on-site time reserved for practical learning. [24] However, the COVID-19 pandemic revealed that the work-based learning component of VET lacked sufficient tools and processes to support practical learning at a distance from tutors, employers and site-specific equipment.[25] The reduction in access to practical experiences

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[23] Butler, J., & Brooker, R. (1998). The learning context within technical and further education colleges as perceived by apprentices and their workplace supervisors. *Journal of Vocational Education and Training*, 50, 79–96.
[24] "Exploring Blended Learning approaches for VET" - project funded by Erasmus+ programme.
https://ec.europa.eu/programmes/erasmus-plus/projects/eplus-project-details/#project/2016-1-UK01-KA202-024636
[25] During the school closure, work-based learning was maintained in very few European countries (i.e. Denmark, Ireland, Sweden and Finland) and only in sectors where companies' activities were still ongoing. Available at :
https://www.schooleducationgateway.eu/en/pub/latest/news/vet-through-distance-learning.htm

highlighted the known need for Vocational Education and Training to take further advantage of digital technology including digital devices and learning platforms, ePortfolios and Augmented Reality and Virtual Reality for simulations.

A survey on the challenges and impact of the COVID-19 pandemic on vocational education and training[26] was undertaken by the Commission in March-May 2020 with the following findings:

− Several tools are available for supporting distance learning. However, in general, VET online material is less developed, as far as the practical parts of training and work-based learning are concerned;

− VET learners might be at a disadvantage compared to learners from other educational tracks, as more efforts are put into general school subjects, and less into typical vocational content;

− There is substantial disruption to the apprenticeship 'supply chain'. Apprentices have largely discontinued their company attendance in the sectors whose activities have been shut down (e.g. restauration, well-being, tourism, and manufacturing). In some cases, discontinuation and termination of financial compensation, where applicable, increases the rate of drop-outs;

− Little capacity for employers to focus on training either for youngsters or for their employees over concerns for ensuring business continuity. However, some employers and training providers made best use of the confinement period to support the training of their employees and to accelerate deployment of digital learning systems and content;

− While it is a significant challenge for teachers and trainers as well as learners to adapt swiftly to this dramatic change, many stakeholders have mobilised themselves to help (VET providers, local governments, publishers, NGOs, companies, etc.);

− There is a strong call for a European online platform (which is safe, quality assured, multilingual, etc.) that would offer opportunities for networking and exchanging good practices and would provide digital solutions, also for work-based learning.

The 2020 report by the ET2020 Working Group on Vocational Education and Training[27] highlights the opportunity to change the way that learners learn. This includes by:

- Broadening the range and reach of learning experiences;
- Enabling students to contextualise and apply their learning in the real world by accessing learning opportunities outside the classroom;
- Facilitating communication, connection and collaboration beyond the immediate school or local community.

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[26] https://ec.europa.eu/social/vocational-skills-week/fight-against-covid-19_en

[27] European Commission (2020) Innovation and Digitalisation: A report of the ET 2020 Working Group on Vocational Education and Training (VET). Luxembourg: Publications Office of the European Union. Available at : https://ec.europa.eu/social/main.jsp?langId=en&catId=89&newsId=9861&furtherNews=yes

Recent research in Sweden[28] indicates that VET teachers can create continuity between the on-site school environment and the work place that VET learners are preparing for, but in some cases this is a demanding task that requires creativity significant amount of effort and problem-solving. Some teachers leave it to the student to make the connection but other teachers go to some lengths to modify the school site environment so that the link is made for the student. This is evidently an area of VET that still requires development.

Vocational education taking place in the dual contexts of workplace and school often lack the tools to fully exploit this potential. Nevertheless, digital tools are being developed[29] to support coordination between the student, VET institution and companies[30] and emphasise the importance of shared reflection.[31] Both the Council Recommendation on vocational education and training[32] and 2020 Osnabruck Declaration[33] contain extensive references to digitalisation.

> *"It is absolutely to be welcomed that vocational training has been explicitly included ... In this context, it is important to strike a sensible balance between online communication and presence. However, high quality practical training must take place physically. It can be supported by digital tools, but cannot be replaced by them."* (Member State Chamber of Commerce)

Evidence is growing of the benefits of incorporating elements of gaming and gamification into digital tools. The use of immersive simulations like virtual and augmented reality[34] also allow students to rehearse risky processes in safe and controlled conditions. Digital tools may also provide new ways of teaching and assessing learners[35] so that learning progression in the two environments can be seamless and more complementary. The Directors General responsible for Vocational Education and Training from all Member States, the European Commission, and other relevant stakeholders meet to discuss current topics and share effective practices in European education, and particularly the VET agenda. Digitalisation is one of the recurrent topics.

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[28] : Mårtensson, Å. (2020): Creating continuity between school and workplace: VET teachers' in-school work to overcome boundaries, *Journal of Vocational Education & Training*, DOI: 10.1080/13636820.2020.1829009

[29] European Commission/Joint Research Centre (2020) "Adapting the SELFIE tool for work-based learning systems in Vocational Education and Training": a feasibility study, pp. 12-14
https://publications.jrc.ec.europa.eu/repository/bitstream/JRC119707/200211_selfie_wbl_jrc_tech_report.pdf

[30] Such as the Trialog App co-funded by Erasmus+ programme https://ec.europa.eu/programmes/erasmus-plus/projects/eplus-project-details/#project/2016-1-RO01-KA202-024528

[31] For example, digital technologies based on 'Erfahrraum' multidimensional pedagogical model (that emphasizes the importance of shared reflection processes to turn concrete experiences into relevant integrated knowledge) such as REALTO platform. https://www.tandfonline.com/doi/full/10.1080/13636820.2015.1061041?scroll=top&needAccess=true

[32] EUR-Lex - 32020H1202(01) - EN - EUR-Lex (europa.eu)

[33] osnabrueck_declaration_eu2020.pdf (europa.eu)

[34] Andrew McCoshan (2020) "Digital learning in VET: why COVID-19 is a wake-up call" School Education Gateway/European Commission. Accessed at : https://www.schooleducationgateway.eu/en/pub/viewpoints/experts/digital-learning-in-vet.htm

[35] For example, in the digital simulation Simspray, learners can spray-paint as often as they like and get instant feedback, which is potentially more precise and detailed than is normally given to the learner.

EXAMPLE C: Digital simulation tools that enhance VET learning in a safe environment

The teacher-led project **VRhoogte** is a prime example of using a VR application for learning. The project, funded by the Flemish government, has developed a high-quality VR training module for secondary VET students to learn how to work safely in high places, such as high-voltage pylons or wind turbines. Through the VR training module students can work and train a number of basic skills in a safe, interactive and challenging environment in preparation for the workplace. The module itself deals with scaffolding installations and construction. In addition to software and hardware, the project consortium is further developing a manual and training for schools and teachers so that they can transfer the module to their schools.

VRhoogte - Veilig werken op virtual hoogte, (2019). Available at https://www.imec-int.com/drupal/sites/default/files/inline-files/VR_HOOGTE_V4_0.pdf

Video about VRhoogte: https://www.imec.be/nl/sectoren/smart-education/smart-education-schools/projecten/smart-education-schools-project-videos#VRhoogte

The central aim of the German project **handlevr** is to use VR technologies to promote the action-oriented learning of various techniques for applying individual layers of paint on vehicle pieces by trainees. The central tool for this project is a three-dimensional VR learning environment: the VR paint shop. It consists of an authoring tool for teachers as well as a VR training application and a reflection application for trainees.

The project is supported by a network of proven experts in the areas of developing VR applications (University of Potsdam), digitally-oriented didactics (Learning Lab of the University of Duisburg-Essen) and professional qualification and further training in the craft (ZWH e . V.). The application partner in the project is Mercedes-Benz Ludwigsfelde GmbH with a focus on the training of vehicle painters.

https://handlevr.de/

Learning remotely full-time

Traditionally, most formal learning has taken place in a physical classroom but there are examples[36] of learning programmes taking place at a distance since the 1800s. Such courses were often referred to as "correspondence courses" and they were rooted in a communication

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[36] https://elearninginfographics.com/history-of-distance-education-infographic/

style – writing and sending by post - which students adopted to engage with members of staff responsible for delivering the programme by distance.[37]

While distance learning was originally associated with the world of business, such approaches were also adopted and adapted by the world of education and in particular by schools and universities. Some have described such approaches as "remote" learning[38], for example where students continued their education remotely via the radio during the polio epidemic of the 1930s and where the telephone supported remote learning from hospitals long before video-conferencing.[39] There is a long history of technologies, such as television, supporting distance and remote learning in schools and other formal settings for well over a century.[40]

Distance learning has been on the increase in higher education, particularly over the past 10 years, with an increase in the number of students learning remotely.[41] The development of the Internet and other software programmes have made it easier for learners to enrol in courses from anywhere in the world.[42]

Perhaps less well known is that there has been a similar growth recently of full-time (or almost) distance learning school education.[43] There are a number of schools that offer supplemental education to students who are unable to access learning on-site. Students log-in from home or from their school to participate in an online programme that typically consists of a mix of synchronous and asynchronous learning events. This blend varies depends on the course and the course providers.[44]

Such examples include "iScoil" in Ireland, where students who are not in mainstream education continue their education from home.[45] All of these programmes were in place pre-COVID-19 and allowed young people to engage in formal schooling remotely over the Internet.

On this topic the Education Endowment Foundation (EEF)'s rapid evidence assessment in 2020[46], albeit largely based on other (non-pandemic) situations, concluded that:

- Teaching quality is more important than how lessons are delivered;
- Ensuring access to technology is key, particularly for disadvantaged pupils;

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[37] https://www.qaa.ac.uk/news-events/news/qaa-publishes-building-a-taxonomy-for-digital-learning

[38] https://theconversation.com/remote-learning-isnt-new-radio-instruction-in-the-1937-polio-epidemic-143797

[39] https://www.the74million.org/article/how-the-telephone-became-the-20th-centurys-most-successful-remote-learning-technology-for-homebound-students

[40] Cuban, L. (1986) *Teachers and machines: the classroom use of technology since 1920*. New York and London: Teachers College Press

[41] Grade Increase: Tracking Distance Education in the United States, https://eric.ed.gov/?id=ED580852

[42] https://journals.sagepub.com/doi/full/10.1177/0047239520934018

[43] https://www.researchgate.net/publication/330275960_The_Landscape_of_K-12_Online_Learning_Examining_What_Is_Known

[44] https://www.education.ie/en/The-Education-System/Policy-on-Gaeltacht-Education-2017-2022/irish-medium-e-hub-pilot-project-international-review-and-advisory-report.pdf

[45] http://iscoil.ie/wordpress/wp-content/uploads/2015/07/HistoryofiScoil_2015.pdf

[46] Education Endowment Foundation (2020) *Remote learning rapid evidence assessment*. Education Endowment Foundation.

- Peer interactions can provide motivation and improve learning outcomes;
- Supporting pupils to work independently can improve learning outcomes;
- Different approaches to remote learning suit different tasks and types of content.

EXAMPLE D: School for Circus Children, Germany

The School for Circus Children offers education for professionally travelling, school-aged children. It was established in 2007 in Hilden, Germany, with online lessons taking place in real time, meaning that the learning group and the teacher log in to the virtual classroom at a certain time. Learning takes place daily with different students from different circuses, no matter where in the world they are located. The objectives of this school are:

- Support and extension of digital learning;

- Intensive preparations for the central final examinations;

- Individualised support and personalised learning;

- Inter-circus and group-based learning arrangements.

Within the projects of the school, students are encouraged to recognise their personal interests, abilities and dormant talents, familiarise themselves with the digital world, but also have fun with their peers, for example by playing online board games.

https://www.schulefuercircuskinder-nrw.de/konzept/die-idee/lernkonzept/beschulungsformen/onlinelernen/

Shadow education

"Shadow education" is a widespread phenomenon but has received relatively little attention in education research. Greater awareness of how students in all socio-demographic groups are engaging with this type of supplementary learning may be important for getting a better understanding of learning that occurs outside of classrooms but which is not "blended".

"Shadow education" refers to private, fee-paying education with the aim of helping students succeed in formal education. It has reached mass levels internationally, and families at all

income levels may invest in this type of supplementary learning to support their children's learning and future opportunities.[47]

Shadow education may include private tutoring, after-school studies, informal learning or leisure or culture (sports/arts), and other non- academic extra- curricular activities. Some programmes help students to develop more technical skills in students, i.e. for robotics, programming, Artificial Intelligence and Information and Communications Technologies (ICT).[48] Shadow education may also be is seen as a way for gifted students to fulfil their academic abilities and interests.[49]

While this type of education is typically not supported by public funds, it is complementary to formal education and integral to the overall education system.[50] Providers range from private individuals to transnational franchises (e.g. Japanese Kumon centres). Courses are provided in a variety of venues (commercial settings, public school buildings, community centres, youth organisations, in students' or teachers' homes, libraries), and increasingly, tutoring is available online, including through video conference other internet-based platforms.[51] It is often focused on attaining high grades in summative high stakes examinations and, given that it requires a fee, raises questions about its contribution to an equitable education system.

Organisation of the school timetable

How the school day and working hours of staff are structured may benefit from review and increased flexibility. Changes to the timetable may be influenced by whether there is a need to synchronise learning i.e. having the teacher and full class in the same lesson (same physical space or online), meaning that they cannot be occupied elsewhere. Teaching and learning hours may also change when a significant number of pupils are not on the school campus (e.g. VET students on work placement or new crisis response that imposes confinement).

With health restrictions defining how many children could attend school at one time, some schools and systems used a rotation approach - for example, pupils being in school for two days a week - or a parallel approach – for example, having two timetables for online (off-site) and on-site learning.[52] Some established fixed timetables for online classes conducted at the same times

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[47] Gyōri, J.G. (2020). Shadow education—Opportunity for development. *European Journal of Education*, 55(3), 305 – 310

[48] Kobakhidze, M.N. & Suter, L.E. (2020). The Global Diversity of Shadow Education. *European Journal of Education*, 55(3), pp.316-321

[49] Kim, Y.C., Jo, J., and Jung, J-H., (2020) The education of academically gifted students in South Korea: Innovative approaches in shadow education *European Journal of Education*, 55(3), pp.379-387

[50] Kobakhidze, M.N. & Suter, L.E. (2020). The Global Diversity of Shadow Education. *European Journal of Education*. 55(3), 316-321

[51] Gyōri, J.G. (2020). Shadow education—Opportunity for development. *European Journal of Education*, 55(3), 305 – 310

[52] For example, in the US: https://catlintucker.com/2020/07/exploring-hybrid-schedules/ and
https://www.edsurge.com/news/2020-09-03-we-run-a-hybrid-school-here-s-how-we-re-adapting-our-schedule-for-the-times

as the pre-lockdown timetable to provide continuity and structure for learners. For others, the emphasis was on flexibility and enabling learners to engage with learning on their own terms.

Reducing class size or dividing into groups – not only for health reasons but also to engage in particular activities - may mean that additional teachers are needed to support teacher substitution.[53] Therefore there is a demand on the school staff and budget. A criticism of attempting a parallel timetable is that teachers are asked to direct their effort and attention in two places at once.[54]

A blended learning approach may encourage an emphasis on interactive (e.g. discussion) or practical learning tasks when on the school site by using a flipped classroom approach to focus the preparatory learning at distance. In this case, timetable changes may benefit teaching and learning by offering longer (or double) lesson periods for extended practical or collaborative work.

The design of blended learning for different age groups may also be reflected in the timetable. For instance, younger pupils may have more teacher contact time or time on the school site compared to older pupils. At certain times in the academic year, for instance in the period before examinations, certain year groups may also be allocated increased teacher contact time.

Helping learners to manage the distance environment

It is important to provide learners with guidance and support to ensure they have a meaningful experience within different environments and with different tools.[55]

Consideration should be given to helping learners manage their own distance learning environment, by themselves or with peers: the choice of physical space, the atmosphere (e.g. whether to have background music, the company of others, and so on)[56], and time management.

Self-regulation refers to an individual's capacity to deliberately control thoughts, feelings, and actions and to orchestrate them in ways that support the pursuit of longer-term objectives, such as obtaining good grades or understanding the learning content, in the academic context.[57] As

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[53] https://assets.gov.ie/82145/40753991-21a5-4715-a5a1-0f193df95ade.pdf

[54] Bates, T. (2020) "Why school boards need to listen to online learning professionals". Online Learning and Distance Education Resources (website). Available at https://www.tonybates.ca/2020/11/04/why-school-boards-need-to-listen-to-online-learning-professionals/

[55] https://docs.google.com/document/d/e/2PACX-1vTKJSTc2gxVC12Oki9bv3S12dry1ZsfATX8zmdBbuPJZ8ejUBpecTy50Yk_7aOSDwh83WHu0NTpOOK3/pub

[56] See, for example, https://www.bouldermedicalcenter.com/tips-for-at-home-learning-during-covid-19/

[57] Duckworth, A.L., Taxer, J.L., Eskreis-Winkler, L., Galla, B.M., and Gross, J.J. (2019) Self-control and academic achievement, *Annual Review of Psychology*, 70:1, 373-399

such, self-regulation predicts the probability with which these objectives are attained.[58] As learning predominantly in the home was entirely novel for most students in 2020 and, many of them experienced it as a major challenge and they struggled with structuring their learning and working on the tasks efficiently.[59] Students' self-regulation may be assumed to have played an important role while adapting to this novel schooling situation.[60] Considering longer time frames and longitudinal data, students with better self-regulation abilities have been shown to achieve better grades and to obtain higher educational attainment overall.[61]

Less independent learners will need to co-manage the distance environment with a supportive person. However, for all learners there is a need to develop their "learning to learn" competence[62] and their ability to manage their own learning experience. This may need to be systematically built up over time and in a shared space, in order to be able to apply their own strategies for learning in other contexts.

Remote schooling experiences during spring 2020 were studied through a survey with parents and their children (10-18 years old) in 9 EU countries (Austria, France, Germany, Ireland, Italy, Portugal, Romania, Slovenia and Spain) in addition to Switzerland and Norway.[63] While the findings show that almost all children who participated in the survey were able to conduct some school-related activities using digital technologies, the findings also point to large variations in terms of how children were able to interact with their teachers in learning activities and how often children were in contact with their teachers through online means. In addition to learning activities provided by the school, parents also engaged in complementary learning activities with their children, for example by using free of charge online learning material and exercises, such as video recordings and online quizzes. Families voiced the need for better guidelines on how to support children with distance education activities and how to support the child psychologically during the confinement. Parents also expressed their need for more counselling and psychological support.

The school may encounter pupil issues of well-being, stress and emotional difficulties related to the distance (home or other) environment including lack of appropriate space for learning. European data on the proportion of children living in low-quality housing and with poor diets

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[58] Tangney, J.P., Baumeister, R.F. and Boone, A.L. (2004), High Self-Control Predicts Good Adjustment, Less Pathology, Better Grades, and Interpersonal Success. *Journal of Personality*, 72: 271-324

[59] Huber, S.G., and Helm, C. (2020) COVID-19 and schooling: evaluation, assessment and accountability in times of crises—reacting quickly to explore key issues for policy, practice and research with the school barometer. *Educational Assessment, Evaluation and Accountability*, 32, 237–270

[60] Tangney, J.P., Baumeister, R.F. and Boone, A.L. (2004), High Self-Control Predicts Good Adjustment, Less Pathology, Better Grades, and Interpersonal Success. *Journal of Personality*, 72: 271-324

[61] de Ridder, D.T.D, Lensvelt-Mulders, G., Finkenauer, C., Stok, F.M., and Baumeister, R.F. (2012) Taking Stock of Self-Control: A Meta-Analysis of How Trait Self-Control Relates to a Wide Range of Behaviors, *Personality and Social Psychology Review*, 16(1), pp.76-99

[62] https://ec.europa.eu/jrc/en/publication/eur-scientific-and-technical-research-reports/lifecomp-european-framework-personal-social-and-learning-learn-key-competence

[63] Vuorikari, R., Velicu, A., Chaudron, S., Cachia, R. and Di Gioia, R. (2020) How families handled emergency remote schooling during the Covid-19 lockdown in spring 2020, Luxembourg: Publications Office of the European Union. ISBN 978-92-76-24519-3 (online), doi:10.2760/31977 (online)

may give some indication of where learning outside of school may be very difficult.[64] Whilst such assumptions are not always fact, these circumstances are certainly of grave concern and may have worsened during the pandemic.

In the 2021 student consultation, some students said they enjoy the flexibility and comfort of learning from home. Some considered home to have a quieter more relaxing atmosphere than the classroom, such as being able to listen to music when learning, and with more freedom to manage their time.

"They can decide time for studying, they can follow their own rhythm/pace in studying" (Teacher)

As with other learning environments, noise can be distracting, in particular when other siblings are present, or simply the feeling of wishing to do other activities or spend time with family. A number of students report said they could feel more isolated from immediate teacher support.

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[64] Di Pietro, G., Biagi, F., Costa P., Karpiński Z., Mazza, J. (2020) The likely impact of COVID-19 on education: Reflections based on the existing literature and recent international datasets: JRC Technical Report. Available at https://publications.jrc.ec.europa.eu/repository/bitstream/JRC121071/jrc121071.pdf