



DIGITAL FOR EDUCATION (D4E)

Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all in a digital era



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INTRODUCTION

The framework of Educaid.be's work is SDG4, to "Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all". It is within this framework that we also address digitalisation in education. Throughout this document, we will use the term Digital for Education (D4E) to refer to both digital for education and education for digital skills.¹

In its reaction to the Belgian Development Cooperation's draft Strategic Policy Note 'Digital for Development' (D4D) of June 2016², Educaid.be regretted that education, with much needed interventions in digitalisation, was not taken up as a specific sector in this note. As education has always been an important sector for the Belgian development

cooperation³, Educaid.be believes that it deserved a more prominent place in the note. Unfortunately, this suggestion was not taken up in the final version of the Policy Note.

In its 2018 Memorandum, Educaid.be recommended Belgian policy makers to "Encourage the use of ICT tools in an equitable and inclusive way, thus supporting education and giving vulnerable children and youth access to information and skills which are crucial for their critical thinking and participation in the labour market."⁴

The aim of this document is to provide a framework for D4E policies and activities of Belgian decision makers and development actors alike. It is based on existing literature combined with the experiences of the members of the Educaid.be working group on Digitalisation in Education. The list of member organisations that contributed to this document can be found at the end.

Although some of the issues raised in this paper are valid anywhere in the world, the focus of our work – in line with the mandate of the platform – is on digitalisation in education in low- and middle-income countries (LMICs), with its specific challenges.

SDG4 – Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all.

SDG Target 4.4 – By 2030, substantially increase the number of youth and adults who have relevant skills, including technical and vocational skills, for employment, decent jobs and entrepreneurship.

- 1 D4E is also sometimes referred to as Information and Communication Technologies for Education (ICT4E).
- 2 See <https://www.educaid.be/nl/documenten/educaidbe-reaction-strategic-policy-note-digital-development-d4d-belgian-development>
- 3 See DGD Strategienota voor de Onderwijssector, 2013. https://diplomatie.belgium.be/sites/default/files/downloads/strategienota_onderwijs_2013_nl.pdf
- 4 See <https://www.educaid.be/nl/documenten/een-centrale-plaats-voor-onderwijs-de-belgische-ontwikkelingssamenwerking-aanbevelingen>





1. FRAMEWORK

In what follows, we will outline the **potential** of digitalisation in education to positively impact both formal and informal education, but also the **challenges and risks** which may impede effective implementation of D4E interventions, and which could even widen the digital gap if not properly addressed. We

identify a number of **conditions** that are to be met and **strategies** to be put in place in order for D4E interventions to be truly successful.

The following graphic shows how we have structured our thinking:





2. POTENTIAL

It is generally acknowledged that digital technology can be instrumental in improving education quality and inclusivity, and that digitalisation in education has great potential to improve:

— **Quality of learning & access to learning, addressing:**

- Inclusion (to improve access and lower barriers to learning)
- Basic literacy & numeracy
- 21st century skills (learning and innovation skills, digital literacy skills, career and life skills)
- Lifelong learning

— **Teaching & training**

— **School and educational governance & policy**

A number of innovative D4E initiatives already exist that aim to leverage digitalisation to improve learning outcomes, teaching, and accountability, management and administration in the education sector. In addition to digital tools, digital transformation also provides opportunities to improve connectivity at all levels (pupils, students, teachers, trainers, school or institution management and ministries of education) and to increase efficiency and quality

of service delivery. It also implies that new relevant skills are to be acquired.

Some examples of digital applications in use in the education sector:

- **Online & blended learning for students and teachers:** blended learning helps individualize and expand learning outside the classroom – an effect enhanced through mobile learning.
- **Social accountability tools** (surveys, citizen outreach, digital publication, e-participation) offer possibilities for public participation in the education sector and can help to make education services more effective and representative.
- **ICT-based school mapping & monitoring:** capture, store, analyze, manage, and present educational and school-related data.
- **ICT for enhancing efficiency of the education-sector:** use of tools such as intranets or digital learning environments to improve school administration and organisation.

2.1 Quality of learning and access to learning

Digital tools are expanding access to high-quality educational content, including digitalised textbooks, video material, interactive eLearning packages⁵ and remote instruction, and at a much lower cost than in the past. They can potentially increase motivation by making learning more fun and relatable. They also create opportunities for personalized learning, helping learners to learn at their own pace and helping educators with limited resources provide learners with better learning opportunities. Digitalisation can provide opportunities for those learners who face particular learning obstacles or with specific needs.

They can open access to learning opportunities for children around the world, especially those in remote areas or in countries facing conflict or political tensions. They allow children to participate in

e-learning and to access a wide range of educational and learning content that was unavailable to previous generations of children.

They also enable tremendous opportunities for life-long learning, e.g. through the availability of MOOCs (Massive Open Online Courses). Open education resources are on the rise, and although the content may need some adaptation and localisation before dissemination, it is very easy to reach millions of users within or even across country borders.

Around the world, the rise of information technology is increasing the demand for 21st century skills, including ICT literacy skills, and high-skilled graduates who can use technology effectively. The term 21st century skills is widely used as an umbrella for the following 3 types of skills-sets⁶:

⁵ Online and digital learning is more than just a digital version of offline course material.

⁶ Based on several studies and reports of the OECD (definition of key competencies, 2005), European Union and the Partnership for 21st Century Skills.

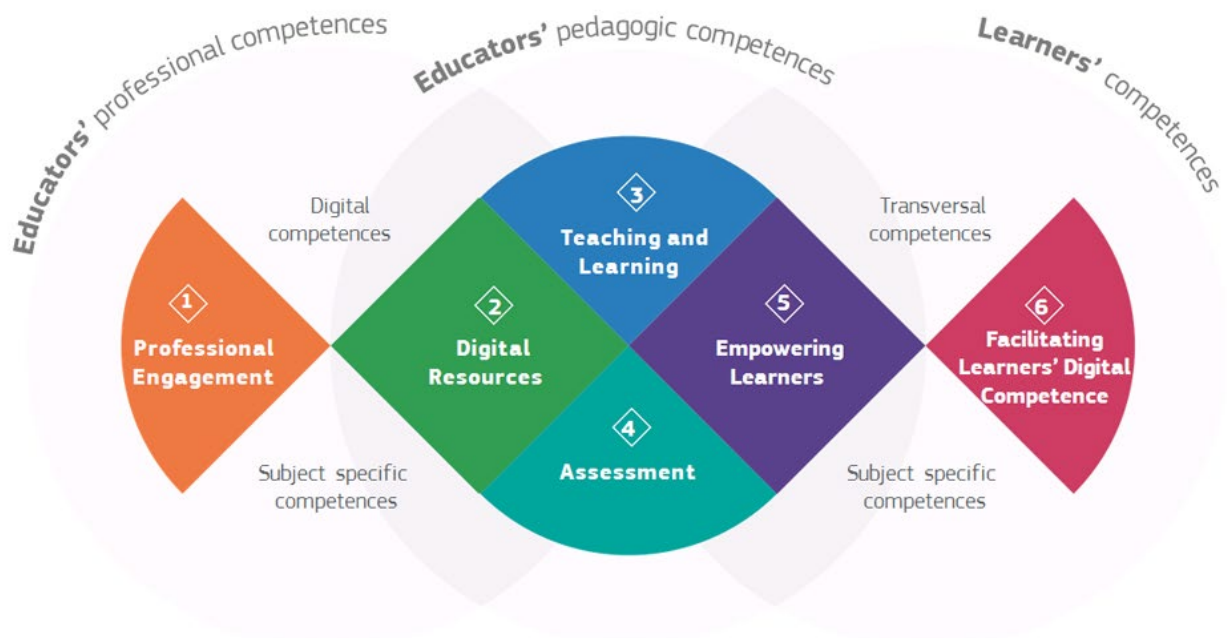


- **Learning and innovation skills:** problem-solving and critical thinking, communication and collaboration, creativity and innovation.
- **Digital literacy skills:** media and information literacy, ICT basic literacy, and “netiquette” (the rules of etiquette in cyberspace).
- **Career and life skills:** adaptability and flexibility, social and cultural interaction, taking initiative and self-direction and accountability.

The European Commission Digital Competence Framework (DigComp 2.0) identifies the key components of digital competence in 5 areas:

- Information and data literacy
- Communication and collaboration
- Digital content creation
- Safety
- Problem solving

The European Commission Digital Competence Framework for Educators (DigCompEdu) describes what it means for educators at all levels of education to be digitally competent. It details 22 competences organised in six areas. 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.



Source: European Framework for the Digital Competence of Educators (DigCompEdu)

2.2. Teaching & training

Digital technologies have a lot of potential in terms of enhanced learning when combined with traditional educational techniques (so-called *blended learning*).

For example, online testing of content that was taught offline can speed up and improve analysis and assessment of the progress of individual learners, who can then receive special attention from their teacher. Other examples of blended learning

are putting the more theoretical subjects online for self-study, so class time can be used for practice and/or discussing the content.

Potential also exist for on-the-job and informal training in ways that were previously unimaginable. People wanting to learn new skills, can now follow training anywhere and anytime. However, some skills still require a hands-on, face-to-face approach.



2.3. School and educational governance & policy

The use of certain technologies – such as learning platforms and management platforms for primary and secondary education, (blockchain) technologies for degree validation, microlearning and learner participation, etc. – can substantially improve and facilitate school management and educational policy-making.

Improved data collection, management and analysis will lead to better policies and guidelines and improved education outcomes. Collection of (big, gender-disaggregated, ...) data can be very useful

to monitor learning, teacher attendance, improve school or institution management, monitor and enhance national level policies or allow for better (supra-)national comparisons and benchmarking. Digital platforms and social media can also help schools and institutions to communicate better, faster and to a broader audience than before, thus improving the level of understanding between stakeholders and ensuring a smoother school management.



3. CHALLENGES/RISKS

Technology in education provides important benefits, but it can also impair the right to quality education for all. The challenges of digitalisation in education are mainly related to the risk of

maintaining or aggravating the digital divide. There are also specific challenges depending on the level of education that is considered.

Below is an outline of some of the issues.

3.1. Disparities in access to the internet and digital technology

While access to electricity, computers, (broadband- and mobile-based) internet connectivity and mobile phones is improving, this access remains limited for large groups of people in low- and middle-income countries, especially in rural areas. Learners or schools that lack the financial means to obtain the necessary equipment or maintain the necessary skilled workforce risk falling behind.

Special attention must be paid to questions related to access and skills for marginalized groups, including girls and women and persons with disabilities. Women often remain disadvantaged when it comes to access to or use of digital tools and different types of impairment can limit the use of digital tools. But given access to the right tools, these can also support and empower.

There is also a possible “Matthew Effect of educational technology”: those most likely to benefit from the use of new technologies in educational settings are those who already enjoy many privileges related to wealth, existing levels of education, and prior exposure to technology in other contexts. Policies that neglect to consider this phenomenon may result in projects that exacerbate existing divides within an education system, and indeed within larger society. For example, the privatisation of education may lead to increased inequality, as private schools tend to offer more or better access to digital tools and technologies.

3.2. Digital literacy and skills gaps

The belief that educational challenges can be overcome simply by providing more and better devices and connectivity presents risks. Although it may be true that simple exposure to technology can make a difference, the skills that learners gain are not always the skills they need, for instance on the job market. If digital technologies are to improve learning outcomes, they require skilled teachers, motivated learners and a sound pedagogy. Simply giving students digital tools results in their using the technology but may do little to enhance their learning.

Students entering the workforce need to be trained on all aspects of 21st century skills and digital competencies. It is not sufficient to train learners to use computers. To navigate a rapidly changing world, we have to interact effectively with others, think creatively, and solve problems. Physically cooperating

with classmates and participating in group-oriented work is an essential part of any learning process. Teacher and trainer workforce capacity building is crucial: while technology will not replace teachers, teachers who use technology may eventually replace those who do not. Teaching or enhancing 21st century skills requires advanced teaching methodology and specific teacher skills. It is known however, that skills gaps among the teaching force are very important today and contribute to their scepticism about the use of ICT in education. The reasons for this scepticism can be cultural or related to the fear of the unknown.

Last but not least, it is important for children and youth to learn about digital rights and safety, so that they are informed, engaged and can roam safely online and know how to protect themselves against fraud and abuse when they are online.



3.3. Absences of educational policy or regulatory framework

Conducive policies and regulations with regard to D4E are essential, as new technologies require new capacities in terms of governance and traditional education systems are not best equipped to cope with the changing nature of learning and demands of skills in the digital age. In most countries, an overall policy vision and leadership on educational innovation (both at national level and institutional level) is lacking. Policies to support teachers in this regard

are even less prominent. A lack of institutionalisation can lead to non-effective changes in policies. Relevant topics to consider in this regard are, for example, how to ensure that educational platforms provide access to quality resources, how to ensure online safety and digital rights for learners, how to ensure digital literacy for teachers, copyright vs open resources, etc.

3.4. Stakeholder involvement

Many stakeholders, authorities and institutions do not yet possess the know-how, financial or risk-taking capacity to apply D4E tools and services. On the one hand, these tools and services should be easy-to-use and intuitive and be designed in close collaboration with the user; on the other hand, stakeholders should know how to navigate and use digital tools. Stakeholder communication and alignment is often difficult, because schools or institutions deal with

many different stakeholders at any given time: pupils, students, parents, teacher force, government, the labour market, etc.

Cooperation with the private sector holds potential (increasing access and improving bandwidth for example) but also risks (e.g. enhanced inequalities). Collaboration with companies requires a new, interdisciplinary skills set and sound follow-up when implementing digital education initiatives.





4. CONDITIONS

For digitalisation in education to be successful, some important conditions need to be in place.

To start with, digital technologies should only be considered a means to an end. They do not deliver educational success in either teaching, learning or accountability on their own. Technology only becomes of value if it is designed in response to real needs and taking into account the context so that learners, teachers and policy makers can adopt it to a useful end.

While innovations in developing 21st-century skills are much needed, these skills are only possible in conjunction with strong foundational abilities. The skills that help individuals succeed in rapidly changing economies are built on the same foundations of literacy and numeracy. It may be tempting to divert resources from the development of foundational skills into the technological skills, higher-order cognitive skills, and socioemotional skills needed in the 21st century, which seem more novel and exciting. But these are complements to foundational skills, not substitutes for them.

Understanding the local education challenge and context before proposing a technology-driven solution also is a critical step. Too many experiments in

educational technology around the world have tried to implement technological “solutions” to problems that have not been well understood. Introducing digital components in the education sector requires policies and tools that are rooted in local reality and that take into consideration the recommendations of digital champions within the educational system. Finally, a broad-based change in attitudes towards the use of technologies in the education sector is essential. Many educators are still hesitant to use technology. Digital technologies can only be usefully implemented if school management and teachers alike overcome this resistance and have the necessary skills to use technology, and if this technology is used with a broader perspective of improving pedagogical follow-up and financial and general school management. To tackle the resistance, it is important to invest in teachers and their training in digital skills.

A change in attitudes is also important among students, who in general are quick to catch up on the skills required for social media and games, but whose interest in using the digital tools that can enhance their learning is often more limited.

5. STRATEGIES/PRIORITIES

From the outset, it goes without saying that applying the nine Principles for Digital Development in D4E interventions should be the basis of every strategy: Furthermore, it is essential to ensure that the right to education for all is preserved when introducing digital tools in education. Strategies to avoid

disparities and exclusion should be built on local and in-depth knowledge. To develop this knowledge, an all-inclusive, multi-stakeholder approach – from intended beneficiaries to local champions to ministries of education – from the start of a D4E initiative, is a necessary precursor for scaling up.

Principles for Digital Development



Design with the User



Understand the Existing Ecosystem



Design for Scale



Build for Sustainability



Be Data Driven



Use Open Standards, Open Data,
Open Source and Open Innovation



Reuse and Improve



Address Privacy and Security



Be Collaborative

<https://digitalprinciples.org/>



5.1. Quality of learning and access to learning

In the field of skills development, several strategies should be applied:

— **Assess skills needs and anticipate future needs**

It is not sufficient anymore to merely react on skills gaps, countries need to anticipate on future skills gaps and education systems need to incorporate those skills proactively.

— **Skills programmes need to be based on co-creation**

The approach to skills development needs to be human-centred and contextualized, ideally combining digital and non-digital solutions, through co-creation with all stakeholders. Top-down skills programmes do not yield the necessary results.

— **Skills training needs to be addressed through formal education**

Formal training for skills development can be improved by adding skills to curricula worldwide (at all

levels of education) and by training educators and teachers. Digital competencies need to be taught in practice. This requires school and institution managements to be more flexible and willing to adjust.

— **Skills training needs to be addressed through informal and lifelong learning**

It is important that lifelong learning becomes standard and has an increased reach. Online and blended learning should always have a skills development aspect, and courses that focus on skills development need efficient and online tutors to guide participants (existing tutors will need extra training to acquire the skills for online facilitation).

In addition to exploring the uses of new technologies, it might also be useful to ask, **How can we innovate using what is already available?** In many low-resource communities, the best technology is the one that people already have, know how to use, and can afford.

(WDR 2016, p. 146)





5.2. Teaching & training

In its 2018 *Guidelines for school leaders report*, the Future Classroom Lab Regional Network summarised five key guidelines for school leaders regarding teacher induction and continuous professional development as well as innovative integration of ICT in the classroom:

- **Prioritise pedagogy when integrating ICT in the classroom**

School leaders should emphasize the importance of pedagogy when considering integrating ICT in the classroom. It is important to define the rationale behind the new methodologies with a holistic approach that consider the whole curriculum. They should enhance collaboration between teachers and promote job shadowing and self-reflection for an increasing level of teachers' self-efficacy.

- **Provide professional development opportunities for the whole school staff**

School leaders should make sure that all school staff, and not only teachers, follows a coherent pathway of professional development to ensure the capacity building of the school as an organization.

- **Bring newly appointed teachers up to speed and support in-service teachers' continuous professional development**

School leaders should provide mentoring programmes for newly appointed teachers to encourage and support them at the beginning of their professional career. Peer to-peer learning and online communities are instead precious ways to engage all teachers in the school continuous innovation process.

- **Leverage e-learning for school staff professional development**

School leaders should encourage online professional development opportunities such as MOOCs, online and blended training courses. It is important also to recognize the effort teachers put into these courses and possibly officially accredit them.

- **Choose the right digital educational resources and training courses**

School leaders should make sure that the digital content teachers are using in their classrooms is properly validated by the relevant institution, linked to the curriculum and adds an extra pedagogical value to the learning and teaching process.

5.3. School and educational governance & policy

A lot of effort has already been put into overcoming the digital divide. To ensure a positive outcome of digitalisation and further bridge the digital divide in the education sector, the focus should be on scaling-up good practices to fully benefit from the cost-effectiveness of digital technologies. At the same time, attention should be paid to not overwhelming learners and teachers with a multitude of initiatives and tools.

The following strategies can serve as a guideline:

- **Improve data collection, management and analysis**

Adequate data collection is essential; skilled professionals are needed at the level of the ministries of education as well as at the level of school management.

- **Increase access to and use of technology for schools**

Support digital communication with all stakeholders and increase access to digital tools for schools. Institutionalisation in terms of D4E can be monitored and assessed through existing tools.

- **Innovate national education policies**

Include digitalisation in national education policies and guidelines, rooted in local realities and building in sound feedback loops to adapt theory to practice. Develop a lifelong learning and digital communication policy. Support continuous teacher training on the level of digital competencies with national policy.

- **Collaboration with the private sector**

A mutually beneficial collaboration with the private sector in the development of new digital resources and solutions, can also boost education quality. The private sector needs to be involved in the creation of tailored ICT programmes that focus on skills that are required on the work floor, especially since the needs for ICT and digital skills change at the same pace as the technological changes. They also can play an important role in skills delivery through different forms of rapid skills development (coding schools, campaigns for girls, investing in digital equipment, etc).



CONCLUSION

This document suggests a series of strategies and priorities to take into account when starting and implementing D4E initiatives. Ensuring inclusive and equitable quality education and promoting lifelong learning, in accordance with SDG4, will be supported by high quality teaching and training and better governance and policy. In all these aspects, digitalisation offers a great potential in contributing to achieving quality education for all.

Digitalisation in education can therefore only reach its full potential if a number of conditions are met (taking into account local context and opportunities) and there is attention for mitigating the challenges and risks that come with introducing digital technologies. Inappropriate mainstreaming of digitalisation can also be counterproductive.

Educaid.be subscribes to the view that D4E interventions should be part of a holistic approach, in order to avoid widening the gap between those who have access to digital tools and those who don't, and between those that are digitally skilled and those who are not (yet). The cause of the digital divide should be tackled from the start and interventions should focus on using digital initiatives' potential to improve quality and reach out to the most marginalized.

Educaid.be believes that teachers and trainers play a central role in learning & access: their skills and enthusiasm, and their ability to inspire and convey digital competencies to the next generation remain key today and will do so tomorrow.



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