

GLOBAL
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CONSENSUS

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CORNERSTONES OF
A SUCCESSFUL DIGITAL
TRANSFORMATION OF
EDUCATION

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PREFACE

Digitization has already induced fundamental changes to the way we work, live and learn. In particular, technology-enhanced learning has the potential to change the face of humanity by improving learning outcomes for people everywhere at all stages of life.

In response to this rapidly changing landscape, the Global Learning Council (GLC), a cross-sector group of thought leaders in the area of the effective use of technology to enhance learning outcomes, convened its Annual Summit in Berlin, Germany from June 29–30, 2017. As part of the planning and ramp up to the GLC Summit 2017, members of the GLC and the leadership of local co-organizers of the Summit engaged in a dialogue focused on identifying and addressing the key questions and issues to be considered if the digital transformation of education is to exploit its full potential.

The following document captures the consensus points and recommendations which emerged from that dialogue, structured according to five key areas. A discussion of each area is accompanied by specific recommendations for action and considerations that must be made by practitioners, educational and technology development leadership and policy makers to ensure the successful use of technology to improve teaching and learning. It focuses not on one specific field of education, but addresses those core elements that are crucial for a successful digital transformation along the entire education chain.

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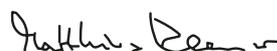
This “Berlin Consensus” is being released concurrently with the convening of the GLC Summit 2017. Its themes and recommendations will be the basis of discussion with an even broader audience of stakeholders at the Summit and beyond and will serve as the foundation of future discussions and activities of the GLC. The Berlin Consensus provides the cornerstones for a global debate about a successful digital transformation of education. We therefore welcome any thoughts, considerations or comments, which may be submitted to

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1 MINDSET AND SKILLS

For a successful digital transformation of education we need a change of mindsets: a willingness to change, focus on agility and creativity are equally as important for the transformation of education, as are funding and technical equipment.

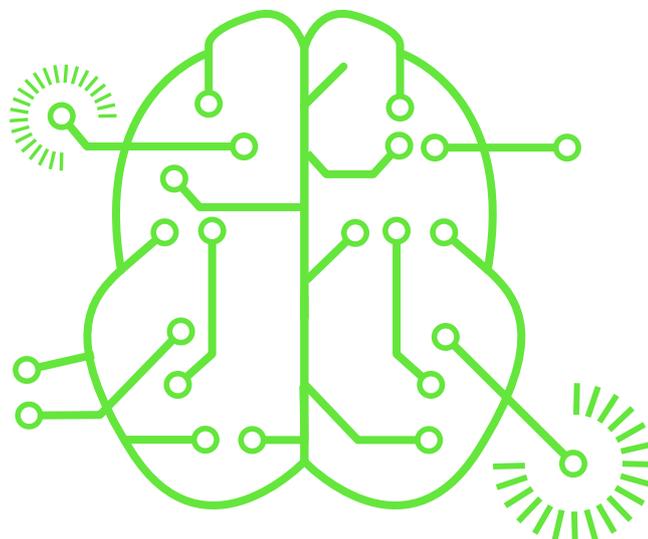
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Education for the digital age has to be rethought: new learning technologies allow a greater individualization of learning and foster co-operation and networking skills. These skills are a cornerstone of success in the changing world of labor. Therefore, decision makers in educational institutions should encourage the digital literacy of young people and ways of agile working that come with the digitization. Technical aspects of the transformation, such as adequate IT infrastructure, must be considered, but the most important prerequisite for the success of education in digital transformation is a lasting change in awareness by various relevant stakeholders, among them administrators, faculty and academic leadership.

Society and labor markets change dramatically through digitization. Graduates need to be equipped with 21st century competences to be successful in the future. Curricula need to be updated accordingly.

Labor economists agree that labor markets will continue to change drastically. There will be much more demand for individuals who are capable of doing complex and creative tasks. On the other hand, many standardized professions are being automatized. Up to 47 percent of tasks (not jobs) might vanish within the next 10 to 20 years¹. 21st century competence frameworks such as the ISTE standards for students² or Future work skills³ indicate capabilities that graduates need to be successful in the future. These competences include the capability to re-learn. Curricula need to leverage the benefits of technology augmenting and complementing human capabilities, not just substituting them. Hence, schools and universities should continually rethink and update their curricula by taking into account current developments.

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2 STRUCTURES

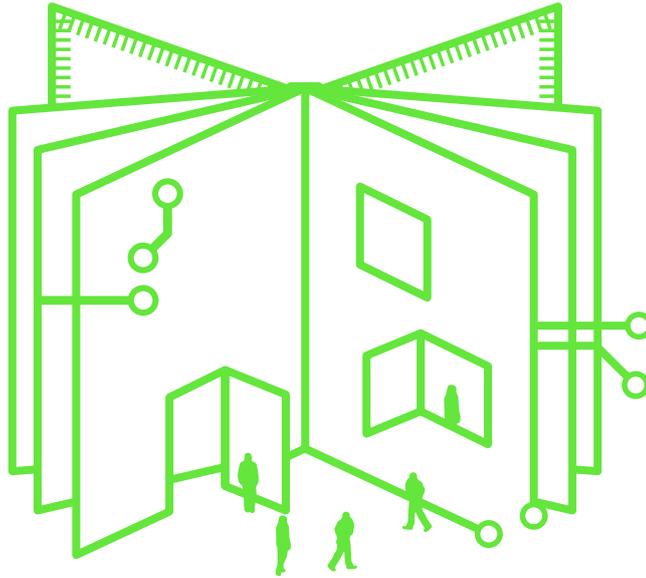
Digital transformation requires a complete chain of structural elements — from IT infrastructures to training and support structures regarding the innovative use of technologies, all consistent with the evidence about how learning actually works.

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Infrastructural elements such as broadband internet and personal devices are necessary, but not sufficient. There is an additional need for an organized information environment (e.g. technological and personal support, physical and virtual spaces, copyright and licence rules). Technology enhanced learning already allows for completely new forms of assessment, that create mutual benefit for the improvement of the respective learning technology and their adaptability to individual needs but also foster a better understanding of learning itself.

For lifelong-learning processes, staff development teams are as necessary as informal educational opportunities. Building networks across all stakeholders allows for the sharing of experiences and inspires reflective and efficient innovations. Only the full availability of all structural elements and their interplay, consistent with evidence about how human learning and expertise work, will lead to an optimal development of relevant knowledge and skills for the 21st century.⁴

Thus, holistic strategies and global learning perspectives are essential for educated societies and successful economies.



Access to learning materials, education and information is key to achieving the global goal of equal opportunities.

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Digitization is a catalyst for a transformation that could shape the education sector into a fairer, more inclusive and impactful environment. In a dynamically changing and increasingly complex knowledge society, the importance of lifelong learning is growing. There is a high demand for flexible study models and new digital services. Digitization enables such models. Access to information, learning materials and education is a prerequisite for the constant development of a resilient and productive society. However, there are still challenges with regard to adoption. These should be resolved by universities and policy makers taking an approach as open as possible, judiciously balancing increased access and safeguards for intellectual property, to create a more collaborative culture of learning and working.

3 DRIVERS AND ENABLERS

New technologies are changing the pedagogical approach, as they allow the instant access of information almost anywhere and anytime. Technological developments create new ways of understanding teaching and learning processes.

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Technologies such as high-speed internet and increasing mobile bandwidth allow for new ways of reaching vast audiences worldwide. Learning technologies like MOOCs and adaptive courseware reach a much higher ratio of people, which changes the pedagogical approach of learning, if they are deployed in ways that are consistent with current research results. As of today, scalability of education is limited: evidence shows that MOOCs and comparable formats only reach a limited audience. But as more people are reached, it is even more essential that pedagogical challenges can be addressed on a global scale. It is not just the number of people reached but also the quality of the interaction between teachers and learners.

Collaborative technology-driven initiatives such as Wikipedia and the Khan Academy have replaced static encyclopaedias and curricula. This change provides know-how at low or zero cost, and the more these technologies are developed to match the evidence about how learning works, the better.

Furthermore, technologies for extensive analysis of data enable new ways of understanding teaching and learning processes. As such, technological developments such as machine learning, artificial intelligence (including learning analytics), smart robotics, AR/VR and 3D printing should be adapted in education programs in ways which are consistent with how human learning and expertise work.

At the same time there is uncertainty about which tasks can best be performed by people in the future and how data sovereignty of the learners will be protected. Nevertheless, digital support-structures need to be provided to guarantee high quality courses. Mixed modality (i.e. blended learning) tends to produce better results for learners than fully online or face-to-face. MOOCs, however, rely heavily on virtual delivery of content and virtual face-to-face, without much live human interaction. Despite the value of technology and digitization in education, the value of live, hands-on practical work and live human-human interaction cannot be underestimated.

New players will enter the global education market and will develop a new dynamic which can change the business models of existing education institutions.

Gate keepers and barriers are being eliminated or bypassed. Therefore, new players that are private, public, interdisciplinary, global, research-based or industry-focused will play an important role in the education market.

This can lead to new services or platforms of free and open education offerings. Of course there also will be low-cost and premium offerings available on the market. There will be business model innovation across all dimensions, so that established education providers will be forced to adjust to the new market needs and create new forms of cooperation that lead to similar or better measurable learning outcomes. Established bricks-and-mortar universities would need to examine their value-add in order to remain relevant and to lead in educational innovation, rather than just respond to it.

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4 OPPORTUNITIES AND CHALLENGES

Learning on all levels is a key to prosperity around the globe. The digital divide between generations and global regions is a challenge. Countries worldwide need to invest in digital learning infrastructure. Global citizenship education is one way to create such a system.

Vast numbers of learners all around the world need to acquire skills in many areas: both basic skills such as reading and writing, but also digital literacy and languages are important in everyone's learning environment. Digital learning carries the potential to bring knowledge and skills to every learner globally. Cross border knowledge exchange and sharing will be a great opportunity. Therefore, every country and society should invest in a powerful infrastructure that provides lifelong learning opportunities, consistent with how the evidence shows that learning works in an internationalized and digitized classroom as the main enabler for diversity, and global cooperation.

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The monetary costs of a digital learning transformation are undoubtedly high. But the total costs for establishing a powerful worldwide education infrastructure are much more reasonable than traditional approaches and will provide a form of education that is more likely to succeed with every human being at an affordable cost.



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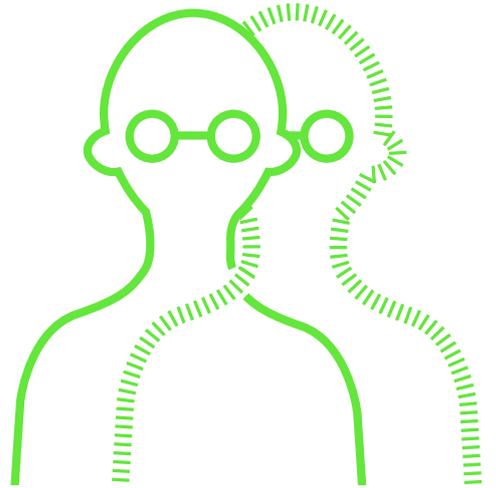
The digital future of learning will not only be focused on the consumption of information. It will provide in-depth adaptive practice and feedback that takes into account learners' current mastery and motivation states to lift them to the new masteries required to be successful, whether it is a question of novice learners experiencing this for the first time, or new augments for experienced professionals adapting to new information-rich tools coming into their professions.

This global approach leads to a global citizenship where learners can acquire knowledge and contribute to the world of information, ideas, and shared values. Peer-to-peer and participative learning communities will be more strongly developed and data sovereignty of the learners should be protected.

In almost every domain, there is an accelerating increase in available information, faster obsolescence of existing knowledge and shorter innovation cycles. The speed of changes will be a challenge for society, industries and systems like the education market.

This is especially the case in scientific and technological areas where digitization plays a central role. As innovation cycles change and competences need to be adapted fast, new skills are required. The capability to structure, qualify and deal with the enormous mass of available data is increasing in value. Additionally, the content of learning programs needs to be adjusted to the speed of change in innovation. New topics as well as new formats will be required — better, more valid and reliable measures of key learning outcomes, too. To convey such knowledge, new forms of learning such as research-oriented and adaptive learning could be better suited to meet the needs of learners. Furthermore, self-controlled learning should be promoted. Self-control learning is the ability to adapt one's own actions continuously to new requirements. As a result, knowledge and skills need to be constantly updated and expanded based on data and evidence.

5 NEW PEDAGOGIC TEACHING CONCEPTS AND SCIENTIFIC EVIDENCE



The roles of instructors and students must be rethought and have already begun to change. A horizontal concept of connected teaching and learning promises a new quality of education.

- 14 The educational world is challenged with the task of rethinking traditional roles of students and teachers. Good instructors have always been more than mere knowledge mediators. With new ways of learning with technology emerge new roles for instructors, who, in some cases, function as guides. Digitally enhanced concepts of learning such as peer-to-peer learning, and peer-to-peer assessment and tutoring offer study approaches that can more easily respond to a constantly changing social environment and new processes of adaptation. Connected ways of teaching and learning should be facilitated on all levels in the education sector. Digital learning also enables new opportunities for instructors to increase active learning in the learning experience.

Collaborative and personalized learning are key learning concepts to help all students, including students who have been traditionally underserved, to develop knowledge, skills and abilities that will prepare them for college, universities and today's workplaces.

Sharing knowledge and resources is a key success factor in the digitized world. Contemporary technologies are significant enablers in the facilitation of collaborative and personalized learning approaches. They help to develop the communication and collaboration competences which affect how students approach complex challenges.⁵ Co-operative and student-centered pedagogy addresses the specific learning needs, interests, and aspirations of individual students and encourages increased student achievement, discussion, confidence, and active learning. Customized learning support meets students' unique needs and is driving the development of new technologies which provide more learner choice and allow for differentiated content delivery. Compounding the challenge is the notion that technology alone is not the whole solution; personalized learning efforts must include instructors and faculty as pivotal for the development of new learning processes.

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In each of these developments, big data and learning analytics will play important roles and should be used in an effective and responsible way.

5 http://www3.weforum.org/docs/WEF_Future_of_Jobs.pdf

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