



COVID-19 as a Catalyst for Digital Lifelong Learning and Reskilling

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Author's contribution

The sole author designed, analysed, interpreted and prepared the manuscript.

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ABSTRACT

Due to COVID-19 and following social distancing many face-to-face business as well as educational activities have been replaced by digital ones. Progress towards the Sustainable Development Goal 4 (SDG4) to achieve quality education for all and lifelong learning will stagnate. But the radical changes within education due COVID-19 also open the way for new forms of lifelong learning by using e-learning platforms - digital lifelong learning. This paper is based on literature review as well as work of the author within the Study Group Lifelong Learning and projects. It presents first critical skills required in the next years for reskilling and methods and pedagogies that should be included into education and training. Secondly the necessity and advantages of digital lifelong learning during and after COVID-19 pandemic and how Sustainable Development Goal 4 (SDG 4) will be supported are shortly described. Thirdly how digital lifelong learning methods can be used in entrepreneurship education and some lifelong skills developed within projects worked by the author as well as used methods are discussed. Some conclusions and recommendations are given i.e., entrepreneurship educators should be better trained and critical in their methods and educational agencies should foster digital frameworks for entrepreneurship education. Research studies are necessary to know how entrepreneurship educators have embedded digital lifelong learning into their lessons,

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including positive and negative experiences, and if exists a correlation between a country level of COVID-19, country economic situation, digitalization and digital lifelong learning/entrepreneurship education.

Keywords: COVID-19; reskilling; entrepreneurship education; Digital lifelong learning; SGD4.

1. INTRODUCTION

Many studies and reports i.e. done by the World Economic Forum (http://www3.weforum.org/docs/WEF_Towards_a_Reskilling_Revolution.pdf) show the urgent necessity for professional reskilling and lifelong learning, recognized already some years ago. It refers particularly to digital skills required for most sectors due to rapid changes in technology because at least 54% of all employees will need reskilling to be efficient within changing work requirements. This situation could be change by improving different forms of entrepreneurship education and lifelong learning. Digitalization is changing not only the skills required to work and live, but also methods to acquire them within education and used within work and life. Students have to learn rapidly, innovations in entrepreneurship education are necessary i.e by “learning to learn” and lifelong learning methods. New skills and continually adaptation are necessary to assure stabile work occupations. Due to COVID-19 and following social distancing many face-to-face business as well as educational activities have been replaced by digital ones. But because the focus was on immediate public health, economic and social welfare responses, education was at considerable risk of neglecting its role as a powerful and effective driver of economic recovery in the short term, for sustainable development and transformation in the longer term. Distance learning solutions cannot substitute classroom interactions and many

disadvantaged students cannot take advantages of them due to not having corresponding digital technologies or skills. But the radical changes within education due COVID-19 also open the way for new forms of lifelong learning by using e-learning platforms - digital lifelong learning. This paper presents first critical skills required in the next years for reskilling and how people, also those from marginalized groups, can take advantage of available learning opportunities. Methods and pedagogies that should be included into education and training are presented so that learners develop corresponding skills. It is important to cultivate entrepreneurial mindsets that will help young people to identify and take advantage of learning opportunities. Secondly the necessity and advantages of digital lifelong learning during and after COVID-19 pandemic and how SDG 4 will be supported are shortly described. Thirdly how digital lifelong learning methods can be used in entrepreneurship education and some necessary lifelong skills developed within projects worked by the author are discussed. Some conclusions and recommendations are given.

2. SKILLS GAP IN THE AGE OF COVID-19

Health and economic shocks in 2020 caused also by pandemic situation affect economies, disrupt labor markets and education. The Future of Jobs Report (Table 1) provides information about skills needed to orient labor markets and workers in this time, to be successful today and in the future. Employees need i.e. besides

Table 1. Top 10 skills

Top 10 skills in 2020	in 2015
1. Complex problem solving	1. Complex Problem Solving
2. Critical thinking	2. Coordinating with Others
3. Creativity	3. People Management
4. People management	4. Critical Thinking
5. Coordinating with others	5. Negotiation
6. Emotional intelligence	6. Quality Control
7. Judgment and decision making	7. Service Orientation
8. Service orientation	8. Judgement and Decision Making
9. Negotiation	9. Active Listening
10. Cognitive flexibility	10. Creativity

Source: <https://www.weforum.org/reports/the-future-of-jobs-report-2020>

digital skills also soft skills, such as communication, creative problem-solving and entrepreneurial thinking. The following table shows how the required skills have been changed within the last 5 years.

Within different forms of education and training developed soft skill curricula supports people but in order to achieve such required skills people have to learn to gain skills and knowledge rapidly to adapt to changes and be successfully. This skill is particularly important as the COVID-19 pandemic causes rapid changes in the education and work opportunities available. They should also learn to choose in a flood of information this one which is factual and reliable.

People search information to make decisions also about their careers and they should learn independently to become active employees, leaders and entrepreneurs. The extensive use of digital technologies across organizations and home office during the COVID-19 and after the pandemic means that not only young people but all employees and employers will need to upskill for digital developments. According to the European Commission [1], during 2017, 53 per cent of all enterprises that recruited or tried to recruit ICT specialists had difficulties in filling those vacancies due to digital skill gaps [2]. Fig. 1 shows reskilling needs until 2022.

Studies in this areas focused of digital skills to support specific activities, such as using public services or on how to address the “digital divide” being created by this technological change [3],

and not on the development of digital competencies and entrepreneurial mindset needed for the modern working world by using i.e. methods including:

- Reflective practice including critical reflection to help learners gain awareness of their implicit knowledge base [4].
- Intentional learning to give learners the opportunity to learn new concepts and skills over time through practice [5].
- Problem-Based Learning (PBL) which engages learners in solving relevant, real-world problems building motivation [6].
- Project-Based Learning (PjBL) where students follow steps of project management [7].

3. DIGITAL LIFELONG LEARNING AND SGD4

Sustainable Development Goal (SDGs) have been adopted by all United Nations Member States since 2015 as a universal call to action to end poverty, protect the planet and ensure that all people enjoy peace and prosperity by 2030 (<https://sdgs.un.org/goals>). SDG 4 is the education goal. It aims to “ensure inclusive and equitable quality education and promote lifelong learning opportunities for all.” One of the objectives of Target 4.4, SDG4 is, to increase until 2030 the number of youth and adults who have relevant skills, for employment and entrepreneurship. Some objectives are the following:

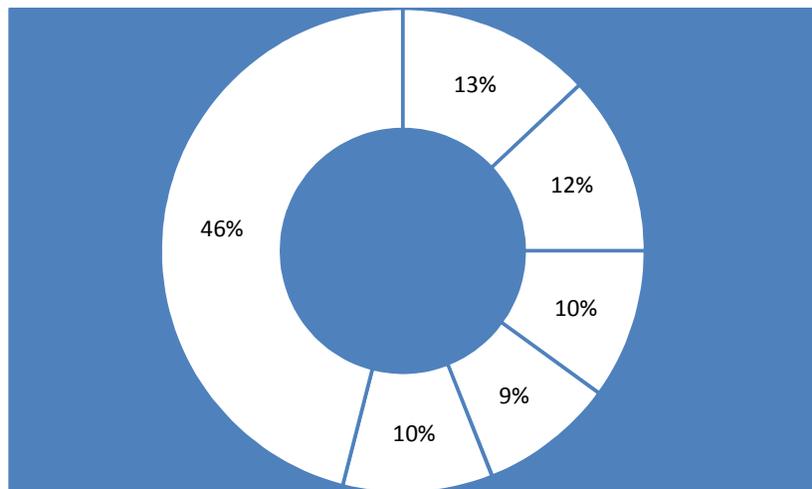


Fig. 1. Expected average reskilling needs across companies, by share of employees, 2018-2022

Source: <https://www.weforum.org/reports/the-future-of-jobs-report-2018>

1. Equitable access to vocational education and training (VET) has to be expanded and quality ensured. Learning opportunities should be increased and diversified, using a wide range of education and training modalities.
2. Beyond work-specific skills high-level also cognitive and non-cognitive/transferable skills, such as problem solving, critical thinking, creativity, teamwork, communication skills and conflict resolution, necessary within occupational fields should be developed.

Lifelong Learning has been particularly discussed in the last decade also due to new and complex business environment, the increasing workforce skills gaps and the achieving of the SDGs. Lifelong learning is an important feature in SDG 4 and so, many activities in international organizations would like to promote lifelong learning. United Nations Educational, Scientific and Cultural Organization (UNESCO) (<http://uis.unesco.org/en/topic/sustainable-development-goal-4>) prepared policy handbooks and conducts capacity-building activities for member states. Lifelong learning should create a positive learning attitude for both professional and personal development. Not only students and employees but also employers need to achieve critical skills in their workforce by using lifelong learning. They should have responsibility for self-participation in learning as well as for employees. Lifelong learning accords the individual's learning a central position as the starting point to understand what learning is about. But learning must be understood also as a result of interaction between the individual and the individual's environment. The learners meet different situations achieving experiences where learning takes place [7,8].

Lifelong learning is important for individuals to increase their knowledge and skills and so also their employability for future jobs. For organizations it is an important source of innovation and changes in their environment as well as to be attractive for employees. Within society, lifelong learning helps to find solutions for problems such as poverty, inequality and climate change.

The intensive use of digital technologies during the COVID-19 crisis is a substantial impulse for digital lifelong learning because businesses and education have replaced face-to-face activities by digital ones. COVID-19 has a catalyzing effect

for digital lifelong learning as a key driver of a being possible change in organizations and supporting more dynamic and flexible "learning mode". Digital learning has advantages in comparison with face-to-face learning i.e. because, materials are available when students want to access them, offers more flexibility for students for when and how to learn, is more easier to access. It is necessary to motivate learners to use digital technologies and engage in lifelong learning. In order to support digital lifelong learning, not only motivation and needs are necessary, but also the right technology like the platforms Learnworlds, Kajabi, Teachable and Thinkific which offer integrative solutions. There are tutorials available for how to create and use online learning platforms effectively for lifelong learning engaging students for technical, marketing and selling aspects.

Some lessons while creating an own lifelong digital platform are the following (<https://www.forbes.com/sites/jeroenkraaijenbrink/2020/09/04/using-covid-19-as-catalyst-for-lifelong-e-learning/?sh=559043b77e42>):

1. Focus on an area of expertise
2. Facilitate the emergence of an active community
3. Assume directed need-driven learning and undirected curiosity-driven learning.
4. Facilitate one-time learning and continuous applications.

4. ENTREPRENEURSHIP EDUCATION

Entrepreneurship education should offer students practical knowledge to act in an entrepreneurial manner [9], providing them skills and motivation to become a successful entrepreneur [10,11,12,13]. European Commission considers entrepreneurship as one of the eight key-competences to be developed also through lifelong learning [13] Entrepreneurship is also introduced in lifelong learning education and training programs. This helps not only being an entrepreneur but also behaving entrepreneurially in a certain context achieving skill gaps particularly in terms of developing an entrepreneurial capability.

Experiential learning used in entrepreneurship education provides a way for students to learn by doing [14]. This teaching philosophy is following by entrepreneurship educators wishing the real-life applicability of their teaching styles. Due to COVID-19, entrepreneurship educators try to reduce the gap between teaching online and

providing experiential learning. COVID-19 crisis has accelerated the need for more creative ways to deal with this challenge [15] but this has been hard to do in the last year.

A digital revolution in education has been discussed for some time but there was not easy for many teachers to embrace quickly the digital world also due to less corresponding skills and teaching methods. COVID-19 crisis has accelerated this situation and digital teaching and learning methods are becoming mandatory also in entrepreneurship education. As a result, there has been an upskilling and increased usage of digital formats both for educators as well as for students. Due to abrupt shift to isolation and online learning, students not having enough digital learning experience and necessary technology need help in this context. More social community-building and engagement platforms which can be use also after students return for their face-to-face classes are necessary.

Many educators lack of digital skills so they have to proceed with own professional development in order to assure efficient learning processes. Some countries integrated also psychological support into their plans and guides for teachers. Many teachers will need such support themselves if they have to meet the needs of their students also during the pandemic time [16].

Depending on the role of each organization, entrepreneurship education is related with specific goals: career development, employability, fostering of innovation, organizational change, social inclusion, social change, etc. To overcome possible disorienting dilemmas due to COVID-19, expected in entrepreneurial courses – especially for adults, critical reflection is proposed in combination with experiential learning is proposed by some authors. To maximize the learning experience, more participatory styles of learning should be tested [8].

One value of lifelong learning in entrepreneurship education is the possibility to apply what is learned when it is needed and exploit it when there is an opportunity within work or life. This requires access to useful digital tools, materials and a community that learners can use when they need. Needs, means, environments are important for digital lifelong learning. They were important also till now, but COVID-19 serves as a strong catalyst for the global reskilling revolution by using digital lifelong learning. Unfortunately, due to closed education institutions and of some

companies as well lack of corresponding research results, the digital lifelong learning could not be used efficiently within the entrepreneurship education until now.

5. EXAMPLES

In the last two projects the Study Group Lifelong Learning of the IAT, coordinated by the author, developed in cooperation with entrepreneurship educators and trainers from higher education and VET, Small and medium-sized enterprises (SMEs) associations, research institutions from five European countries, a digital program for entrepreneurship education within Vocational Education and Training (VET) institutions and adapted training for SMEs employees with modules for lifelong skills [17]. Important groups of lifelong skills to be learned, particularly for SMEs employees are:

- Basic Digital Literacy Skills
- Digital Skills for the General Workforce (Upskilling for the Digital Economy)
- Digital Skills for ICT Professions (Digitally innovative and creative individuals, organizations and businesses)

Other lifelong learning skills which are required (See Table 1) and which have been learned by using the learning modules both within VET as well as in SMEs are:

- Creativity
- Critical Thinking
- Leadership
- Communication skills
- Collaboration skills
- Adaptability
- Curiosity

The used methods follow the development of interdisciplinary competence. Interdisciplinary competence is important to be achieved within VET and training within SMEs for both employability and sustainable development. Interdisciplinary learning help students to use knowledge across disciplines and to achieve competences useful for achieving goals and master tasks also in new situations in job or life. Students have been confronted with interdisciplinary problems, they learn about different disciplines and also integrate different views also their own ones. Interdisciplinary models within entrepreneurship education and following studies to assess them are missing till now. The two used learning methods in our projects are:

- Interdisciplinary Problem-Based Learning (IPBL) which combines Problem-based Learning (PBL) and Interdisciplinary Learning; it is a suitable approach for innovation [18,19]. IPBL helps students to understand complex problems regarding social sustainability and facilitates interdisciplinary thinking achieving an integrative perspective for scientific and practical solutions.

This method has been used within the entrepreneurship education project tested in a VET organization from Germany. The students followed eight steps to solve a problem, by working in groups. At the beginning a problem has been presented and discipline-based terms included. By using a digital platform developed within the project the eight steps have been demonstrated. Then each group formulated own problem and tried to find a solution by using the platform. Reflective learning i.e. about the own projects developed by students has been used. Because two months the VET institution was closed due COVID-19, the work within the groups was not so successful, like planned. In the last months each group could formulate own statement. The groups received feedback from e-mentor and e-tutor.

- Interdisciplinary Project-based learning (IPjBL) to engage students in gaining interdisciplinary insights, by synthesizing and reflecting and following steps of project management [7]

This method we used in the digital training program for SME employees. The 20 students from Germany received additional information from other disciplines necessary for their own projects. The students worked individually but most of their projects were planned in cooperation with external project partners, depending on their workplace and topic. The e-tutors and e-mentors connected students with relevant stakeholders and if necessary, with financial sources. Some months the companies and/or the cooperation partner companies were closed due to COVID-19, so that planned cooperation within own projects was hard to be realized.

Both methods IPBL and IPjBL support collaborative work in team or with other partners/communities, understanding of real-life and of interdisciplinary problems. Both methods have been positively evaluated and useful for participants in their jobs or lives. Also, the digital

competences achieved through the digital learning modules have been evaluated as useful.

6. CONCLUSIONS AND RECOMMENDATIONS

As a result of the quick shift to online learning and teaching methods, the digital disruption to education has started. Disruption in the education requires better service models for improved educational program quality; it is about redefining quality in a much more complex and inclusive world of digital knowledge than within the existing educational models.

COVID-19 presents a unique opportunity to incorporate more creativity and innovation into educational experiences, facilitating the transition to digital technology and digital lifelong learning and so to transform disruption of education into innovative one. There are great opportunities for entrepreneurship educators to use their existing skills and new ones sets to use new techniques and digital platforms that can enable a more contextual learning environment. It is necessary that entrepreneurship educators will be better trained and critical in their methods; educational agencies should foster digital frameworks for entrepreneurship education. Educator's training on critical instruction and examination of critical questions offered by the agencies will be helpful in this direction.

There is few research i.e. within case studies about the way entrepreneurship educators have embedded digital lifelong learning into their lessons. More studies are required in particularly from the pre- and post-COVID environment to see what has changed in this context. It is helpful that research results include positive and negative experiences of entrepreneurship educators to discuss how pandemic and digital context affected teaching and learning methods. Also, more research into different geographic contexts is necessary to see whether there is a correlation between a country level of COVID-19, country economic situation, digitalization and digital lifelong learning/entrepreneurship education.

COMPETING INTERESTS

Author has declared that no competing interests exist.

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