

SELFIE WBL PILOT COUNTRY REPORT: REPUBLIC OF SERBIA

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CONTENTS

ACKNOWLEDGEMENTS	3
EXECUTIVE SUMMARY	6
1. SELFIE TEAM IN SERBIA	7
2. DIGITAL EDUCATION AND WBL POLICIES IN SERBIA	7
3. SETTING UP THE PILOT	8
3.1 Methodology for selecting the pilot schools and companies in Serbia	8
3.2 Methodology for translating and adapting SELFIE materials	9
3.3 Preparing the pilot implementation	10
4. IMPLEMENTATION	10
5. FOLLOW-UP: QUANTITATIVE AND QUALITATIVE ANALYSES	12
5.1 METHODOLOGY	12
5.2 QUANTITATIVE ANALYSES	12
5.3 QUALITATIVE RESULTS	14
5. FINDINGS	15
6. LESSONS LEARNT AND SUGGESTIONS FOR FUTURE DEVELOPMENT	16
7. IMPLICATION OF COVID-19	18
8. CONCLUSIONS AND FUTURE DIRECTIONS	19
8.1 Conclusions	19
8.2 Recommendations for upscaling	20
REFERENCES	24
ANNEXES	25
Annex I – Key info on the WBL system	25
Annex II - References to SELFIE in policy documents	26
Annex III - Country Fiche	27
Annex IV – List of tools similar to SELFIE and other tools used in WB	29
Annex V – Overview of SELFIE WBL results in the Republic of Serbia	30

Annex VI – Methodology for scale-up: stakeholders, questionnaires, communication, the analysis of outcomes	43
Annex VII – List of abbreviations	50

EXECUTIVE SUMMARY

The Self-reflection on Effective Learning by Fostering the use of Innovative Educational technologies (SELFIE) tool was piloted in the Republic of Serbia (hereafter Serbia) in 2017 and scaled up in early 2019. At the beginning of 2020, the European Commission's Joint Research Centre (JRC) developed a new version of SELFIE specifically focusing on Work-Based Learning (WBL) arrangements, including a questionnaire for in-company trainers who support students during their time with employers.

Serbia's Ministry of Education, Science and Technological Development (MoESTD) expressed their interest in participating in the SELFIE WBL pilot study. Based on the results of the pilot in Serbia, it can be concluded that the SELFIE WBL tool was successfully tested and validated. The updated version of the SELFIE tool covering WBL will be upscaled in Serbia in 2021.

At the national level, the SELFIE WBL tool is seen as a useful and easy-to-use education policy tool that considers all relevant stakeholders in schools and companies, namely principals, teachers, students and in-company trainers.

The SELFIE WBL pilot in Serbia was a success taking into consideration all the challenges of the COVID-19 situation. Only one selected and invited school had to cancel participation due to COVID-19 issues, while three schools did not manage to collect the data from in-company trainers due to COVID-19 issues.

Fifteen schools were identified and officially invited by the MoESTD. Thirteen schools and 30 companies from the Information and Communications Technologies (ICT) sector, one of the most important industry sectors in Serbia, conducted self-assessments in the period from 5 October to 11 November 2020. Nine schools managed to finish the exercise by involving at least one in-company trainer.

Overall, 791 participants, from nine schools and related companies providing WBL, filled out the SELFIE WBL survey: 548 students, 162 teachers, 51 school leaders and 30 in-company trainers.

Participation of all invited schools and companies was anonymous and on a voluntary basis. Given the adverse circumstances caused by the COVID-19 pandemic, and the consequent limited sample size, pilot outcomes are not representative of the national education and training system in Serbia.

Based on a scale of 1 to 10, the average user satisfaction score for the SELFIE WBL pilot in Serbia is 7.31. The highest satisfaction score was given by school leaders (8.30), followed by teachers (7.78), students (7.09), and the lowest score was reported by in-company trainers (6.57).

One Vocational Education and Training (VET) WBL school from Serbia participated in a case study. Five semi-structured interviews were conducted with a representative from five groups: SELFIE school coordinator, school leader, teacher, student, and in-company trainer. The school involved in the case study reported that using the SELFIE WBL tool was an eye-opening exercise that allowed them to obtain a clear picture of the current situation and serve as a basis for future actions.

Based on preliminary results from the case study and stakeholder consultations, schools and companies expressed willingness to use the SELFIE WBL tool for self-reflection. Therefore, SELFIE WBL will become a part of their current policy on digital education and its quality assurance process.

The outcomes of the pilot are not representative of the national education and training systems. However, they do provide useful insights for schools and companies participating in the pilot and, overall, for schools and companies providing similar WBL programmes in the specific economic sectors covered by the pilot.

1. SELFIE TEAM IN SERBIA

- Ugljesa Marjanovic – national expert
- Danijela Šćepanović – national coordinator, Ministry of Education, Science and Technological Development (MoESTD)
- Katarina Aleksić – Institute for Education Quality and Evaluation (IEQE)

2. DIGITAL EDUCATION AND WBL POLICIES IN SERBIA

The development of digital education in Serbia is multi-layered and depends on role-specific perspectives. The most complex way to approach it is to analyse digital transformation within all areas of education policy. To be more specific, one layer could refer to measures aimed at the development of digital competences of employees in the education sector and students, linked to the advent of informatics and computer science. Another refers to the pedagogical application of digital technologies to improve the quality of teaching and learning.

Currently, developments of this complex and dynamic phenomenon consist of a variety of interventions and initiatives with special focus given to long-term, development-oriented, cost-effective instruments such as Self-reflection on Effective Learning by Fostering the use of Innovative Educational technologies (SELFIE), curricula development, the introduction of quality standards, and increasing opportunities for dialogue and exchange of good practice for primary and secondary education including Vocational Education and Training (VET).

Work-Based Learning (WBL) in Serbia is a vocational education model in which the student learns in two places: at school and in a company. This model is implemented within the secondary level of education. Depending on the educational profile, a student can learn in a real work environment from the first year of schooling. A student spends one, two or three days a week in the company, depending on what the VET school curriculum stipulates. However, it needs to be noted that the work-based model in secondary education, which is well regulated, remains a small percentage of the VET system (10%).

Following the example of and supported by development partners from Austria and Germany, Serbia was the first country in the region to pass a law on WBL in 2017 (The Law on Dual Education), whose full implementation began on 1 September 2019. This law regulates all participants' rights and obligations and entrusts the employer with the responsibility and role in educating students and

acquiring the competences necessary to work in the target occupation. As a leader on WBL, Serbia is also a regional leader on SELFIE WBL, having already taken part in the pilot phase.

WBL development in Serbia is conducted by the MoESTD, in cooperation with the Serbian Chamber of Commerce, often supported by donors (Centre for Education Policy, 2019). In the school year 2019/2020, 35 dual educational profiles were created. Currently, in Serbia, WBL is implemented in 120 VET schools located in 52 cities and municipalities. Around 4 500 students are educated in cooperation with 600 companies. The share of WBL in Serbia is approximately 10% of the entire secondary vocational education system, with a tendency to grow.

The SELFIE tool was piloted in October 2017 in more than 650 schools in 14 countries. Serbia took part by involving 61 schools; the feedback was positive, with schools perceiving the tool and SELFIE report as a useful roadmap for further development.

After its official launch on 25 October 2018, at the EU level, in April 2019, SELFIE was translated into the Serbian language and rolled out, so far covering 60% of Serbia's primary and secondary schools. At the same time, evidence emerged that participating schools need further support to move beyond SELFIE, mainly with new equipment, support for school development planning, and help to increase the level of teachers' digital competence. The COVID-19 crisis has shut down schools and many WBL environments and compelled teachers and in-company trainers to switch to virtual learning. It follows that digital technologies will have a more prominent role in WBL in the future and will help to improve skills acquisition in the workplace and foster new forms of virtual WBL. VET, compared to general education, was less ready to switch to digital learning due to the closure of many companies and the inability to deliver practical teaching with in-company trainers. Hence, SELFIE WBL could play an important role in filling this gap.

3. SETTING UP THE PILOT

3.1 Methodology for selecting the pilot schools and companies in Serbia

One of the pilot's main activities was sampling both VET schools and companies. In Serbia, for the school year 2020/2021, there are 35 WBL educational profiles at 120 VET WBL schools, located in 52 cities and municipalities, with 880 accredited companies. Hence, the following selection criteria were considered:

- economic sector,
- relevant educational profiles, and
- at least two years' experience of implementing VET WBL.

The MoESTD decided to focus on the ICT sector as this is one of the most important sectors in Serbia. In 2019, ICT industry revenue was EUR 2.51 billion or 5.8% of Serbian GDP (Matijevic and Solaja, 2020).

The department for WBL within the MoESTD provided a list of all VET WBL schools from the ICT sector clustered around five educational profiles: (1) information technology electrician, (2) air traffic information systems communication technician, (3) digital graphics technician, (4) mechatronics technician, and (5) technician for computer control of CNC machines.

The IEQE provided a list of all VET WBL schools implementing WBL for at least two years (Government of the Republic of Serbia, 2020). Out of 120 VET WBL schools in Serbia, 15 schools satisfied the selection criteria and were selected to participate in the SELFIE WBL pilot. Table 1 presents a list of the schools.

TABLE 1. LIST OF SELECTED VET WBL SCHOOLS¹

School name	Location
Electrotechnical school 'Nikola Tesla'	Belgrade
Aviation Academy	Belgrade
Polytechnic school Subotica	Subotica
Technical school Zrenjanin	Zrenjanin
Technical school Vlasotince	Vlasotince
Mechanical school Pancevo	Pančevo
Mechanical school Valjevo	Valjevo
VET school Kragujevac	Kragujevac
Electrotechnical school 'Nikola Tesla' in Niš	Niš
Technical school Uzice	Užice
Technical school 'Mileta Nikolić'	Arandjelovac
Technical school 'Ivan Sarić'	Subotica
Technical school Požega	Požega
VET school Crvenka	Crvenka
VET school Leskovac	Leskovac

The Serbian Chamber of Commerce is responsible for companies involved in VET WBL. All companies need to be certified along with the in-company trainers. Companies were selected either directly through schools or handpicked from the Chamber of Commerce's database using the following criteria:

- size of the company, and
- economic sector (ICT).

3.2 Methodology for translating and adapting SELFIE materials

The translation and adjustment of new elements introduced in SELFIE for WBL materials (questionnaires, guides, WBL tool, and other supporting materials) consisted of two distinct actions. For accuracy purposes, a professional translator was hired for this specific purpose. The pilot team reviewed all official translations to ensure that language and terminology used is:

- clear and understandable by all those involved, and

¹ All schools have given explicit consent that their names are mentioned in the report. However, their SELFIE data remains fully anonymous and schools cannot be identified in aggregate data.

- in line with official requirements in Serbia.

The national expert first reviewed the translation, adjusting the terms used to the national context. In the second step, the SELFIE national coordinator from the MoESTD and the representative from IEQE changed the terminology to fit the previous SELFIE translated materials implemented previously.

3.3 Preparing the pilot implementation

The first step in preparing the pilot in Serbia was the development of an action plan. The primary purpose of the action plan was to provide an overview of the methodological approach to each of the activities, highlighting the purpose, scope, processes that have been put in place, and the timeline and expected outcomes.

The second step was to establish communication with all relevant stakeholders. In this phase, involvement of all stakeholders was essential, especially contact with the national coordinator from the MoESTD, representative from the IEQE, and Chamber of Commerce.

After starting the translation and conducting the sampling, the third step and main strategy for engagement was one-to-one communication with each school director. The school director was supposed to support the pilot by appointing a SELFIE school coordinator for the pilot process for that particular school. The SELFIE national coordinator at the MoESTD prepared an official kick-off meeting invitation to each of the schools, which, once the go-ahead had been received from the schools, was sent to all SELFIE school coordinators and associated in-company trainers.

The final step was a kick-off meeting for the SELFIE WBL pilot in Serbia. The kick-off meeting's main goal was to gather all participants and present the pilot. At the kick-off meeting organised as a webinar on 5 October 2020, a total of 77 people from 15 VET WBL schools participated: 15 SELFIE school coordinators, 26 in-company trainers, 16 school leaders and 20 teachers. Also, representatives from the Joint Research Centre (JRC), the European Training Foundation (ETF), MoESTD, IEQE and the Chamber of Commerce were present. With direct support during and after the kick-off by the MoESTD, the SELFIE WBL pilot was ready for implementation.

4. IMPLEMENTATION

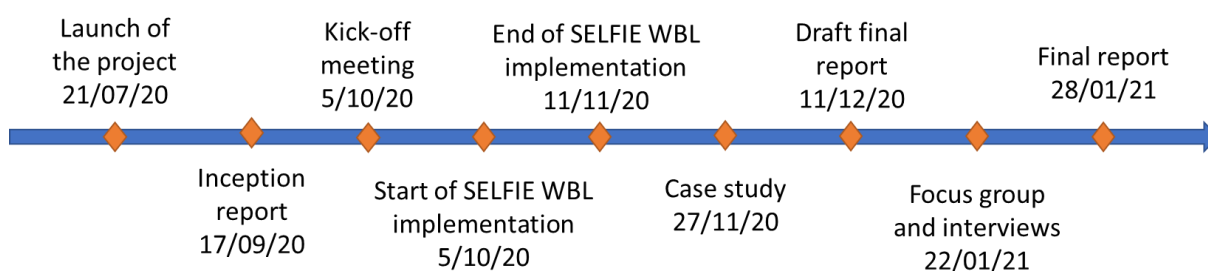


FIGURE 1. TIMELINE OF THE SELFIE WBL PILOT IN SERBIA

During the kick-off meeting for the SELFIE WBL pilot in Serbia, each of the SELFIE school coordinators was told about the participation threshold for surveys for each of the groups: at least one school leader, 40% of the students, 40% of the teachers engaged in WBL activities, and at least two in-company trainers. All SELFIE school coordinators received the SELFIE WBL Guide, a checklist for the school, and a questionnaire for WBL, all in the Serbian language. Monitoring of the SELFIE school coordinator was done on a weekly basis, first through email and if there was no reply then by phone. In the end, the national expert requested a written report from each of the SELFIE school coordinators to validate the exercise.

Ten schools managed to finish the exercise in October and three in November. Out of these 13 schools, only nine schools managed to finish the exercise by involving at least one in-company trainer. Overall, 791 participants filled out the SELFIE WBL survey: 548 students, 162 teachers, 51 school leaders and 30 in-company trainers (the majority from manufacturing companies). The 13 schools were spread across 11 regions within Serbia, the majority (11) from an urban area, with even geographical distribution. The school size was considered small if the overall enrolment was less than 500 students, medium with 500 to 1 000 students, and large if there were more than 1 000 students. Table 2 presents the distribution of the schools.

TABLE 2: PARTICIPATING SCHOOLS IN THE SELFIE WBL PILOT

No. VET schools	No. regions	School size			Location		Geographical coverage					Programme area						
		S	M	L	U	R	N	E	W	S	C	A	B	TE	TC	AT	HW	BIZ
13	11	2	6	5	11	2	3	1	3	2	4	0	0	13	0	0	0	0

Notes: S = small, M = medium, L = large; U = urban, R = rural; N = north, E = east, W = west, S = south, C = central; A = agriculture/food industry, B = biotechnology, TE = technology and engineering, TC = tourism and catering, AT = art and design, HW = health and welfare, BIZ = economics and business.

In total, 30 companies from 11 regions within Serbia participated in the SELFIE WBL pilot. The majority of companies were large (n=14), with more than 250 employees. Table 3 presents the distribution of the companies. Also, 26 in-company trainers participated in the SELFIE WBL pilot kick-off meeting.

TABLE 3. PARTICIPATING COMPANIES IN THE SELFIE WBL PILOT

No. companies	No. regions	Company size*				Economic sector						
		Mic	S	M	L	A	B	TE	TC	AT	HW	BIZ
30	11	3	7	6	14	0	0	25	1	0	2	2

Notes: Mic = micro, S = small, M = medium, L = large; A = agriculture/food industry, B = biotechnology, TE = technology and engineering, TC = tourism and catering, AT = art and design, HW = health and welfare, BIZ = economics and business.

* Company size is defined as follows: micro (Mic) = 0 to 9 employees; small (S) = 10 to 49 employees; medium (M) = 50 to 249 employees, and large (L) = 250 or more employees.

5. FOLLOW-UP: QUANTITATIVE AND QUALITATIVE ANALYSES

5.1 METHODOLOGY

For quantitative analysis, anonymised and aggregated data for all 13 schools was analysed. In general, descriptive statistics were conducted in SPSS (statistical software). Items from the aggregated scores were transposed into eight associated areas. The SELFIE WBL tool consists of eight areas rated using a five-point Likert scale (1–5). Some questions also used a scale of 1 to 10.

As for qualitative analysis, a case study was conducted with the technical school in Vlasotince. The school was selected for the case study as it had the highest number of participants in the pilot, both from the school and in companies. The school managed to involve 16 school leaders, 23 teachers, 80 students and 9 in-company trainers. Also, in the spring of 2019, the school's SELFIE team participated in a national online programme: 'Training of employees in primary and secondary education to apply instruments for self-evaluation and assessment of digital capacities of the school – SELFIE.' Afterwards, the school's SELFIE team conducted self-evaluation using the SELFIE tool.

For the purpose of qualitative research, questionnaires were created for all user profiles: school leaders, teachers, students, in-company trainers and the SELFIE school coordinator. Representatives of all stakeholders and the SELFIE school coordinators were interviewed. The questionnaires were sent via email. Answers were collected either through a phone interview or in writing. For the school leaders, the principal of the school was selected. As for the teachers and students, digitally competent persons were selected. In-company trainers were handpicked from the pool of companies participating in the pilot. They were all asked to provide answers to a semi-structured questionnaire.

Pilot outcomes are not representative of national education and training systems in Serbia. Participation of all invited schools and companies was anonymous and voluntary.

5.2 QUANTITATIVE ANALYSES

Based on the responses on a scale of 1 to 10, the average user satisfaction score for the SELFIE WBL pilot in Serbia is 7.31. The highest satisfaction score was given by school leaders (8.31), followed by teachers (7.78) and students (7.08), and the lowest score was reported by in-company trainers (6.57) (see Figure 2).

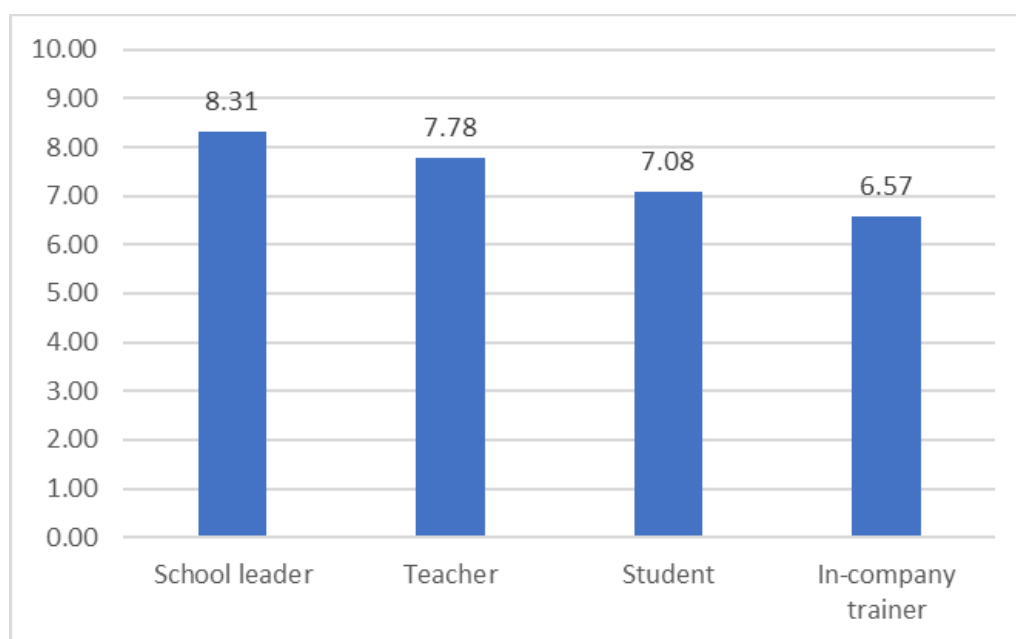


FIGURE 2. OVERALL SATISFACTION SCORE FOR SELFIE WBL EXERCISE

Based on the SELFIE WBL pilot results in Serbia, using a Likert scale of 1 to 5, the highest average score from all respondent types was received for the area of Continuous Professional Development (CPD) (4.13), followed by pedagogy: support and resources (4.03), and collaboration and networking (3.90). Assessment practices received the lowest score (3.60). Figure 3 depicts the average score for all eight SELFIE WBL areas by all user profiles.

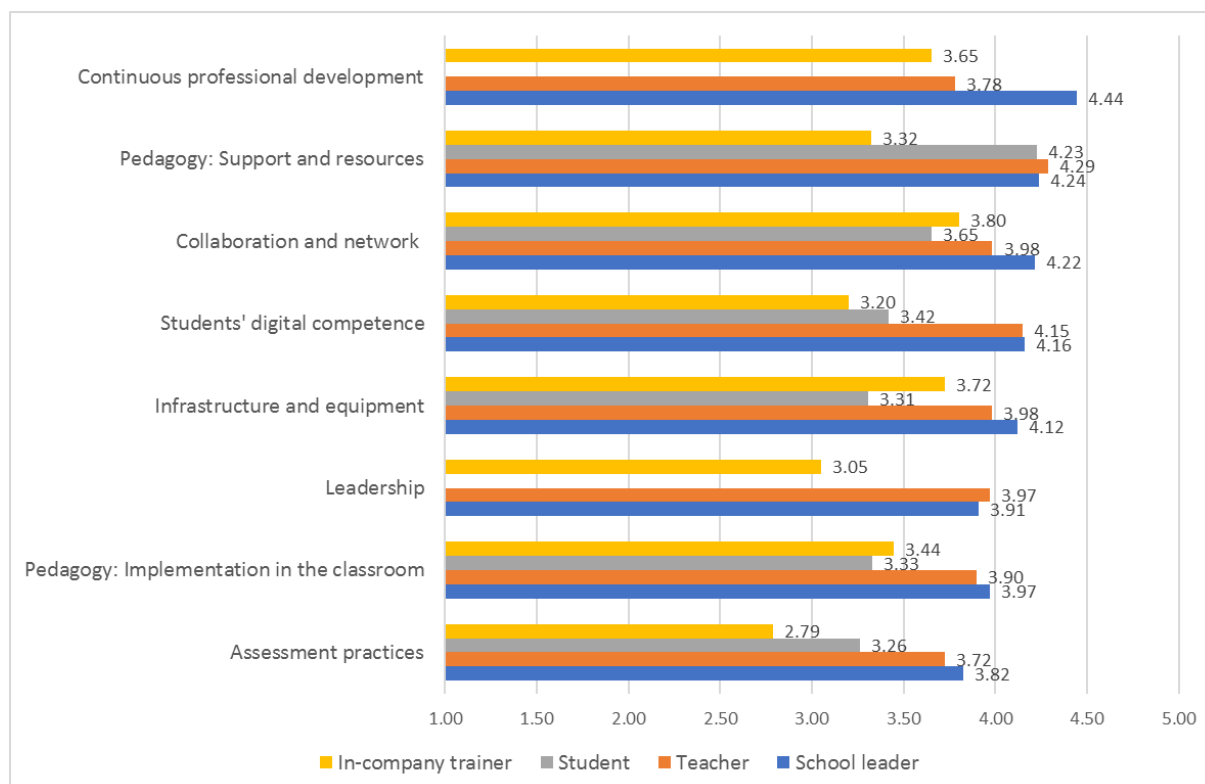


FIGURE 3. AVERAGE SCORE BY EACH OF THE EIGHT SELFIE WBL AREAS

Four user profiles assessed the use of digital technologies for innovative and effective learning. The highest score for all eight SELFIE WBL areas was given by teachers (4.18), followed by school leaders (4.11), students (3.75) and in-company trainers (3.26). Figure 4 shows the overall average rating for all eight SELFIE WBL areas by each user profile. However, students only assessed six areas, as they didn't address CPD or leadership.

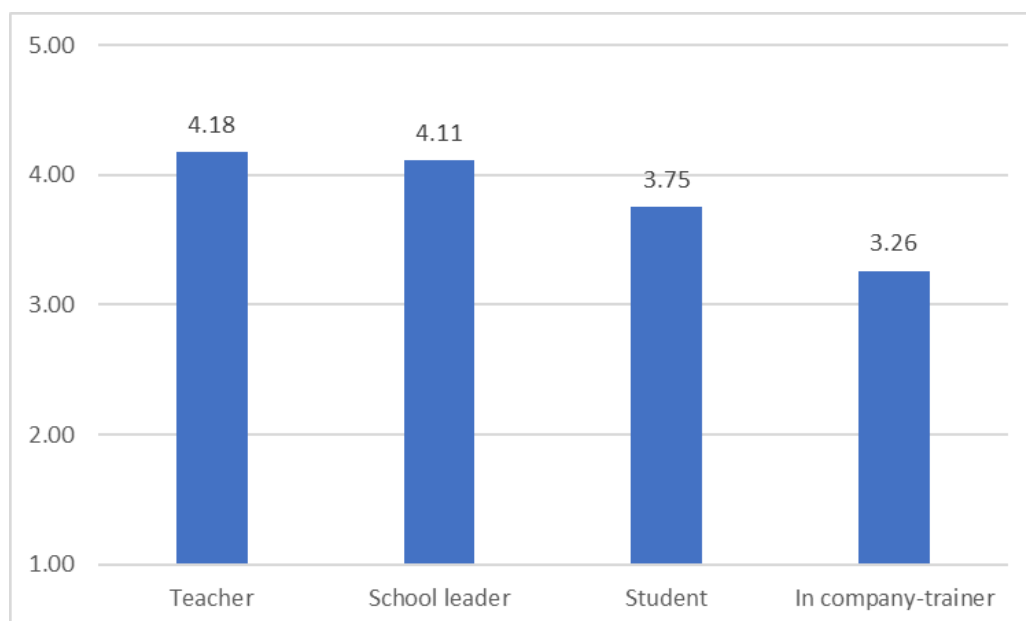


FIGURE 4. AVERAGE OVERALL SCORE BY USER PROFILE

For in-company trainers, the collaboration and networking (3.8) area was rated highest, followed by infrastructure and equipment (3.72). The lowest score was given to assessment practices (2.79).

From the student perspective, pedagogy: support and resources was given the highest rating (4.23). This area was supported by examples; for instance, different learning management systems and platforms for digital teaching and learning (e.g. Microsoft Teams, Moodle and Google Classroom) were suggested as valuable resources. For company-related items, students reported that the highest ratings were given for the students' digital competence area.

5.3 QUALITATIVE RESULTS

For the qualitative analysis, a case study was conducted. Data was collected from one VET WBL school in Serbia through five semi-structured interviews. Answers from all user profiles were analysed based on the following criteria: participation in the SELFIE WBL exercise, motivation, SELFIE WBL report, recognition for taking part, usefulness of the SELFIE WBL tool, and the SELFIE WBL ecosystem.

Regarding the school leaders' and teachers' involvement, a SELFIE school coordinator reported the following: 'To inform the teachers and school leaders who participated in the SELFIE WBL instrument, I created a Viber group and included the teachers and school leaders who were supposed to do the survey. I did not send them additional reminders. They did it very quickly, and I set them a short deadline.'

It was more challenging with the in-company trainers. They received several reminders via email from the school principal. Also, the SELFIE school coordinator contacted some of the in-company trainers by phone. Two in-company trainers did not participate due to the short deadline.

The principal concluded: 'We weren't paying attention to some segments and the SELFIE School Report pointed out those areas! There is potential for upgrading hybrid and distance learning.' Representatives of teachers and in-company trainers confirmed this finding.

The principal stressed that the 'SELFIE self-evaluation was critical because all school system segments are included. A detailed analysis gave us an insight into our current situation. The SELFIE WBL instrument indicated that we need to have a complete analysis for successful school development, as we received in the SELFIE School Report, which pointed out that we must have a School Development Plan based on the results obtained. We are glad to have participated in this process. We will do our best to continue and follow up with other activities related to the SELFIE results.' The school principal stated that SELFIE WBL questions and statements indicated the need to include the procurement of ICT in the School Development Plan. 'By doing so, we'll achieve improvement and fulfil the needs of teachers and students.'

Representatives of teachers had the same opinion related to the SELFIE WBL questionnaire.

The in-company trainer said, 'The statements inspired me to make greater use of digital technology to organise work with students more easily and to prepare them for work in the company.'

5. FINDINGS

Based on the quantitative and qualitative results of the SELFIE WBL pilot, the findings are presented in Table 4 organised across six key topics.

TABLE 4. REFLECTIONS AND MAIN FINDINGS FROM THE SELFIE WBL PILOT IN SERBIA

Topics	Reflections and main findings
Registration, inputting the school and company data, customising the surveys and generating links	Participation of the SELFIE school coordinators at the webinar enabled the smooth set-up of the SELFIE WBL instrument. As for customisation of the survey, none of the 13 schools used any custom questions; the case study disclosed that one of the reasons for this was the lack of specific goals set by the school for the use of digital technologies. The generation of links was straightforward.
Reaching out to and motivating participants and monitoring participation	A large number of students filled in the questionnaire using school-based ICT facilities. The SELFIE school coordinator also used the Viber application to send the link to some of the students to complete using their own computers/smartphones. Reaching out to in-company trainers through the invitation to the kick-off meeting was crucial for their motivation and participation.
SELFIE WBL report	All of the stakeholders agreed that the SELFIE WBL school report gave insight into the school's digital capacity level. One in-company trainer added that the report helped him better understand current practices related to planning students' learning in the company and spot their weaknesses.

Recognition for taking part	Some school wanted to receive the open badge for participation in the SELFIE WBL exercise and post it on the school website. They underlined that it is an excellent way to be recognised by a wider audience. However, they found the procedure of registering on the Insignias INTEF Platform too complicated so did not manage to do this.
Usefulness of SELFIE WBL	Regarding plans for increasing use of digital technology in the schools and companies, representatives stated that they obtained a clear picture of future actions. Still, lack of funds and relevant professional development are obstacles to implementation.
SELFIE WBL ecosystem	Overall, the support from the SELFIE team was appropriate. Also, the SELFIE guide and website provide precise, sufficient and useful information.

6. LESSONS LEARNT AND SUGGESTIONS FOR FUTURE DEVELOPMENT

Based on the pilot experience, the reflections and main findings are presented in Table 5. Findings are grouped around six topics: process; SELFIE WBL tool; content; SELFIE WBL report; features of SELFIE WBL; data; and future SELFIE WBL ecosystem and possibilities of integrating SELFIE WBL in education and training policies.

TABLE 5. LESSONS LEARNT AND SUGGESTIONS FROM THE SELFIE WBL PILOT IN SERBIA

Topics	Reflections and main findings
Process	All pilot schools in Serbia found the SELFIE WBL four-step process (i.e. selection of the educational level, customisation of the questionnaire, selection of dates, and activation of the links) used in the tool very intuitive. Most of the schools used a two-week time frame to conduct the SELFIE WBL exercise. SELFIE school coordinators reported that video instructions received during the kick-off meeting were helpful. Respondents reported that it would also be useful to provide video instructions on the SELFIE process. Three schools started the exercise (i.e. activated the links) before setting the dates and adding companies.
SELFIE WBL tool	Most of the pilot participants found the SELFIE WBL tool particularly useful since it provides a meaningful overview of the use of digital technologies for innovative and effective learning. From the perspective of companies, the SELFIE WBL tool is designed to identify not only strengths but also weaknesses and areas of improvement in the use of digital technology for teaching and learning and coordination with schools. It provides an opportunity to assess the current situation and eliminate possible shortcomings. From the perspective of the school, the WBL module provides an opportunity for schools to reflect on collaboration and networking with companies and in-company trainers and to work on action plans to overcome weaknesses jointly. Also, it would be useful to have the same digital technologies in both the school and company.
Content	All eight areas are useful both for the schools and for the companies. All questions are relevant, sufficient, and useful. However, none of the schools customised their own questions within the SELFIE WBL tool. One of the reasons is the lack of specific goals regarding the use of digital technologies set by the

	<p>schools. All the schools relied on the common questions. Schools did not take the benefits of the SELFIE WBL instrument seriously enough. This is solely the responsibility of the school leaders. The school leaders should take a more serious approach and further reflect on opportunities offered by tailoring the standard questionnaire. Also, a follow-up reflection with each of the companies could be useful.</p>
SELFIE WBL report	<p>The SELFIE WBL report provides an exceptionally good overview of the use of digital technologies within the company.</p> <p>For the schools, the SELFIE WBL report offers an opportunity to identify areas that school leaders are not aware of. Also, it suggests which area is the weakest and provides recommendations for improvements. The SELFIE WBL report is important since it includes all areas in which digital technologies are used in the school system. The incredibly detailed analysis provides an insight into the school's current situation.</p>
Features of SELFIE WBL (badge and certificate, possible suggestions for other features)	<p>The SELFIE certificate for SELFIE school coordinators was considered useful and straightforward to acquire from the website. However, the procedure of obtaining an open badge for a school or company was too complicated. The recommendation is to make it simpler. One of the recommendations is a direct download from the SELFIE website (i.e. in the same way as the certificate).</p> <p>A few schools confirmed that the reason for not downloading the open badge is a lack of understanding of the purpose of the badge. Obviously, the process, purpose and instructions for downloading the open badge need to be clearer and better communicated to schools.</p> <p>The SELFIE team has been working on an easier, more user-friendly and automatic system to generate open badges for schools which will go live around mid-2021.</p>
Data	<p>One of the suggestions for improvement is to include in the SELFIE WBL report the overall SELFIE results for the school. The current report provides ratings for the eight different areas; however, one single score could be introduced. This data would be useful for the school leaders to keep track of the progress and to set goals for the school. Also, it would be useful if schools could set expected goals for each of the areas.</p>
Future SELFIE WBL ecosystem and possibilities of integrating SELFIE WBL in education and training policies	<p>The SELFIE WBL tool is comprehensive and covers all important areas for the digital technology strategy. The SELFIE guide is considered very useful too. However, creating video instructions on how to set up the exercise for the SELFIE school coordinators is recommended. The SELFIE website provides precise, sufficient and useful information. Another important aspect regarding the support is training for in-company trainers. Online training could be an excellent mechanism for motivating in-company trainers to participate in the SELFIE WBL exercise and take an active role in the development of the digital strategy for the school. Interviewees stated that questions and statements in the SELFIE WBL questionnaire were clear and well defined, and that all areas related to digital technology in the school context were covered. Regarding the same issue, a representative of the in-company trainers said that the statements were not only straightforward but also interesting. The current SELFIE WBL tool is comprehensive and covers all important areas for the digital technology strategy.</p> <p>Ongoing efforts to contribute to the development of digital education in Serbia include creating a set of national frameworks, projects and initiatives that could serve in the future as pillars of a comprehensive digital policy. Use of the SELFIE WBL tool is directly linked with the WBL developments in Serbia and indirectly linked with most of the current education and technology projects in Serbia, such as (1) implementation of the EU-funded Bridging the Digital Divide project, in partnership with UNICEF, the MoESTD and IEQE; (2) establishment of the Centre for Educational Technology at the IEQE; and (3) publication of the Framework of Digital Competencies of Teachers – Digital Age Teacher 2019,</p>

	which provides support to teachers in the process of integrating digital concepts, tools and content into everyday educational practice and organises accompanying training (so far, this programme has only trained 5% of teachers for the first level of competence). More specifically, the projects implemented by the MoESTD and IEQE in which the SELFIE tool is used are: Framework for Assessing the Capacity of Primary and Secondary Schools for Organising Remote Learning in the Case of a Lockdown; participation in the Erasmus+ project, Digital Schools Awards European Pilot Programme (A-SELFIE); new training for SELFIE school teams for the preparation of a digital component of school development plans; and a new series of training for SELFIE school teams (postponed due to the COVID-19 crisis).
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7. IMPLICATION OF COVID-19

Throughout the COVID-19 pandemic, ICT in education and training has become one of the solutions to improve resilience and the effectiveness of teaching and learning. In the first phase of the COVID-19 crisis, during the lockdown in mid-March 2020, the MoESTD temporarily suspended face-to-face teaching in all preschool institutions, primary and secondary schools, and higher education institutions. The public television station, with national coverage, regularly broadcast lessons, starting this only two days after the suspension of face-to-face teaching in schools. The aim was to offer general education subjects and vocational subjects, focusing on distance learning for students from vulnerable groups. A national platform – RTS Planet – was available online and is still open for free access to its users. Another national platform – My School – was developed on Moodle (a learning management system) and contains activities following the content of TV lessons for all grades of primary school, introducing interactivity in the form of tests and helping younger students develop independent learning skills. Free digital textbooks also became available from all commercial textbook publishers.

The COVID-19 pandemic has caused widespread disruption to education and training providers throughout the world. Serbia is no exception. The crisis has shown that greater capacity is needed to facilitate the use of distance, online and hybrid learning to ensure the continuity of quality education and training provision.

Throughout the history of education, digital and remote learning were used as an alternative form of education provision, often away from the formal education policy and development. Therefore, it is understandable that there were numerous obstacles when online and distance learning had to be organised quickly at the system level. A lack of connectivity and devices was challenging, but the more significant challenge was schools' and teachers' limited capacity to adapt to distance and online learning, which played a crucial role in the learning loss.

During the first lockdown, VET schools, especially those using the WBL model, experienced additional challenges regarding practical classes. Schools used different strategies and tools to overcome those challenges, such as organising virtual workshops that allowed students to follow practical classes, and offering videos of practical classes, which will also be used when students return to schools as an introduction to the WBL process. Nevertheless, students need to be further prepared for the conditions and work environment in companies before entering production facilities, which is hard to achieve without the opportunity for students to spend time in the premises.

Academic year 2020/2021 began in accordance with the recommendations for safe return to schools during the COVID-19 pandemic.

All necessary health and hygiene precautions have been taken. A special education programme was prepared by the Institute for the Improvement of Education, at the initiative of MoESTD and in accordance with the law.

The special programme is applied by all primary and secondary schools in Serbia and stipulates the duration of classes (30 minutes); recommendations for the organisation of classes; necessary content in accordance with the curriculum to ensure prescribed goals, outcomes and standards are achieved; and didactic-methodological instructions to fulfil the programme content.

The COVID-19 crisis has stressed the importance of digital education and digital transformation. Prior to COVID-19, many steps had already been taken towards digital education transformation but these were not fully understood, particularly related to how teaching was designed online to assure sufficient learning outcomes. In a given situation, it is clear that the relevance of SELFIE has increased as it can quickly provide a roadmap and help schools to find out where they are in the process of transformation and how to plan for the future. The use of distance and online learning dramatically increased during the crisis and its use is continuing; therefore, the features on blended learning and WBL added to SELFIE can foster developments in all relevant areas, both for blended and fully online learning.

Besides the above-mentioned positive implications of COVID-19, there were also some negative elements that affected implementation of the SELFIE WBL pilot in Serbia. During the implementation of the pilot, one selected school had to cancel participation due to COVID-19 issues. Companies involved in the WBL process had to withdraw since they were not able to accommodate students in their facilities, nor offer distance learning due to a lack of digital capacity. Also, three schools did not manage to collect the data from in-company trainers due to COVID-19 issues. COVID-19 caused operational difficulties for schools and the SELFIE WBL exercise was not a priority.

8. CONCLUSIONS AND FUTURE DIRECTIONS

8.1 Conclusions

Based on the SELFIE WBL pilot outcomes, a set of conclusions and recommendations are presented in Table 6 for further implementation of the SELFIE WBL tool.

TABLE 6. CONCLUSIONS AND RECOMMENDATIONS FOR THE SELFIE WBL PILOT IN SERBIA

Conclusions	<p>The SELFIE WBL pilot in Serbia was a success taking into consideration all the challenges of the COVID-19 situation.</p> <p>At the national level, the SELFIE WBL tool is seen as a useful and easy-to-use education policy tool that considers all relevant stakeholders in schools and companies: principals, teachers, students and in-company trainers. In Serbia, pilot schools and companies expressed willingness to use the SELFIE WBL tool as a self-evaluation instrument. Based on the results of the pilot, it can be concluded that the SELFIE WBL tool was successfully tested and validated. Therefore, there are plans to make the SELFIE WBL tool part of the current education policy on digital education and its quality assurance process.</p>
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	<p>Overall, 791 participants filled out the SELFIE WBL survey from 13 VET WBL schools. All user groups confirmed the usefulness and comprehensiveness of the SELFIE WBL instrument. SELFIE school coordinators highlighted that the SELFIE guide and website provide precise, sufficient and useful information to conduct the SELFIE WBL exercise.</p> <p>Based on the SELFIE WBL pilot results in Serbia, the highest rating (on a Likert scale from 1 to 5) was received for CPD (4.13), and the lowest for assessment practices (3.60). From the student perspective, pedagogy: support and resources was given the highest rating (4.3). This was supported with examples of different learning management systems and platforms for digital teaching and learning. For company-related items, students reported that the highest ratings were given for the students' digital competence area.</p> <p>Three schools did not manage to collect the data from in-company trainers due to COVID-19 issues.</p>
Recommendations	<p>Even though the SELFIE WBL process is straightforward, it is recommended to record video instructions and post them on the website.</p> <p>Further promotional and awareness-raising activities are suggested regarding the potential of digital technologies for better education outcomes but also for improving the quality of work and life conditions.</p> <p>Training should be organised with the aim to improve digital capacity for both teachers and in-company trainers.</p> <p>VET schools, especially those using the WBL model, experienced additional challenges regarding practical classes during the first lockdown. Many schools cancelled the WBL part due to the inability to send students to the companies' facilities. It is recommended to continue with the SELFIE WBL after COVID-19 restrictions have eased.</p> <p>The MoESTD and the IEQE should engage VET WBL schools with measures related to improving assessment practices with the use of digital technology both in schools and companies.</p>

8.2 Recommendations for upscaling

A focus group discussion was held to reach a consensus on the implementation, upscaling and integration of SELFIE WBL in the education and training system of Serbia based on the SELFIE WBL pilot results. This focus group methodology involved the following steps: discuss why and how to implement SELFIE WBL; review how to scale up, integrate, manage and monitor the process, taking into account existing governance and reforms of the national education and training system; and agree when is the best time to do it.

Focus group meetings were held with all major national stakeholders (e.g. MoESTD, IEQE, Chamber of Commerce). In addition, interviews with representatives from employers and students were conducted (see Annex VI). The eight-step methodology for scaling up and integration of SELFIE into education and training systems was used to predetermine the topics for the focus groups (Figure 5). More details can be found in the Bocconi and Lightfoot report (2021).

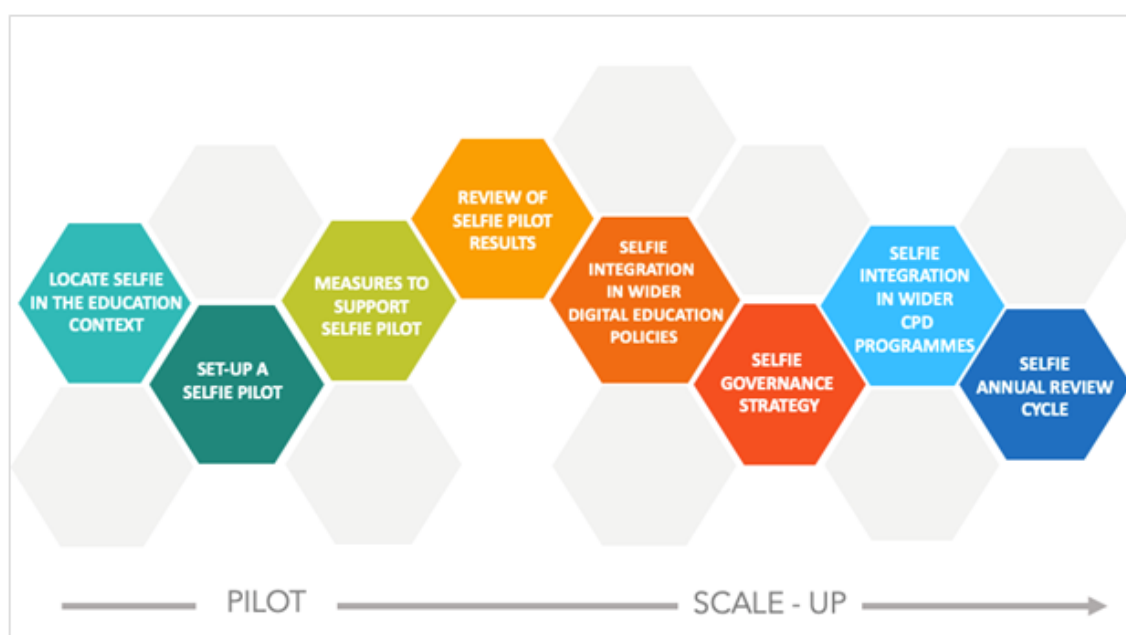


FIGURE 5. EIGHT-STEP METHODOLOGY FOR INTEGRATING SELFIE (INCLUDING THE WBL ELEMENT) INTO THE EDUCATION SYSTEM (BOCCONI AND LIGHTFOOT, 2021)

Table 7 depicts key recommendations and policy advice based on the findings by applying the eight-step methodology for integrating SELFIE into the education system.

TABLE 7. FRAMEWORK ANALYSIS BASED ON THE UPSCALING METHODOLOGY FOR THE SELFIE WBL TOOL

STEPS	Key recommendations and policy advice
STEP 1: Locate SELFIE WBL in the national, regional and local context	<p>The MoESTD expressed interest in participating in the pilot study. Based on the results of the pilot in Serbia, it can be concluded that the SELFIE WBL component was successfully tested and validated. The updated version of the SELFIE tool covering WBL context will be launched in Serbia in 2021.</p> <p>At the national level, the SELFIE WBL tool is seen as a useful and easy-to-use education policy tool that considers all relevant stakeholders in schools and companies: principals, teachers, students and in-company trainers. Also, the SELFIE WBL tool is the only tool for measuring and supporting the development of digital competences at school and national level.</p>
STEP 2: Set up the SELFIE WBL pilot	The SELFIE WBL pilot has been conducted; details about how the pilot was set up are reported in section 3 of the current document.
STEP 3: Define measures to support the SELFIE WBL pilot	The supporting measures have been defined and implemented as reported in section 6 of the current document.
STEP 4: Review SELFIE WBL pilot results	The SELFIE WBL pilot results are reviewed and presented in the current document, particularly in sections 5 and 6, and Annex V.
STEP 5: Plan the upscaling and integration of SELFIE WBL in national,	SELFIE WBL is the only comprehensive and voluntary tool for schools and companies on how to self-assess digital capacity for teaching and learning in Serbia. SELFIE WBL identifies weaknesses, direction for future development of digitalisation in Serbia, potential for networking, and opportunities for comparison

<p>regional and local policies</p>	<p>with other European educational institutions. It fosters a dialogue for continuing improvement and innovation, involving the whole educational community towards a shared digital education strategy.</p> <p>The best time to use SELFIE WBL would be the end of the school year, e.g. in April, as a tool to self-reflect and evaluate schools' and companies' digital capacity.</p> <p>SELFIE, including the WBL component, is included in the Education Strategy until 2030 of the Republic of Serbia. This can be a concrete opportunity for scaling up this tool. Also, SELFIE WBL is already integrated in all major legal documents and could be integrated into the internal and external assessment of schools, as well as within regulation of certification of in-company trainers. Development of a strategy on how to approach companies to invite them to take an active role in SELFIE WBL is needed.</p>
<p>STEP 6: Establish the SELFIE WBL governance strategy</p>	<p>The SELFIE WBL implementation process at national level should be based on the existing SELFIE governance strategy in Serbia. SELFIE WBL governance should take a centralised and bottom-up approach. The current SELFIE coordinator at national level, from the digital education sector within the MoESTD, should also be coordinating the scaling up of SELFIE WBL. Also, current SELFIE school coordinators should be responsible for SELFIE WBL at the level of education institutions.</p> <p>Members from the IEQE and Chamber of Commerce responsible for WBL should be part of the coordinating body. Other social partners could be involved too.</p> <p>There is a need to develop an effective communication strategy for SELFIE WBL, both for schools and companies. Promotional campaigns should be organised to inform key stakeholders (e.g. SELFIE school coordinators, in-company trainers) on the distinctive elements of SELFIE WBL, and planned activities for implementing SELFIE WBL. An effective communication strategy should include the fact that the SELFIE tool is already included in the Education Strategy until 2030; promotion of SELFIE WBL at school level through communication by the SELFIE national coordinator; and promotion of SELFIE WBL by the Chamber of Commerce to all companies involved in WBL.</p>
<p>STEP 7: Incorporate SELFIE WBL in the CPD programme</p>	<p>Training of school leaders and teachers on SELFIE WBL can be used as an opportunity to scale up SELFIE WBL. Current formal training programmes for the SELFIE tool can be extended to the WBL part. Modified CPD can increase digital capacity and raise awareness of the role and contribution actors can make in defining and broadening schools' digital education regarding the WBL component. Also, introductory training sessions for all school managers, SELFIE school coordinators and in-company trainers should include an explanation on how to utilise SELFIE WBL results to implement digital segments into a school's development plan.</p> <p>Training of in-company trainers for the WBL certification could be modified and redesigned to include the SELFIE WBL section. The WBL section should raise awareness of an in-company trainer's role and contribution in defining and broadening schools' and companies' digital education. In this way, SELFIE WBL could be additionally promoted.</p>
<p>STEP 8: Set up a SELFIE WBL annual review cycle to inform policies</p>	<p>Case study feedback, SELFIE WBL aggregate data, development plans from schools and external assessments of schools can be used to control and monitor upscaling.</p> <p>Using a case study at the end of the year to assess the impact of SELFIE WBL at the national and school level could be an excellent monitoring mechanism for scaling up. Also, anonymised and aggregated data at the national level from the JRC could provide stakeholders with indications to identify broad areas for interventions. Finally, through the support of the SELFIE WBL reports, insights</p>

could be provided for effective use of the SELFIE WBL tool. This could be repeated on an annual basis as part of a review cycle to inform policies.

Key recommendations and policy advice, highlighting enablers and challenges

Based on the findings at the national, employer and student level, a set of recommendations is presented below. The general recommendation is that the Serbian education system could integrate and scale up SELFIE WBL as a tool for measuring and supporting the development of digital capacity at the school, company and national level.

- The fact that a similar tool does not exist in the country is a valid argument for the broader adoption of SELFIE WBL in the education system in Serbia.
- In this context, SELFIE WBL could be integrated into the national education system. The best time to use SELFIE WBL would be the end of the school year, e.g. in April, as a tool to self-reflect and evaluate schools' and companies' digital capacity.
- The decision to use SELFIE for WBL involving in-company trainers could be part of the current policy framework for SELFIE. SELFIE is already included in the quality standards for the operation and evaluation of schools and in the Education Strategy until 2030 as a voluntary tool. Upscaling SELFIE WBL should be organised voluntarily.
- An effective communication strategy for SELFIE WBL, both for schools and companies, should be developed by all national stakeholders together (e.g. MoESTD, IEQE, Chamber of Commerce).
- Important elements to be provided during the SELFIE WBL implementation process at the national level should be based on the existing SELFIE model, including the following specificities:
 - identify the SELFIE WBL coordinator at the national level, from the digital education sector within the MoESTD,
 - coordinate the process of identifying the people responsible for SELFIE at the level of educational institutions; the same person should be responsible for SELFIE WBL,
 - include SELFIE WBL in the in-service training programme/ for teachers and in-company trainers,
 - support/recognise the VET WBL schools and companies that run SELFIE WBL as part of their development plan, and
 - monitor the progress achieved at the national level related to digitalisation of the education system through the use of case studies and SELFIE WBL aggregate data.
- Introductory training sessions for all school managers, SELFIE school coordinators and in-company trainers should include an explanation on how to utilise SELFIE WBL results to implement digital segments into the school's development plan.

Challenges and enablers:

Challenge 1: Low involvement of schools and companies reluctant to digitalise and use the SELFIE WBL tool.

Enabler 1: Organise ad hoc (e.g. by sector, programme, municipality) peer-to-peer initiatives, including small events to involve different schools, i.e. those that used SELFIE WBL and those that did not; pairing, based on proximity or other criteria, schools in SELFIE WBL with those that are not; and recognition of progress on the use of digital technology in teaching and learning at school and in companies using a common strategy.

Challenge 2: Underutilisation of SELFIE WBL results for the internal assessment of schools through development plans.

Enabler 2: To overcome this challenge, the following activities could be implemented: create a reward or recognition programme (financial and non-financial); and develop an online community of SELFIE WBL practice for schools including exchange of best practices and lessons learnt.

Challenge 3: Some of the companies involved in WBL are still not operational due to the COVID-19 pandemic. They are not able to accommodate students in the company's facilities due to a lack of digital capacity.

Enabler 3: Promotion of SELFIE WBL is needed as it can quickly provide a roadmap and help schools and companies to find out where they are in the digital transformation process and how to plan for the future.

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ANNEXES

Annex I – Key info on the WBL system

The development of education that will meet the needs of the labour market to the maximum extent and the development of the national model of dual and entrepreneurial education were priority goals of the Government of the Republic of Serbia for the last few years, and in accordance to such directions the Law on Dual Education is developed and adopted. In more concrete terms, the Law on Dual Education (LDE) was adopted in November 2017 (Official Gazette of the Republic of Serbia, 101/17). According to this Law, dual education is a model of realization of teaching and learning in the system of secondary vocational education, in which through theoretical and school teaching and learning through work with the employer, students acquire competence in accordance with the standard of qualification and the curriculum of teaching and learning.

For the school year 2019–2020, 2533 students were enrolled in the first grade of secondary school. The total number of Dual educational profiles was 37, the number of secondary vocational schools in Dual was 104, while the number of interested companies that were in the process of accreditation was 880.

According to the latest data in Serbia, for the school year 2020–2021, 2447 students were enrolled in the first grade of WBL secondary school. The total number of Dual educational profiles is 47. WBL is implemented in 120 VET schools located in 52 cities and municipalities.

In total around 10.038 students are educated in cooperation with 900 companies. The share of WBL in Serbia is around 5,3 percent of the entire secondary vocational education enrolled in the first grade, with a tendency to grow.

Annex II - References to SELFIE in policy documents

In the Republic of Serbia, MoESTD, took the leadership for SELFIE to become part of the official education policy in 2016, seen as the best answer to introduce the e-maturity model and self-reflection tool focusing on digital technologies into the education system. In 2016 SELFIE was integrated into Serbia's Government ICT Action Plan and later implemented in several stages, under the responsibility of the MoESTD and the Institute for Education Quality and Evaluation (IEQE).

At the 47th Assembly Session, on January 18, 2018, the Government of the Republic of Serbia adopted the Action Plan for the implementation of the strategy for the development of the information technology industry for the period 2017-2020. The envisaged application of the SELFIE instrument is elaborated in the chapter on human resources, page 11, section 9. The document is available at http://www.srbija.gov.rs/vesti/dokumenti_pregled.php?id=312063 .

Annex III - Country Fiche



SELFIE WBL pilot implementation in the Republic of Serbia

December 2020

SELFIE team


Ugješa Marjanović, University of Novi Sad
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Natasha Aleksić, Institute for Education Quality and Evaluation (IEQE)

Motivation and support measures


Official letter sent to selected pilot VET WBL schools by the MoESTD
Webinar (kick-off meeting)
Regular (email, phone) communication with SELFIE school coordinator

Participating actors and case studies


13 schools and 30 companies from ICT sector
Technical school Vaso Papić, I case study, 4 semi-structured interview of SELFIE school coordinator, school leader, teacher, student, and in-company trainer

Key info on WBL system (data from 2020)


120 VET schools offer WBL
10,088 students
900 companies
Share of WBL in VET is 10%
Share of VET in the upper-secondary education is 75%

Preparation

Methodology of selection


ICT sector was selected as one of the the most important industry sectors in Serbia. Department for WBL within the MoESTD has provided the list of 11 VET WBL schools from the ICT sector clustered around five educational profiles. In total 15 schools were selected to participate.
In-company trainers were selected either directly through school or handpicked from the database of the Serbian Chamber of Commerce.

Methodology of translation


A professional teacher was subcontracted. The Pilot Team reviewed all official translations to assure that language and terminology used is:
(1) clear and understandable by all those involved, and (2) terms and expressions used are in line with the official ones used in Serbia.

Preparation of the pilot implementation


Development of a clear plan with aim, detailed description of all activities, and a time line. Involvement of all stakeholders, especially the communication MoESTD. Other stakeholders (IEQE, Chamber of Commerce) were also involved in the Pilot and provided valuable support.
Kick-off meeting – gather all participants, present the Pilot, demonstrate the SELFIE WBL tool, explain roles, communicate and collaborate milestones, engagement measures, and standards.

Implementation

Process

 **Video instructions received during the kick-off**
 **Three schools started the exercise with not setting the dates.**

Content

 **SELFIE WBL tool is comprehensive and covers all important areas for the digital technology strategy.**
 **All the schools relied only on the common questions.**
 **None of the schools in Serbia used optional nor add their own questions.**
 **There should be a more serious approach developed by the school leaders. Also, a follow-up reflection with each of the companies could be useful.**

Platform

 **Provides "big picture" of the use of digital technologies for innovative and effective learning.**
 **From the perspective of companies, the SELFIE WBL tool is designed to identify easier not only strengths but also weaknesses and areas of improvement in the use of digital technology.**

SELFIE Report

 **For companies provides an exceptionally good overview of the use of digital technologies.**
 **For the schools, the SELFIE report offers an opportunity to identify areas that school leaders are not aware. Also, it suggests which areas is the weakest and provide recommendations for improvements.**

<https://ec.europa.eu/education/schools-go-digital>

Ecosystem measures



On-going recent efforts to contribute to the development of Digital Education in Serbia consists of a set of national frameworks, projects and initiatives that could serve in future as pillars of a comprehensive digital policy.

The use of the SELFIE tool is indirectly linked with most of them. To name a few:

- Implementation of the EU-funded Bridging Digital Divide project, in partnership by UNICEF, MoESTD and IEQE.
- Establishment of the Centre for Educational Technology at the Institute for the Evaluation of the Quality of Education.
- Published Framework of Digital Competencies of Teachers - Digital Age Teacher 2019 - support to teachers in the process of integrating digital concepts, tools and content into everyday educational practice and organized accompanying training (so far trained only 5% of teachers for first level of competence).

More specifically, the activities closely linked with SELFIE and implemented by the Ministry of Education, Science and Technological Development and the Institute for Education Quality and Evaluation (IEQE) are:

- published Framework for assessing the capacity of primary and secondary schools for organizing remote learning in the case of a lockdown, participation in the Erasmus+;
- Digital Schools Awards European Pilot Programme (A-SELFIE);
- envisaged new Training for Selfie School Teams for the preparation of a Digital component of the School Development Plan and new series of trainings for SELFIE school teams (recently postponed due to the Covid crisis).

Other



In 2012, Serbia created a Framework for the School Quality Assessment. The Framework was revised in 2018. Since then, work of the schools is assessed according to 24 standards and 124 indicators, distributed in 6 areas of quality.

In addition, the quality of education is evaluated through international evaluation studies of student achievement, such as PISA, TIMSS and PIRLS surveys.

Overall evaluation and future directions



SELFIE WBL Pilot in Serbia was a success taking into considerations all the challenges of the COVID-19 situation.

At the national level, the SELFIE WBL tool is seen as a useful and easy-to-use educational policy tool that considers all relevant stakeholders in schools and companies – principals, teachers, students, and in-company trainers. In the Republic of Serbia, schools and companies expressed willingness to use the SELFIE WBL tool as a self-evaluation instrument. Therefore, SELFIE WBL will remain a part of the current educational policy on digital education and its quality assurance process.

Overall, 791 participants filled out the SELFIE WBL survey from 13 VET WBL schools – 548 students, 162 teachers, 51 school leaders, and 30 in-company trainers (majority from the manufacturing companies). All the VET schools are coming from the ICT industry sector.

Pilot outcomes are not representative of national education and training systems in the Republic of Serbia. Participation of all invited schools and companies were anonymous and on a voluntary basis. Based on the SELFIE WBL pilot results in Serbia, the highest score was received for Continuous Professional Development (4.13), and the lowest for the Assessment Practices (3.60).

Implications of COVID-19



The school and academic year 2020/2021 began in accordance with the recommendations for safe return to schools and faculties during the COVID-19 pandemic.

The special program is applied by all primary and secondary schools in the Republic of Serbia and contains the duration of classes (30 minutes).

From Monday, November 30, 2020, all students in the Republic of Serbia attending fifth to the eighth grade of the primary schools and all secondary school students will switch to online education, including WBL schools.

During the implementation of the SELFIE WBL pilot, one selected and invited school had to cancel participation due to COVID-19 issues.

Some of the invited companies had to withdraw participation in the pilot since they were not able to accommodate students in the company's facilities neither to distance learning.

Three schools did not manage to collect the data from in-company trainers due to COVID-19 issues.

Annex IV – List of tools similar to SELFIE and other tools used in WB

In 2012, Serbia created a Framework for the School Quality Assessment. The Framework was revised in 2018. Since then, work of the schools is assessed according to 24 standards and 124 indicators, distributed in 6 areas of quality. In addition, the quality of education is evaluated through international evaluation studies of student achievement, such as PISA, TIMSS and PIRLS surveys.

In Serbia, there are no other tools used in WBL.

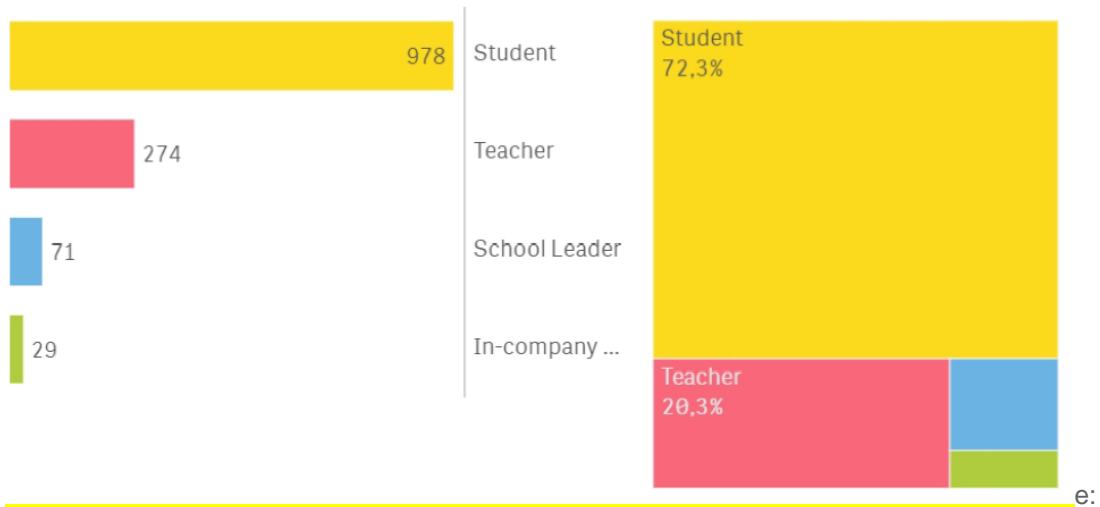
Annex V – Overview of SELFIE WBL results in the Republic of Serbia

The outcomes of the pilot are not representative of the national education and training systems. They provide useful insights for schools and companies participating in the pilot and, overall, for schools and companies providing similar WBL programmes and belonging to the specific economic sectors covered by the pilot.

1. Participation

By user profile

Number of users



By schools (distribution by categories):

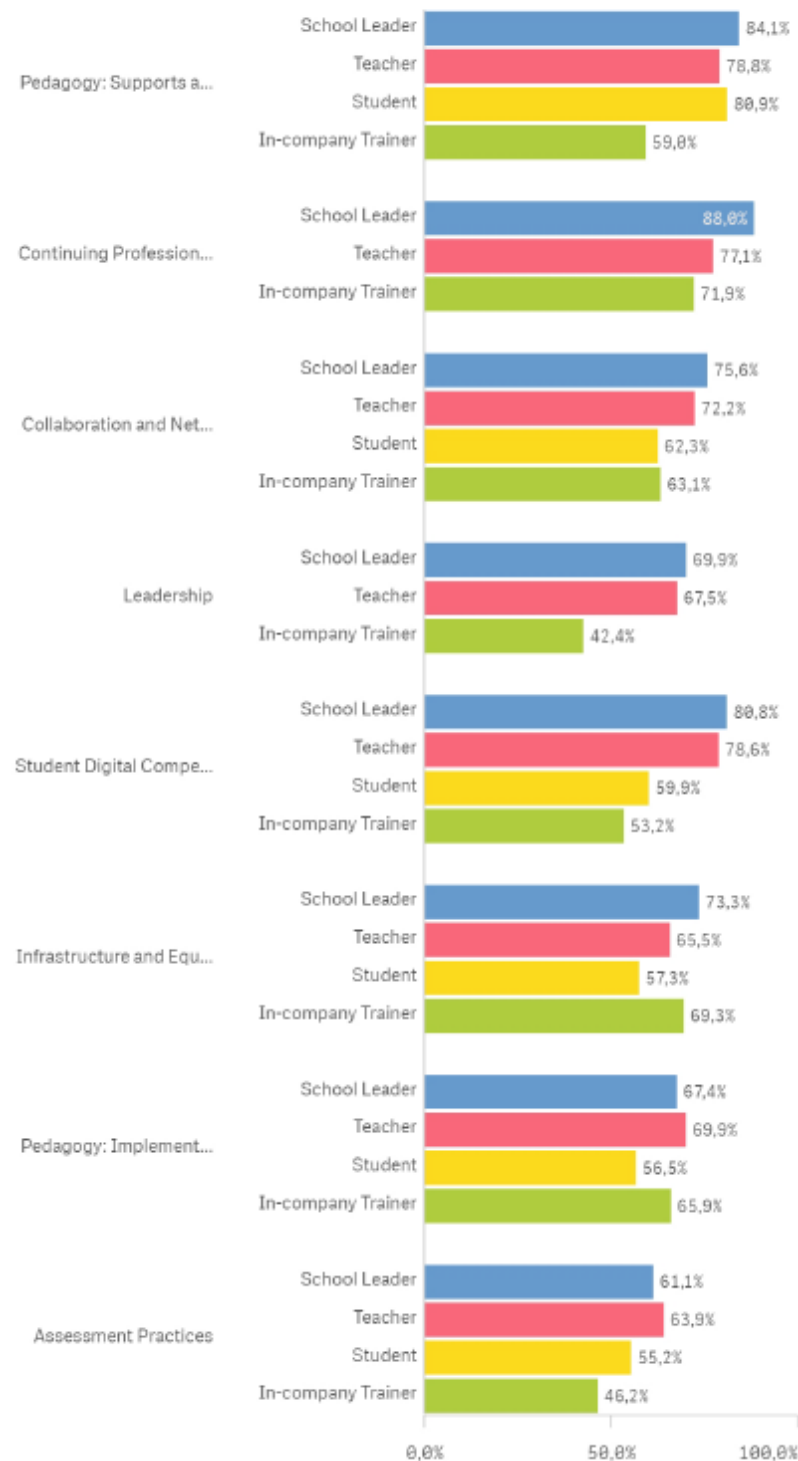


2. Main areas

Please note that "percentage of positive responses by area" means the share of responses on 4 and 5 (on the 1-5 scale).

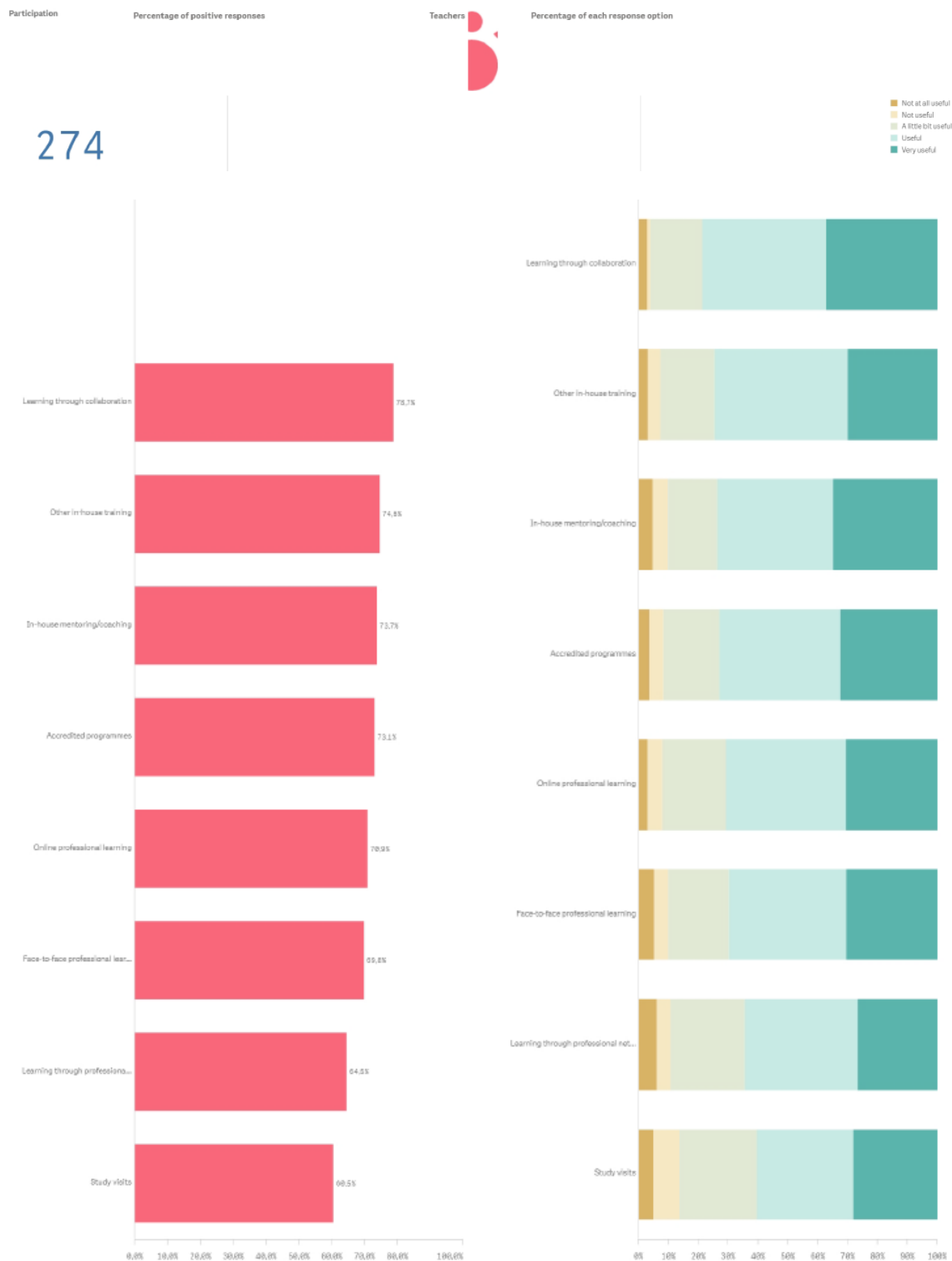
Overview by area

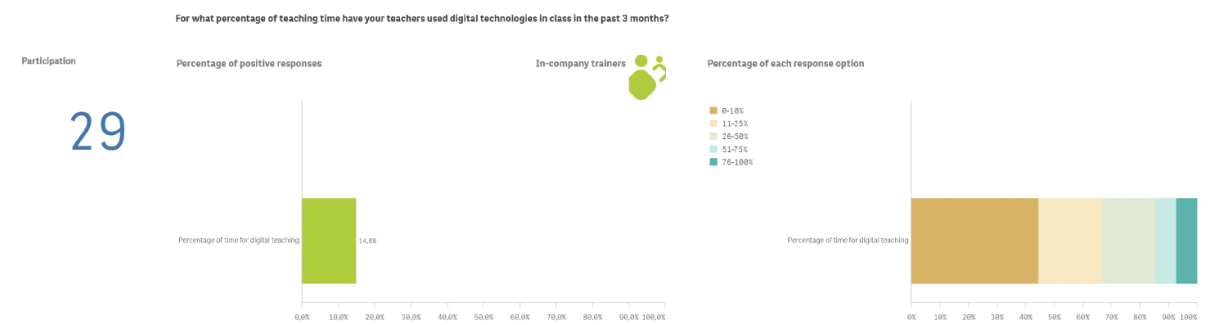
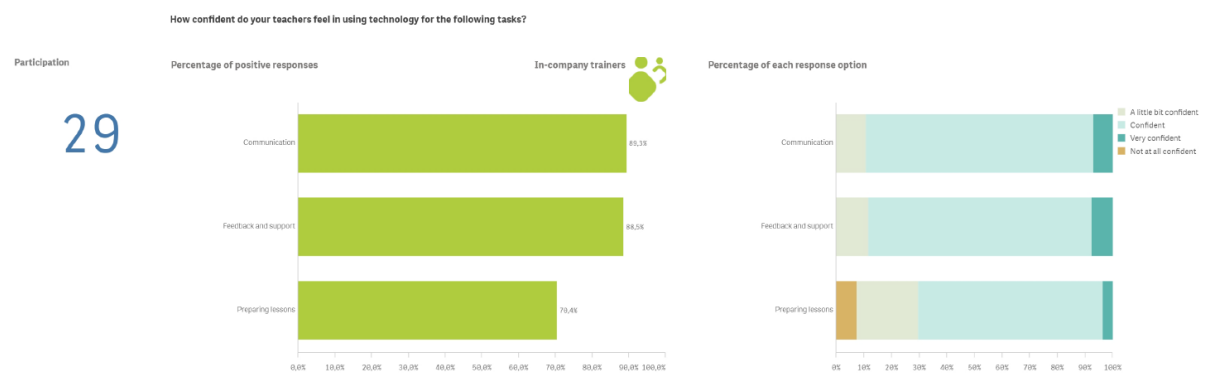
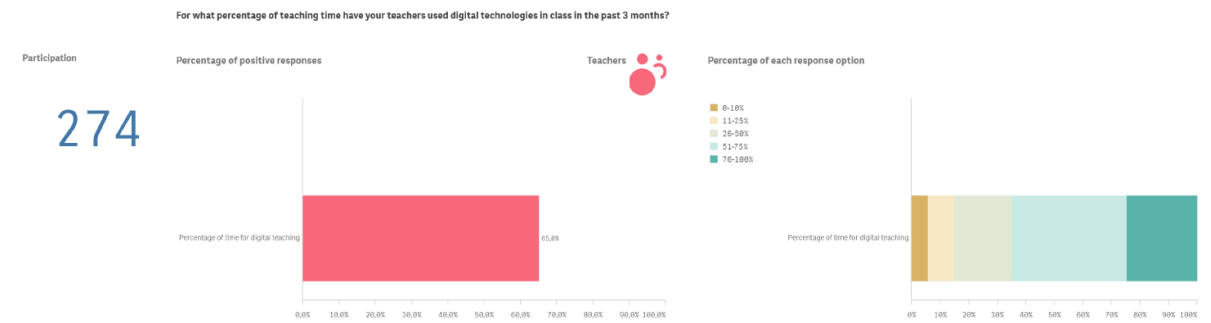
Percentage of positive responses by area and user profile



3. Additional areas

What do your teachers think about the usefulness of the CPD activities in which they participated in the last year?





Which best describes the approach to using digital technologies for teaching and learning by your school leaders and teachers?

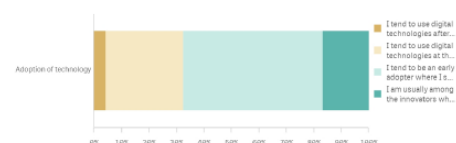
Participation

71

Percentage of positive responses

School leaders

Percentage of each response option



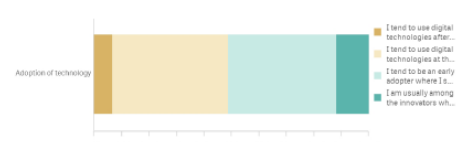
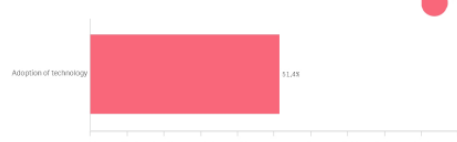
Participation

274

Percentage of positive responses

Teachers

Percentage of each response option



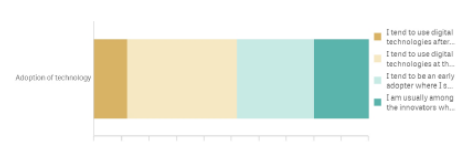
Participation

29

Percentage of positive responses

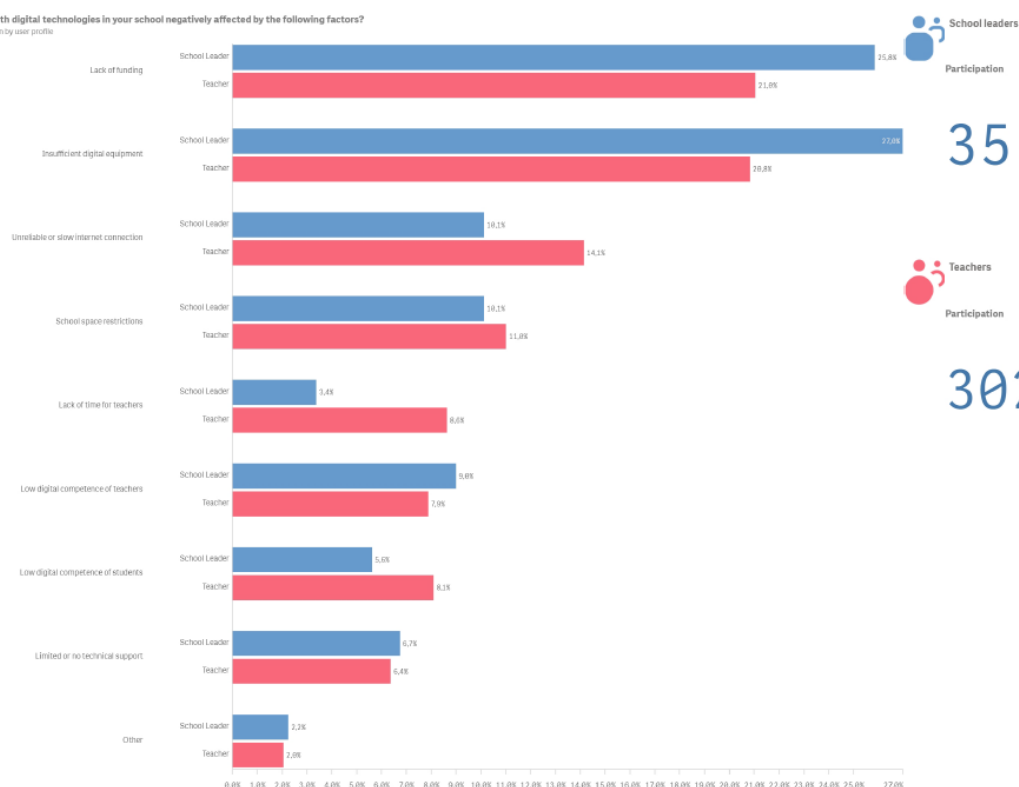
In-company trainers

Percentage of each response option



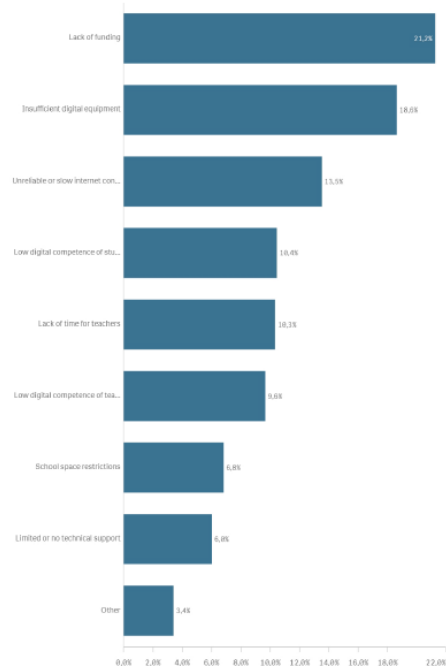
Is teaching and learning with digital technologies in your school negatively affected by the following factors?

Percentage of each response option by user profile

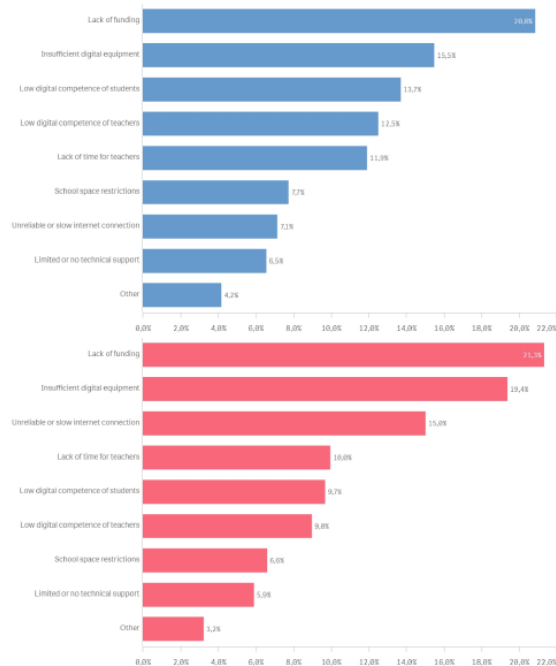


Is teaching and learning with digital technologies in your school negatively affected by the following factors?

Percentage of each response option



Percentage of each response option by user profile



School leaders
Participation

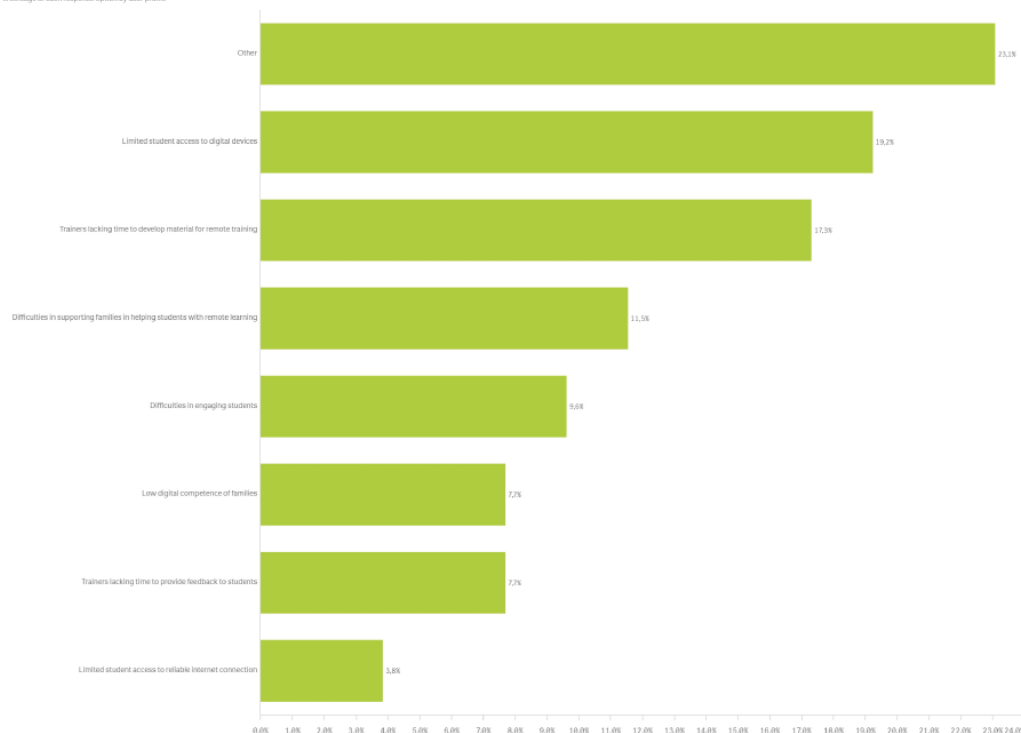
71

Teachers
Participation

274

Is remote training with digital technologies negatively affected by the following factors?

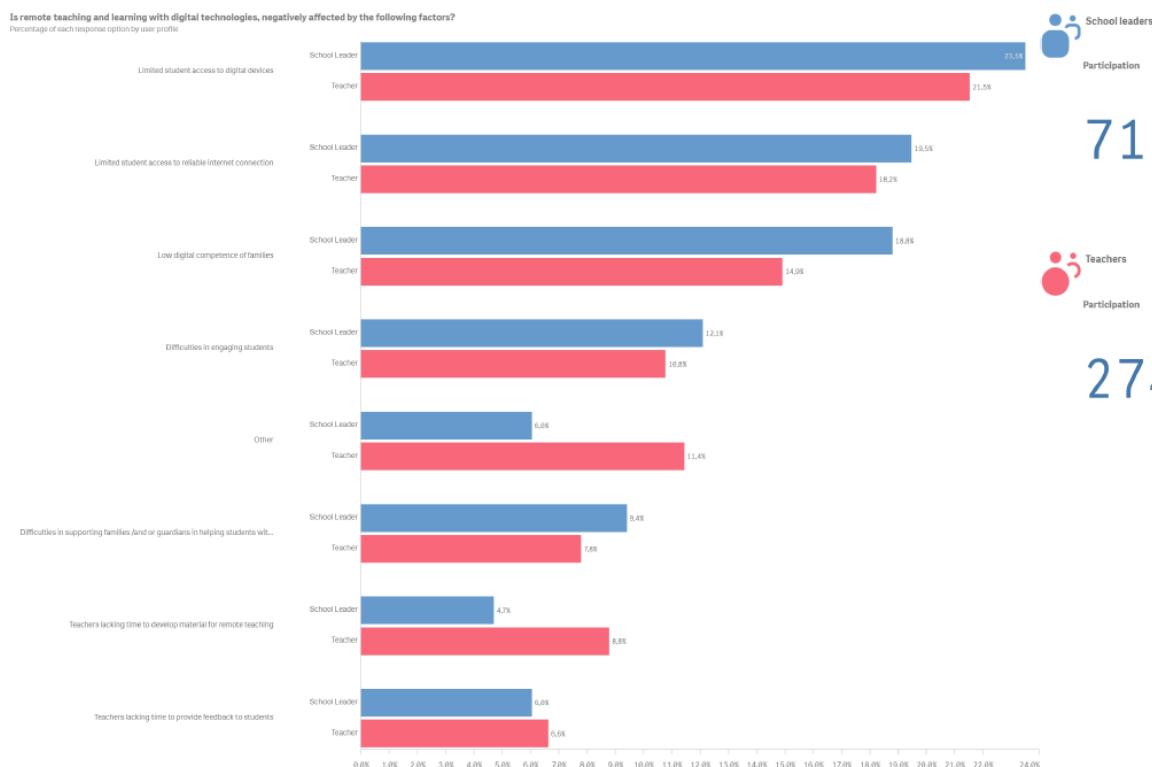
Percentage of each response option by user profile



In-company trainers
Participation

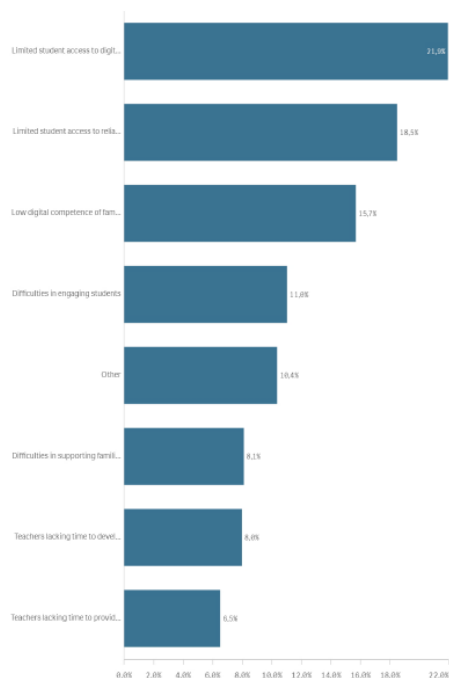
29

Is remote teaching and learning with digital technologies, negatively affected by the following factors?
Percentage of each response option by user profile

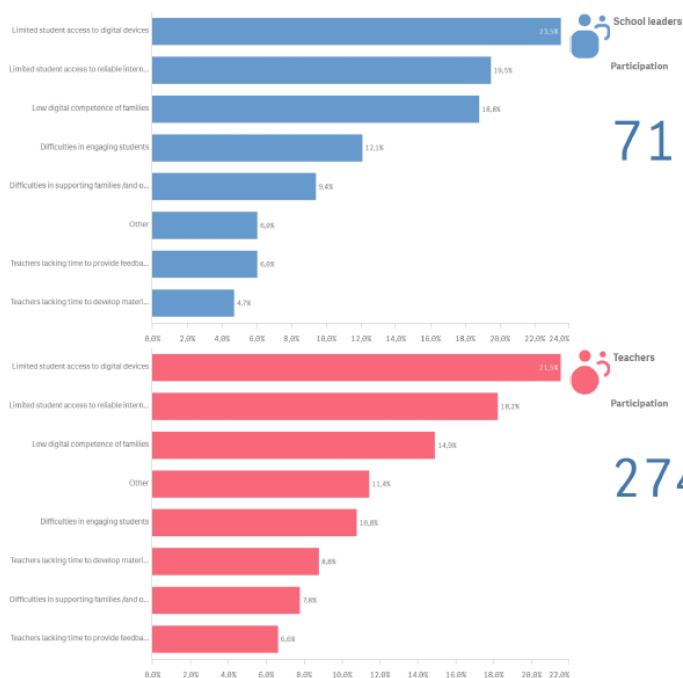


Is remote teaching and learning with digital technologies, negatively affected by the following factors?

Percentage of each response option



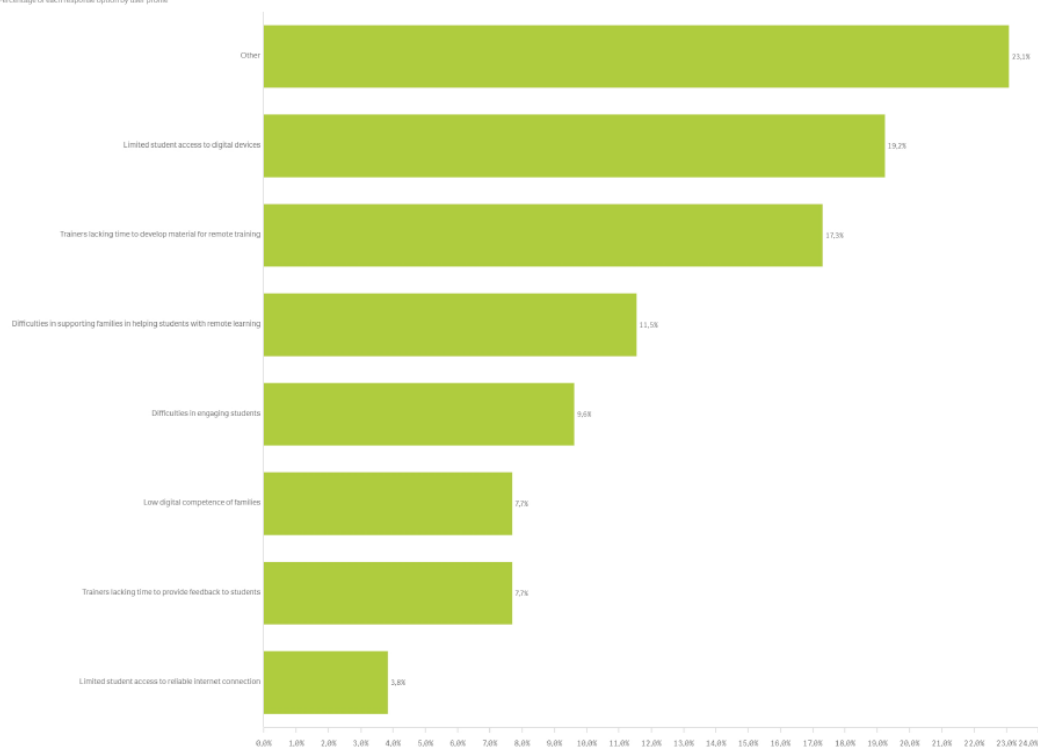
Percentage of each response option by user profile



Is remote training with digital technologies negatively affected by the following factors?
Percentage of each response option by user profile

In-company trainers
Participation

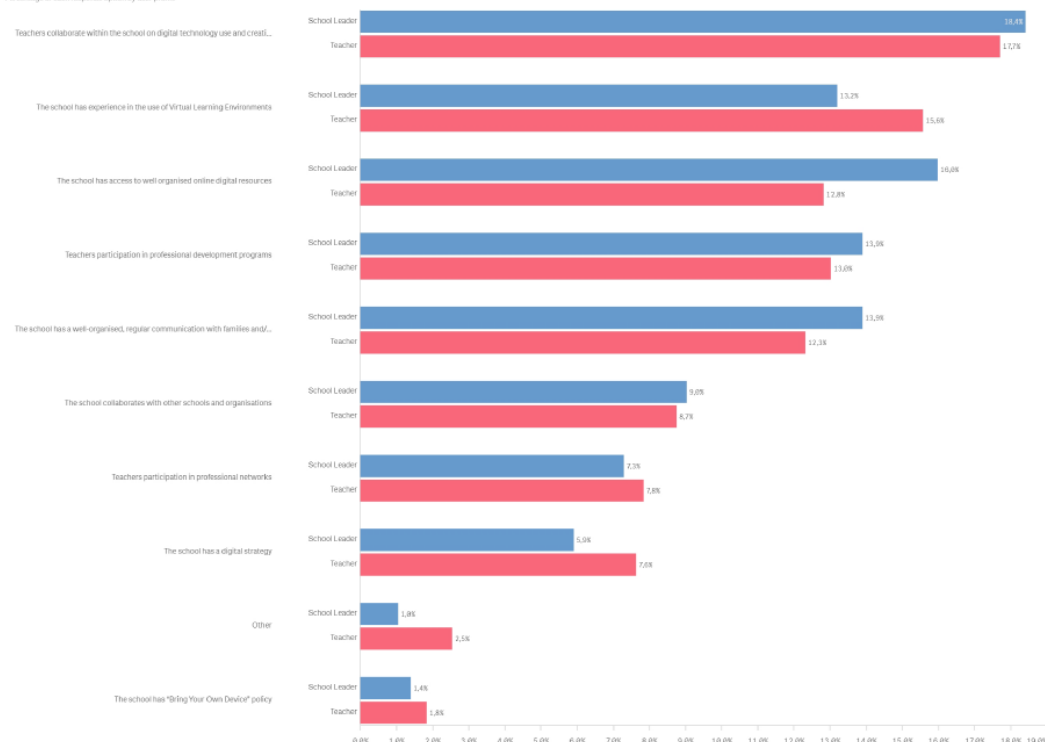
29



Is remote teaching and learning with digital technologies, positively affected by the following factors?
Percentage of each response option by user profile

School leaders
Participation

71

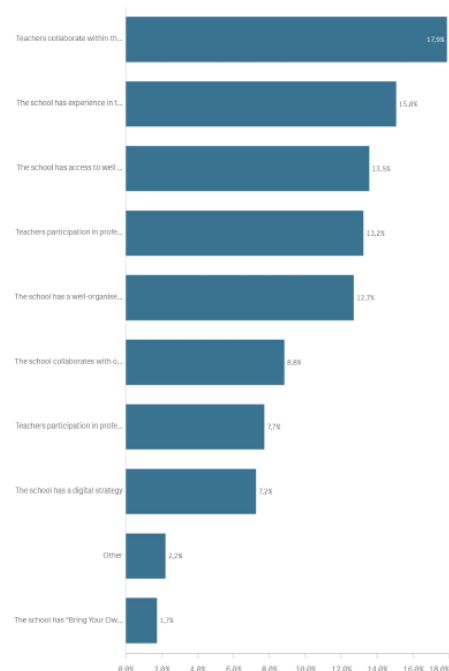


Teachers
Participation

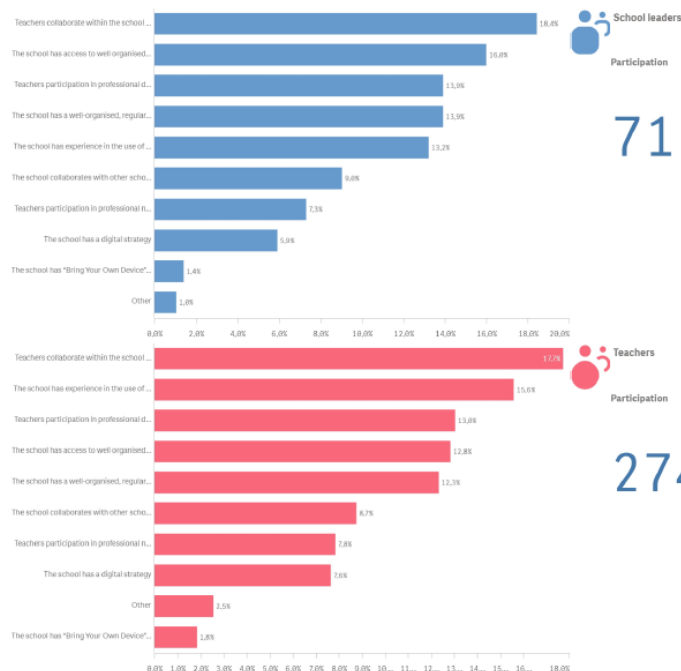
274

Is remote teaching and learning with digital technologies, positively affected by the following factors?

Percentage of each response option



Percentage of each response option by user profile

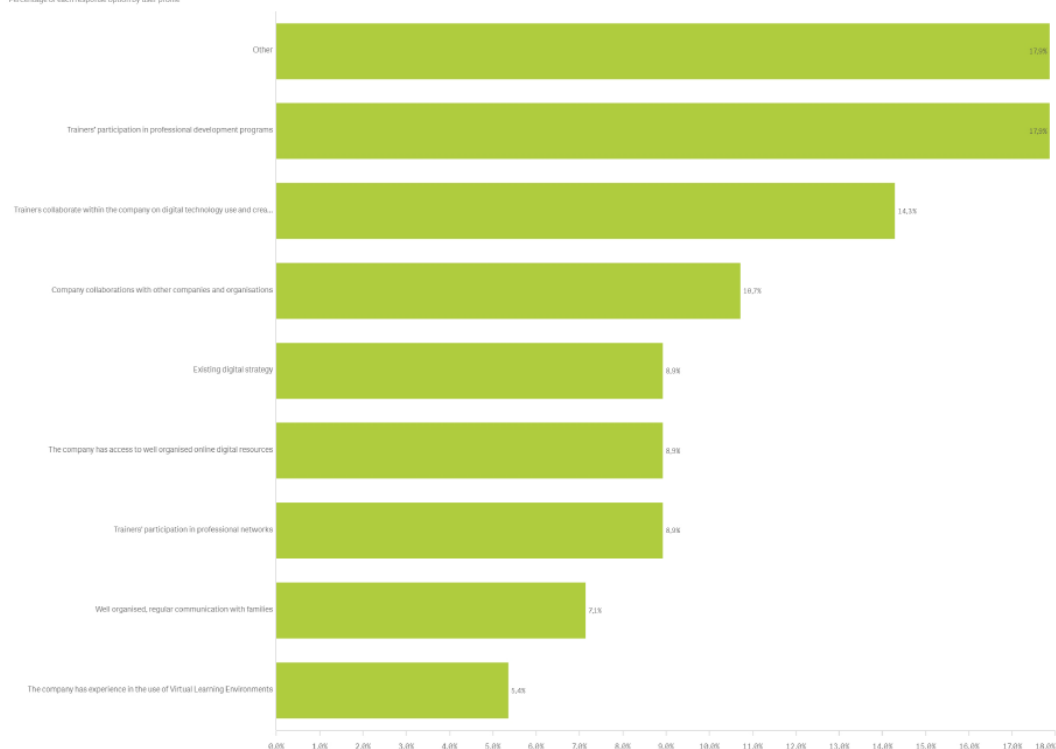


71

274

Is remote training with digital technologies positively affected by the following factors?

Percentage of each response option by user profile



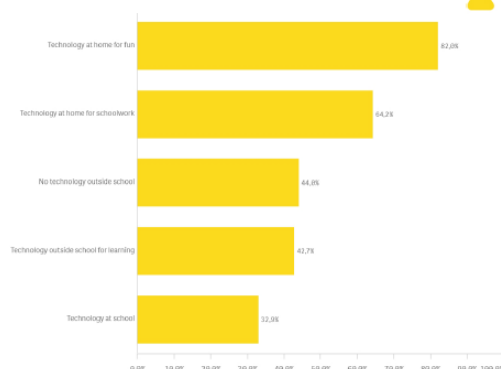
29

How do your students use technology in and out of school?

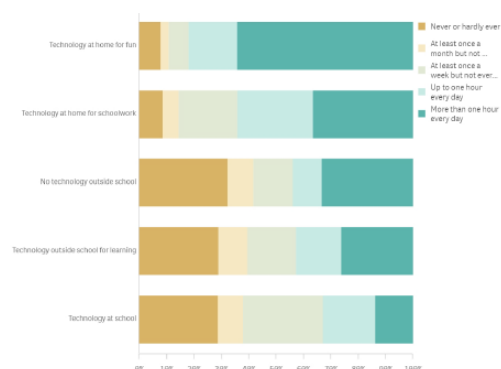
Participation

978

Percentage of positive responses



Percentage of each response option



Are you able to access digital devices (computer, laptop, tablet, mobile phone) at home?

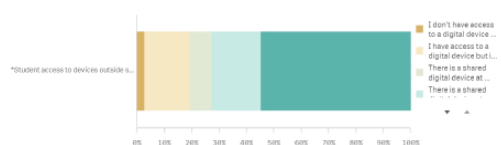
Participation

978

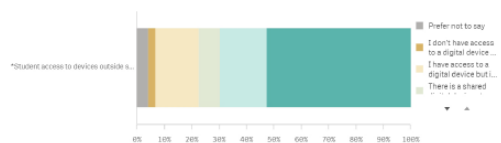
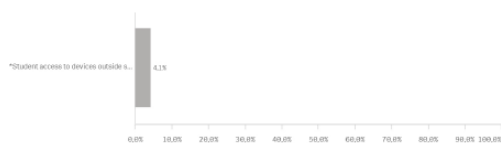
Percentage of positive responses



Percentage of each response option



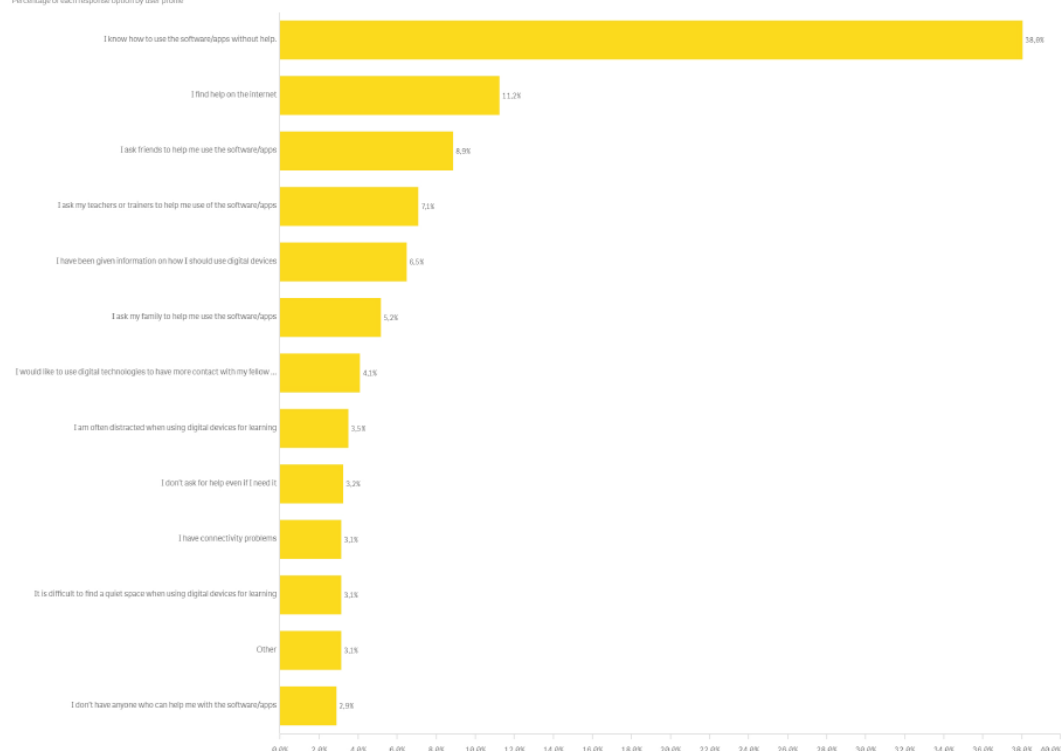
Percentage of "Prefer not to say" responses



Average



Is remote training with digital technologies positively affected by the following factors?
Percentage of each response option by user profile

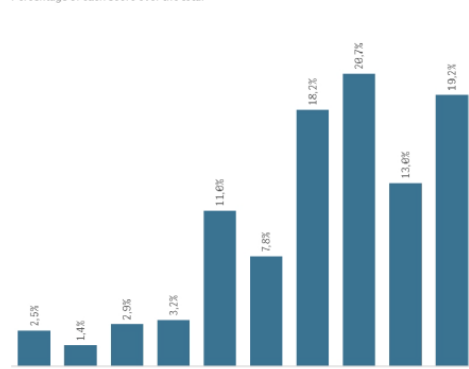


Students
Participation

978

4. satisfaction

Percentage frequency distribution
Percentage of each score over the total



Participation
Number of users

1.326

Average
Average score

7,31

Number of countries

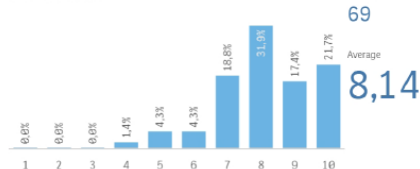
1

Number of schools and educat...

14

Percentage frequency distribution by user profile

School leaders



Participation
69

Average
8,14

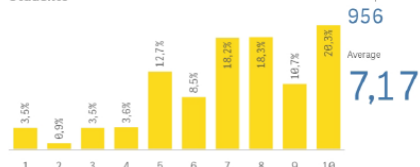
Teachers



Participation
272

Average
7,67

Students



Participation
956

Average
7,17

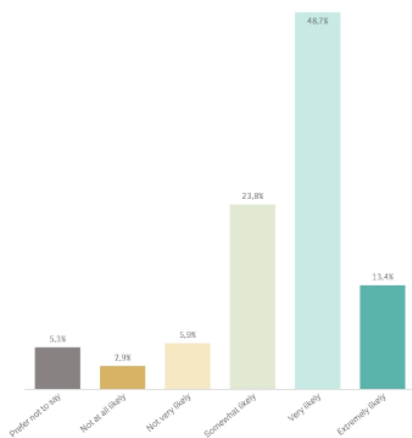
In-company trainers



Participation
29

Average
6,66

Frequency distribution
Frequency distribution



Percentage frequency distribution



Participation
Number of users

374

Number of countries

1

Average
Average score

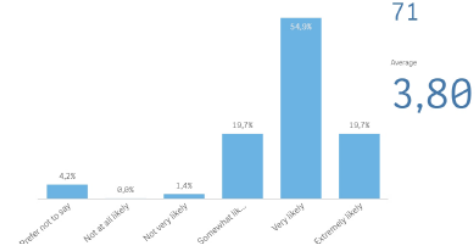
3,48

Number of schools and education levels

14

Frequency distribution by user profile

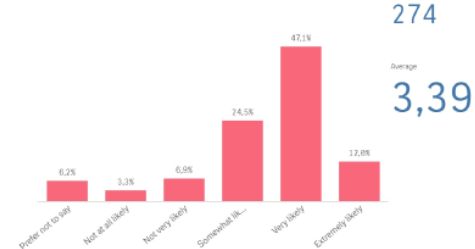
School leader



Participation
71

Average
3,80

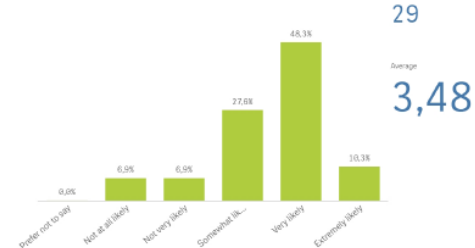
Teacher



Participation
274

Average
3,39

In-company trainers



Participation
29

Average
3,48

Annex VI – Methodology for scale-up: stakeholders, questionnaires, communication, the analysis of outcomes

National stakeholders, employers and students to involve

Criteria for selection of participants of the focus group at the national level:

- National coordinator of the SELFIE in the Republic of Serbia that would be also involved into the implementation of the SELFIE WBL for Serbia,
- Public official (e.g., WBL policymakers) responsible for the WBL at the Ministry of Education, Science and Technological Development,
- A representative from the Digitalization in Education sector at the Ministry of Education, Science and Technological Development,
- A representative from the Institute for Education Quality and Evaluation, Education Technology Centre and responsible person for the implementation of activities related to SELFIE and future SELFIE WBL,
- A representative from the WBL sector at the Serbian Chamber of Commerce.

Based on these criteria the following representatives at national level were invited:

- - Danijela Šćepanović, SELFIE National coordinator, Ministry of Education, Science and Technological Development
- - Dragana Jovanović, advisor in Sector for dual education (WBL), Ministry of Education, Science and Technological Development
- - Biljana Marić, Adviser to the Minister for Digitalization in Education, Ministry of Education, Science and Technological Development
- - Katarina Aleksić, Head of Education Technology Center, Institute for Education Quality and Evaluation
- - Mirjana Kovačević, Head of Center for Education, Dual Education and Education Policies, Serbian Chamber of Commerce

Criteria for selection of interviewees at the employer's level:

- A representative from employers within the ICT sector who offers internship/ work-based learning.
- A representative from employers that are more advanced in organizing online practices.
- A representative from employers who offer the traditional face to face work-based learning.

Based on these criteria the following representatives from employers was selected:

- In-company trainer from an anonymised Company

Criteria for selection of interviewees at the student's level:

- Representatives of students at the fourth year involved in the WBL.
- A representative from parents that are willing and more engaged in WBL.

Based on these criteria the following representatives from students was selected:

- Fourth year student from an anonymised school

Questionnaire

One questionnaire for a focus group with National stakeholders, and two questionnaires for interview with employer and student

Questionnaire for National Stakeholders

1. Do you think that the SELFIE WBL is a useful tool for assessing the digital capacity of institutions in the education system of the Republic of Serbia? If so, why?
2. In post COVID19 crisis how could the SELFIE WBL help school respond to the new digital competences demand?
3. What are the main obstacles and opportunities for scale-up of the SELFIE WBL in the Republic of Serbia?
4. How can the SELFIE WBL be integrated into legislation, taking into account existing reforms of the national system for dual and digital education of the Republic of Serbia?
5. What recommendations do you have for the scale-up of the SELFIE WBL in the education system of the Republic of Serbia?
6. What are the mechanisms for conducting control and monitoring for scale-up?
7. When is the best time to implement the scale-up of the SELFIE WBL in the Republic of Serbia?

Questionnaire for Employer

1. Do you think that the SELFIE WBL is a useful tool for assessing the digital capacity of companies involved in the dual education system of the Republic of Serbia? If so, why?
2. What are the main obstacles and opportunities for companies to take part in the SELFIE WBL in the Republic of Serbia?
3. What recommendations do you have for the scale-up of the SELFIE WBL in the dual education system of the Republic of Serbia?
4. When is the best time to implement the scale-up of the SELFIE WBL in the Republic of Serbia?

Questionnaire for Student

1. Did any statement in the SELFIE WBL tool indicate to you the need to discuss more at school, when it comes to the application of digital technologies? Please explain.
2. How do you use digital technologies at school and company?
3. How was your overall experience of using the SELFIE WBL? Please explain.

Communication

Communication with national stakeholders, employers and students

National stakeholders were reached out via email in advance and meeting for online focus group was settled. Some of national stakeholders were called by phone. This was done deliberately since the subject needed more explanation and details that could be presented during face to face discussion. A short power point presentation was developed for this purpose and some aspects of SELFIE WBL

report were shown as well as eight-step Methodology for the scale-up and integration of SELFIE into education and training systems.

With employer and student, the interviews were organized online. Employer and student were involved in the SELFIE WBL during the piloting period. Both of them were aware about the specificity of SELFIE. The interview with employer and student lasted half-hour.

During the focus group discussion, the information was put down in for format of table that contained the questions. After the focus group session, the notes with all the discussed information were sent via email to the respondents for verification and approval.

Analysis of outcomes

Methodology for the analysis SELFIE WBL outcomes, focus group and interview outcomes

National Stakeholders analysis of answers related to SELFIE WBL

Question	National Stakeholders answers	Synthesis of answers
Q1: Do you think that the SELFIE WBL is a useful tool for assessing the digital capacity of institutions in the education system of the Republic of Serbia? If so, why?	<ul style="list-style-type: none"> - SELFIE WBL is very useful tool since it provides guidance for all the schools in which direction to develop. Also, it is economically viable. Schools do not have to pay anything for its utilization. It is useful since it is a self-reflection tool and in comparison, to external evaluation it is not mandatory. Finally, SELFIE WBL is a comprehensive tool. - I agree that SELFIE WBL is useful tool. It provides self-reflect feature for digital maturity of schools. Also, SELFIE WBL offers networking opportunity for school and companies. - SELFIE WBL tool is the only tool for assessment of digital capacity of schools in Serbia. It is broad and prepared to be used in wider context including other European WBL educational institutions. Also, SELFIE WBL non-formally sends invitation to companies to participate in the school's digital development plan. - I think that SELFIE WBL is very useful tool since it is voluntary, anonymous, and provides directions for development of digital capacity. - Yes, SELFIE WBL is useful tool since it provides opportunity for companies to self-reflect on usage of digital technologies and assessment of students' digital competences. 	<p>Synthesis of answers for the Question 1.</p> <p>SELFIE WBL is the only comprehensive and voluntary tool for schools and companies on how to self-assess on digital capacity for teaching and learning. SELFIE WBL identifies weaknesses, provides direction for future development of digitalisation in Serbia, potential for networking, and opportunity for comparison with other European educational institutions.</p>
Q2: In post COVID19 crisis how could the SELFIE WBL help school respond to the new digital competences demand?	<ul style="list-style-type: none"> - SELFIE WBL can help schools in the process of planning at the level of whole school, school development and pedagogical application of digital technology. It is limited in a sense that cannot assess specific ICT competences of students needed for a particular profession but can contribute to the discussion on digital competences related to students as future citizens. Nevertheless, SELFIE should not and is not meant to deal with new digital competences of students that are related to job requirements, those are covered by the curricula. - COVID-19 crises has triggered need for self-reflection of digital competences. We became aware of demand for new digital competences. Ministry has created database for educational profiles based on new digital competences. 	<p>Synthesis of answers for the Question 2.</p> <p>SELFIE WBL can help in overall digital competences for teaching and learning. However, specific ICT competences cannot be assessed.</p>

	<ul style="list-style-type: none"> - SELFIE WBL can tackle digital competences of the citizens. We need digital competence citizens in Serbia and schools can help in this process. - In schools we already have implemented informatics in the elementary level of educations. This can help schools in delivering digital competences to students. - Employers have demand for digital competences. Students in WBL model have opportunity to faster acquire required digital skills compared to non-WBL. SELFIE WBL can help not only schools but also companies to identify which digital competences are the most important and where is opportunity for improvements. 	
Q3: What are the main obstacles and opportunities for scale-up of the SELFIE WBL in the Republic of Serbia?	<ul style="list-style-type: none"> - Current formal training programs for SELFIE tool can be extended with WBL part. - Lack of promotion is currently biggest obstacle. SELFIE WBL is voluntary and in that sense, I do not see any major obstacles, nor legal, nor organisational. Every school has to conduct internal evaluation and to design development plan including digital elements for teaching and learning by the existing regulation. SELFIE WBL can help in this process. - SELFIE is included in the Education Strategy until 2030. This can be greatest opportunity for scale-up. There are no legal obstacles. Training of school leaders and teachers on SELFIE can be also used as an opportunity for scale-up of SELFIE WBL. We should create strategy on how to approach companies in order to invite them to take an active role in SELFIE WBL. - There are no legal constraints for the scale-up of SELFIE WBL tool in Serbia. In some of the regulations SELFIE is included as a policy instrument (e.g. quality standards for the operation and evaluation of schools is encouraging SELFIE to be used as a tool for self-assessment). - Companies in Serbia are applying different quality standards. From my point of view, I do not see any major obstacles for companies to take active role in SELFIE WBL. If they see an opportunity for improvement, companies will deep dive. The only strategy is promotion. The Chamber of Commerce can take an active role. 	<p>Synthesis of answers for the Question 3.</p> <p>There are no obstacles, legal nor organisational, for scale-up of SELFIE WBL. Promotion and communication both to schools and companies is biggest opportunity.</p>
Q4: How can the SELFIE WBL be integrated into legislation, taking into account existing reforms of the national system for dual and digital education of the Republic of Serbia?	<ul style="list-style-type: none"> - It is part of the Education Strategy until 2030. - Revision of the Development plan of school. This is internal self-assessment instrument. - SELFIE is already recognised as quality standard for the operation and evaluation of digital capacities of schools, national bodies are encouraging school to use SELFIE as a tool for self-assessment. - Certification of in-company trainers by the Chamber of Commerce could be used as a communication platform to further promote the use of SELFIE WBL. 	<p>Synthesis of answers for the Question 4.</p> <p>SELFIE is already integrated in all major legal documents. SELFIE WBL could be integrated in the internal and external assessment of schools, as well as within regulation of certification of in-company trainers.</p>
Q5: What recommendations do you have for the scale-up of the SELFIE WBL in the education system of	<ul style="list-style-type: none"> - We just have to continue with the current plan that we adopted for the SELFIE. SELFIE WBL is just extension of it. The only recommendation is to create effective communication strategy. - Promotion and dissemination of SELFIE WBL at all levels. - VET schools that took part in SELFIE will include WBL module. However, schools which did not participate in SELFIE 	<p>Synthesis of answers for the Question 5.</p> <p>Development of an effective communication strategy for the</p>

the Republic of Serbia?	<p>will not take part in WBL as well. For those schools we have to create clear strategy.</p> <ul style="list-style-type: none"> - To keep up with the current action plan for SELFIE and include WBL part. - Training of in-company trainers for the WBL certification could be modified and redesigned to include SELFIE WBL section. In this way SELFIE WBL could be promoted. 	SELFIE WBL, both for schools and companies.
Q6: What are the mechanisms for conducting control and monitoring for scale-up?	<ul style="list-style-type: none"> - We currently use case study as a mechanism for monitoring of SELFIE implementation. SELFIE WBL aggregated data from JRC is an excellent mechanism for monitoring. - Every school is required to conduct self-evaluation regarding every aspect of school life, on regular basis. After the analyses of the results, conclusions should be incorporated in School Development plan and according Action plan should be developed. These school documents can be used for conducting monitoring for scale-up. - School Development plan is a public document. If SELFIE WBL outcomes are presented in that document and appropriate measures are created based on these outcomes, external evaluators can be positive that school is strengthening its digital capacity. In close collaboration with external evaluators, national stakeholders and SELFIE national coordinator can monitor scaling-up of the SELFIE WBL. - SELFIE WBL could inspire changes of criteria in the process of External evaluation of schools. - Sharing of SELFIE WBL aggregated data with the Chamber of Commerce would be a good approach. 	<p>Synthesis of answers for the Question 6.</p> <p>Case study, SELFIE WBL aggregated data, Development plan of school, and external assessment of schools can be used as mechanisms for conducting control and monitoring for scale-up.</p>
Q7: When is the best time to implement the scale-up of the SELFIE WBL in the Republic of Serbia?	<ul style="list-style-type: none"> - We are promoting SELFIE tool continuously. Schools who took SELFIE claimed that April is the best time to conduct an exercise. We have to check the final version of the questionnaire before the scale-up. - The sooner the better. First, schools and companies need to be informed. Second, schools need to be trained. And after that scale-up can occur. - I have to raise a question – do teachers that teach in general VET and in VET WBL class have to conduct exercise twice or only once. As soon as we have all answers we can proceed with scale-up. - As soon as possible. - Companies are always ready. As soon as the school is ready for the SELFIE WBL exercise it would be the best timing. The sooner the better. 	<p>Synthesis of answers for the Question 7.</p> <p>All preparation for SELFIE WBL scale-up should be done before April. The best time for scale-up is April 2021.</p>

Interview with National Stakeholders outcomes:

1. National Stakeholders consider SELFIE WBL a potential tool for assessing digital capacity of dual (VET WBL) education system in the Republic of Serbia. SELFIE WBL is the only comprehensive and voluntary tool for schools and companies on how to self-assess on digital capacity for teaching and learning. SELFIE WBL tool provides potential for networking between school and companies.
2. SELFIE WBL can foster discussion that could lead to the overall improvement of digital competences for teaching and learning and of students. However, specific ICT competences cannot be and should not be assessed with the SELFIE WBL tool.
3. There are no obstacles, legal nor organisational, for scale-up of SELFIE WBL in the Republic of Serbia. Opportunities related to the SELFIE WBL tool identified by National Stakeholders are:

- promotion of SELFIE WBL at school level,
 - existing training programs for SELFIE tool can be extended with WBL part,
 - use the leverage of SELFIE already being included in the *Education Strategy until 2030*.
 - use the Chamber of Commerce to promote SELFIE WBL for companies.
4. National Stakeholders agreed that SELFIE is already integrated in all major policy documents but not in legal documents. Further discussion is needed in order to set its legal ground. SELFIE WBL could inspire changes related to the legal framework that regulates external assessment of schools, as well as promoted within the process of certification of in-company trainers.
 5. The number one recommendation by the National Stakeholders is development of an effective communication strategy for the SELFIE WBL, both for schools and companies. Funds have been secured for further promotion of SELFIE and the implementation is planned in the 4th quarter of the 2021.
 6. Mechanisms for conducting control and monitoring for SELFIE WBL scale-up are:
 - Case study,
 - SELFIE WBL aggregated data,
 - Development plan of school, and
 - External assessment of schools.
 7. There is a common view on timing of the SELFIE WBL scale-up – the sooner the better. All preparation for SELFIE WBL scale-up should be done before April. Hence, the best time for SELFIE WBL scale-up would be April 2021 if schools were able to work without disruption. Having in mind the impact of COVID-19, it has been decided to postpone developmental activities for the end of the 2021 year.

Employer Stakeholder analysis of answers related to SELFIE WBL

Question	Employer answers
Q1: Do you think that the SELFIE WBL is a useful tool for assessing the digital capacity of companies involved in the dual education system of the Republic of Serbia? If so, why?	- Yes, I do. SELFIE WBL tool offers opportunity for assessment of digital capacity of the company and identifies weaknesses.
Q2: What are the main obstacles and opportunities for companies to take part in the SELFIE WBL in the Republic of Serbia?	- The only obstacle is lack of time. Companies have opportunity to benefit from SELFIE WBL results. Results could identify how to improve use of digital technology and how to organize training with students and prepare them better for practical work.
Q3: What recommendations do you have for the scale-up of the SELFIE WBL in the dual education system of the Republic of Serbia?	- To involve company in the process as soon as possible. With effective communication regarding SELFIE WBL exercise it would be possible to organize time and take active role.
Q4: When is the best time to implement the scale-up of the SELFIE WBL in the Republic of Serbia?	- School and company should agree at the beginning of the academic year for the timing of the SELFIE WBL exercise.

Interview with Employer Stakeholder outcomes:

1. Employer consider SELFIE WBL as a tool that offers opportunity for assessment of digital capacity of the company. It identifies areas in which the company is weak.

2. To scale-up SELFIE WBL within companies, it is necessary to inform employers on time and to provide clear benefits for them. Effective communication is required.
3. Employer agreed that companies should be involved in the process as soon as possible and, if possible, at the beginning of the academic year school and company should agree for the timing of the SELFIE WBL exercise.

Student Stakeholder analysis of answers related to SELFIE WBL

Question	Employer answers
Q1: Did any statement in the SELFIE WBL tool indicate to you the need to discuss more at school, when it comes to the application of digital technologies? Please explain.	- It's not. In my opinion, there is enough talk in our school about digital technologies.
Q2: Did you experience any difficulties in the use of SELFIE WBL tool?	- I did not have any problems with SELFIE WBL.
Q3: How was your overall experience of using the SELFIE WBL? Please explain.	- It was useful. I have improved my knowledge related to employer. It will serve me well in further education and the life that follows.

Interview with Student Stakeholder outcomes:

1. Student did not have any problems with SELFIE WBL tool.
2. Student agreed that digital competence are very useful for future career and everyday life.

Annex VII – List of abbreviations

ETF	European Training Foundation
CPD	Continuous Professional Development
ICT	Information and Communications Technologies
IEQE	Institute for Education Quality and Evaluation
JRC	Joint Research Centre
MoESTD	Ministry of Education, Science and Technological Development
SELFIE technologies	Self-reflection on Effective Learning by Fostering the use of Innovative Educational technologies
VET	Vocational Education and Training
WBL	Work-Based Learning