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ANALYSIS OF POSSIBILITIES TO DEVELOP HYBRID-SIMULATION TRAINING IN THE SMILTENE VOCATIONAL EDUCATION CENTER (SMILTENES TEHNUKUMS) (LATVIA)

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Project partners:

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Abstract

This country case study is part of the Study of the specificities, context and perspectives of VET in Lithuania, Latvia, Estonia, Spain and Portugal. At the same time, the readiness and potential of the Smiltene Vocational Education Center to undertake the development of a specific VET new program or module or the adaptation of an existing program through hybrid simulation training will be analyzed.

This case study from Latvia will form the basis for an agreement between the "Development of hybrid training in VET" project (No. 2020-1-LT01-KA226-VET-094679) partners on the next phase of the project and for the assignment of specific responsibilities to each partner.

This case study will answer what is the most relevant profession in Smiltene Vocational Education Center and which competencies in this profession will be most important in the future.

Accordingly, Smiltene Vocational Education Center will also be able to identify key selection parameters and form a preliminary team of VET teachers who will be trained to use and manage the hybrid simulation training as well as to prepare hybrid simulation training materials.

1. Problem, object and purpose of the analysis

The problem of the research is whether the Smiltene Vocational Eduacation Center has the right conditions, resources, sufficient abilities, measured need and high motivation to apply the hybrid-simulation training method in its activities.

The object of the research is the portfolio of vocational training programs implemented by the Smiltene Vocational Education Center.

The aim of the research is to identify the most promising (most significant) economic activities (sectors) of the Latvia economy, for which the required specialist training programs (or their parts) could be implemented in the future using the applied hybrid-simulation training method.

2. Assumptions of the analysis

In order to select the areas of vocational training (programs or parts thereof) that have the greatest potential to contribute to the training of specialists most needed in the future Smiltene Vocational Education Center labor market, it is appropriate to review the structure of the national economy and the impact of certain economic sectors on the national economy. The latter factor is extremely significant, so in Part 3 of this analysis we will evaluate several aspects:

1. the number of employees in a given sector of the national economy and the share of employees in the country as a whole (a detailed analysis of this aspect would show the scope of training of the specialists in greatest demand in the future, as well as the scope of the need to improve the qualification of existing specialists; accordingly, the analysis would reveal the need to develop a hybrid training content that will improve the efficiency of the vocational training process and significantly reduce the training time);how much taxes are paid by companies in a certain sector and what part of the Latvia economic portfolio they make up (this would strengthen the arguments for choosing a particular sector, as it would show the relative scale of companies' activities and turnover of products / services produced or sold);

2. what is the labor productivity of persons working in enterprises of a certain sector of the Latvia economy (this would reveal the tendencies of enterprises to modernize and

the dynamics of implementation and development of innovations in them).

The results of the review of the listed aspects will provide a basis for distinguishing the Latvia economic sectors (Part 3.4 of this analysis), for which the training of the required specialists will be the most relevant in the future. Accordingly, it will help to decide which vocational training content hybridization or the development of completely new hybrid training content makes the most sense.

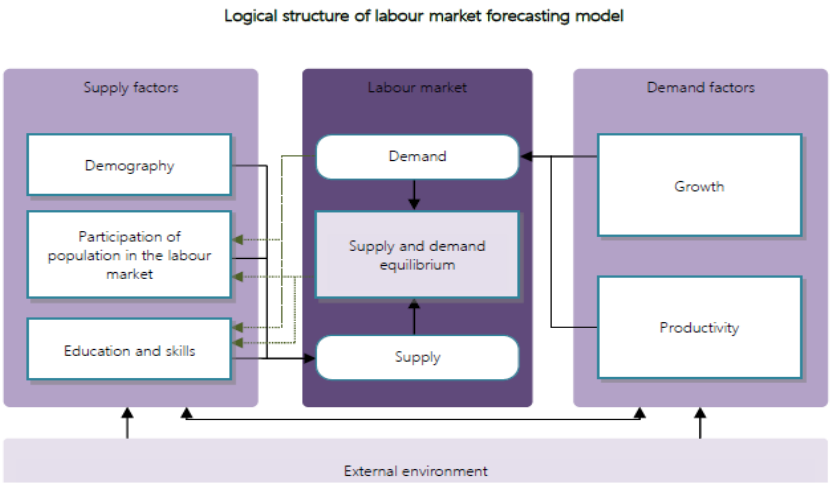
3. Analysis of the Latvia economic trends and prospects

It is worth mentioning that the model of medium- and long-term economic predictions that has been recently published by Ministry of Economics is based on several building blocks aiming to balance the equilibrium between the demand led by economic growth and productivity and the supply of labour dependent on such factors as demography, education and skills and population participation in labour market.

Whether this is most accurate tool, considering the COVID pandemic effects and transformations due to environmental breakdown, is out of the scope of this analysis. Nevertheless, the authors tried to account for the latest health and economic crisis to the limited extent they were able to.

The full use of digitisation opportunities is fundamental to the maintenance of productivity and the improvement of living standards. **In Latvia, a digital divide has come about between city and countryside.** Much of Latvia's population lacks the digital skills needed to make effective use of the internet. **The integration of digital technologies in businesses is well below the EU average.** Basically, Latvia's population is not fully prepared for a digital boom in the economy. Latvia has one of the highest proportions of inhabitants in various age groups with low overall levels of digital skills. **This not only leads to a shortage of digital skills on the labour market, but also generally hinders the broader rollout of digital technologies within companies.**

Figure 1 Logical structure of labour market forecasting model in Latvia



Source: Informative Report on Medium and Long-Term Labour Market Forecasts, Ministry of Economics, June 2020, p. 43.

There are multiple effects of the pandemic already visibly affecting the Latvian economy - declining demand in export outlet markets, delays in supply chains of raw materials, effects on domestic services sectors, restrictions on international transport, reducing flows of travellers, and impacts on companies which must have coped with quick transition to remote work forms which had also significant impact on transport services and reast estate market (with closing down many offices and co-working spaces).

Many sectors have suffered severe consequences of introducing the public health safety measures – most immediately tourism has suffered as well as the restaurant and catering sector and air transport. With time and repeating lockdowns also education, entertainment, wholesale and manufacturing became affected.

Many effects might be already creating long term coinsumer behaviours shifts such as online shopping. Those who adapt and catch up with digitalisation quickly enough are the biggest winners in this run. Covid-19 has caused the so-called 'technology tipping point' - according to some estimations trends of digitalization happening 20 to 25 times faster than expected[1] speeding up the automation of workforce.

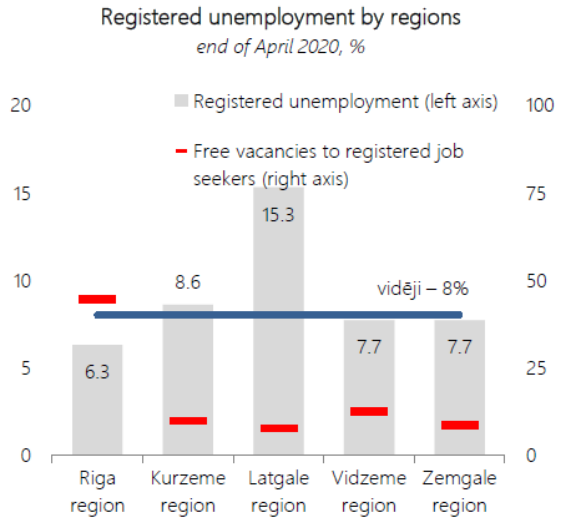
For the first time globalisation has been confronted on such a scale by involuntary need for shortening the trade chains. This has also created opportunity for localisation of the investments.

COVID-19 had significant impact on employment rates in Latvia.

One should bear in mind that Latvia is a country of structural, geographical and economical deep inequalities. The graph below shows how much different regions have been affected in comparison to the agglomeration centred around the capital – Riga.

Although the unemployment rate varied in April 2020 between 6.3% and 15.3% the overall average has not grown quickly. And between March and May 2020 (the first lockdown) it grew by 2 percentages and the number of registered vacancies has also reduced rapidly in the respective period – by more than 14 thousand.

Figure 2 Geographical inequality of unemployment rates in Latvia



Source: Informative Report on Medium and Long-Term Labour Market Forecasts, Ministry of Economics, June 2020.

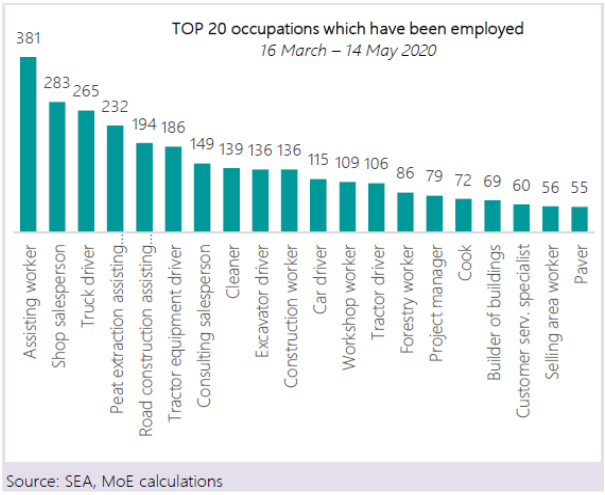
The length of restrictions in Latvia has been particularly severe. This had irreversible effect on many small businesses and led to significant job loss and unemployment. Like around the world, almost all sectors of economy have been affected, rarely any positively. The longer the restriction, the larger the decrease in population participation in labour market (both for caregivers and newcomers).

Aviation, public catering, international passenger transport, art, culture and entertainment, hotels and tourist places, conferences and exhibitions halls, car rent, rent of equipment and tangible assets, travel agency and tour operator activities, sports facilities, clubs, fitness centres have all been affected. As it is indicated on the figure below,

[1] *Haigh and Goodwin Brown, Circular Economy, 2021*

the most demanded related to wholesale, transport and construction.

Figure 3 The top demanded occupations during the first lockdown in 2020.



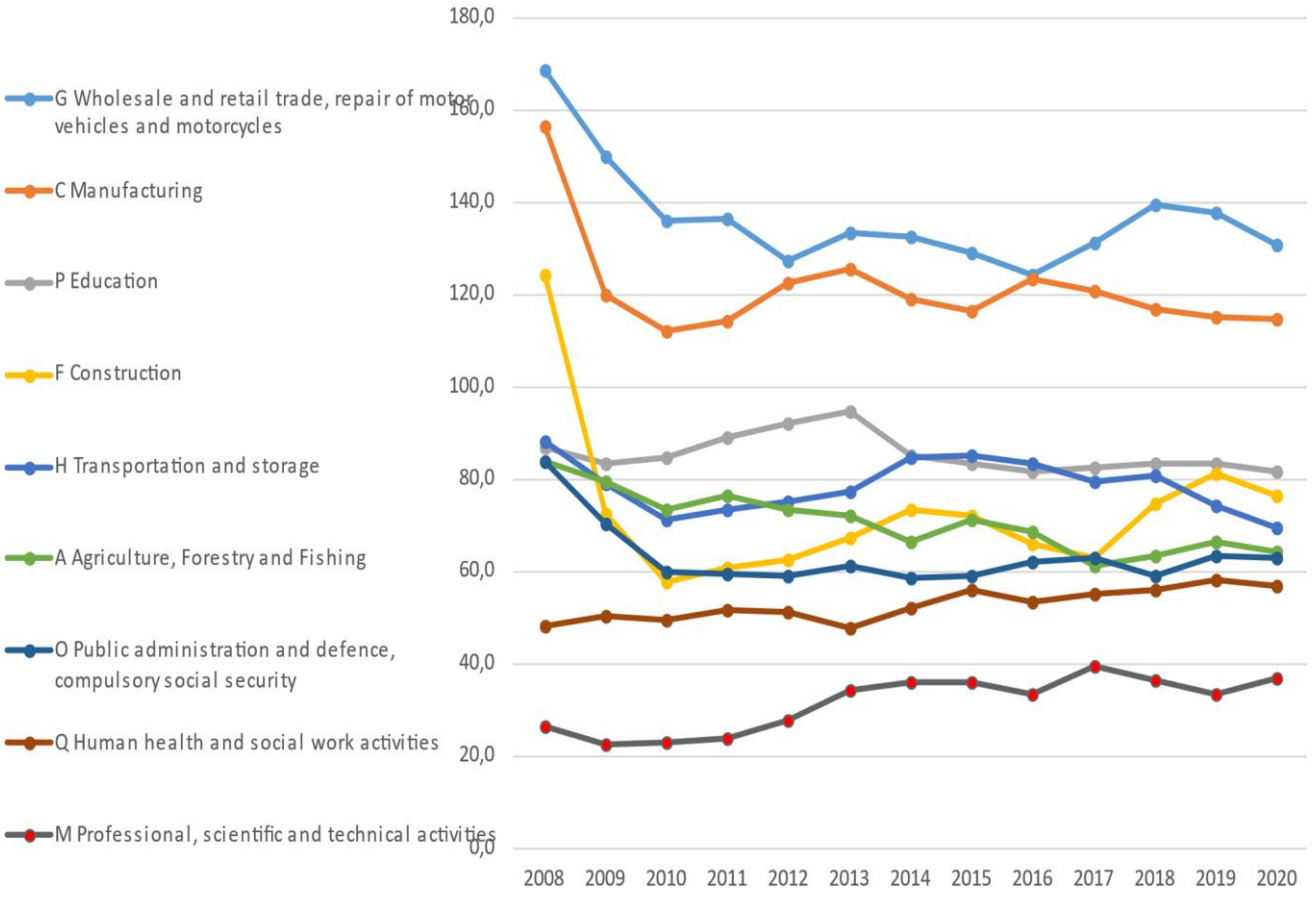
Source: Ibidem.

Even though the next wave of Coronavirus pandemic cannot be predicted in its length or form, average unemployment rate in 2020 has been estimated for 11% and with several lockdown in 2021 only, this rate will only grow.

3.1. Analysis of the number of persons employed in a certain sector of the national economy

The figure below shows the influence of the last crtically damaging to Latvian economy crisis in 2008 and the recovery that took place over a decade. Though the data for COVID pandemic times could be skewing lots of prognosis, the data is partially available also for 2020.

Figure 4 Number of people employed in different sectors of economy (in thousands).



Source: Own elaboration based on CSB data[2] based on NACE[3]

[2] Latvian Statistical Office source: https://data.stat.gov.lv/pxweb/en/OSP_PUB/START__EMP__NB__NBLA/NBL040/ [accessed: 26th May 2021]

[3] Statistical Classification of Economic Activities in the European Community

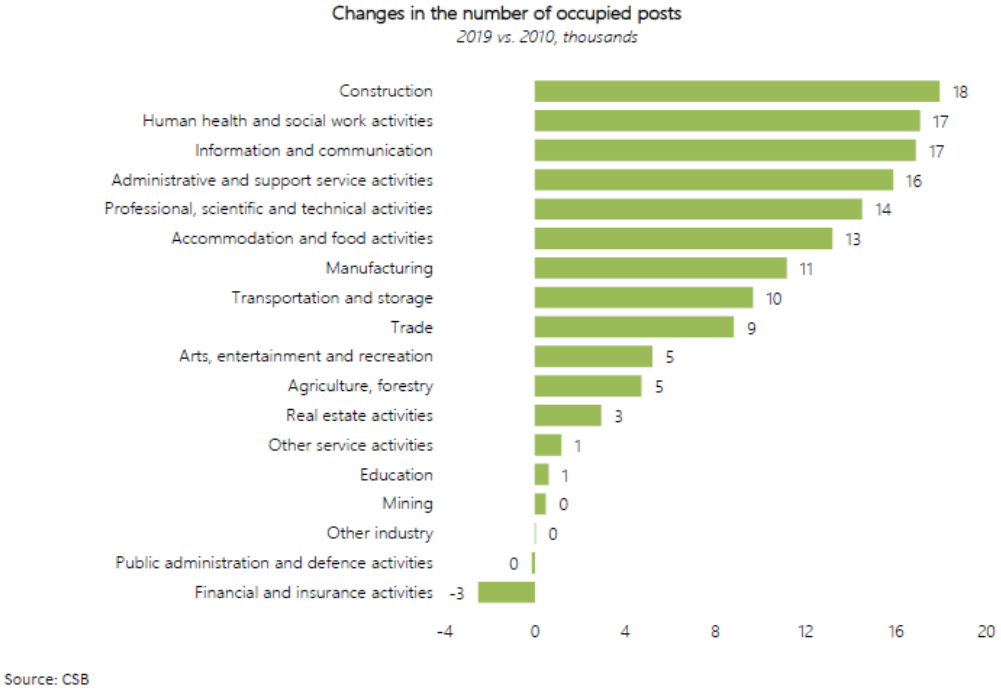
Although the *Wholesale and retail trade, repair of vehicles, Manufacturing, Education, Transportation and storage* show as the key areas of workforce demand in overall numbers, these are also areas of relatively simple work done by employees with basic education that soon will be most at risk of high automatization of work. This creates justified risks to Latvian economy's competitiveness since these are not innovative areas that can improve productivity of the market[4].

The overall trends analysis from the Ministry of Economy from the recent reports like *Informative report on medium and long-term labour market forecasts* published in 2020 shows that construction, right after STEM (*Science, technology, engineering, and mathematics*) highly educated workers will be the most demanded profession up until 2027.

The road construction especially, as the recent report on Latvian productivity (also from 2020) has shown that Latvian infrastructure and road connection must be significantly improved to bring up the overall country competitiveness thanks to high connectivity and easier access.[5] This can also be seen in the graph below which compares the number of occupied posts in different sectors over almost a decade. Both historical analysis and forecasts are showing that construction will remain critical field of the labour demand.

At the same time, even in the comparison of the pre-pandemic times the sectors of public administration, human health and ICT are increasingly more significant.

Figure 5 Changes in number of occupied posts in different sectors of economy (in %).



Quote from: Informative Report on Medium and Long-Term Labour Market Forecasts, Ministry of Economics, June 2020

[4] This is explained by the important share of traditional industries (food industry and timber processing), which together account for almost half of the total value added of manufacturing, which is almost one-and-a-half times the EU average. (Latvia's 2020 Productivity Report)

[5] According to the International Monetary Fund (IMF), increasing investment in infrastructure might be an important step towards supporting economic activity in the post-crisis recovery phase. This may increase the *region's long-term productive capacity and accelerate the transition to a green and digital economy. (Latvia's 2020 Productivity Report)*

Veterinary medicine on the other hand, finds itself in quite opposite situation. According to NACE, vterinary is classified under *'Professional, scientific and technical activities'*.[6] And as we can notice from the figure 1, number of employed persons has grown in this category even despite the pandemics. Also, other reports show that employees with high specialization, especially in the field of health care and environmental care, will continue to be on high demand in long term labour market prognosis (after year 2028).

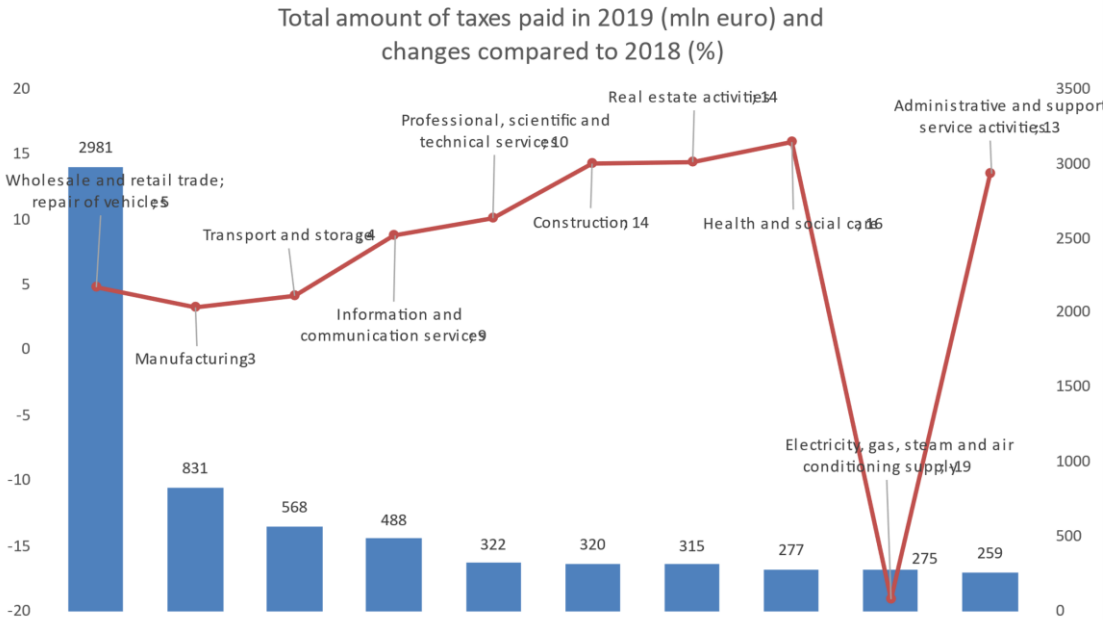
3.2. Analysis of taxes paid by enterprises in a certain sector of the national economy

The data for taxes paid by enterprises by sectors in Latvia are difficult to get. We managed to get relatively complete data only for year 2019 from the database of enterprises registered in Latvia (Lursoft).

Here again, we see the dominance of *Wholesale and retail trade, repair of vehicles, Manufacturing and Transportation* sectors. Subsequently, businesses related to information and communication services (based on ICT) gain more importance. Nonetheless straight after abovementioned sectors are the two categories directly related to the professions, we were interested the most with a little difference in contribution of 322 and 320 mln euros.

The plummeted change between 2019 and 2018 in electricity, gas and other power supplies came from the change of governmental policy and introductions of new technologies in this market.

Figure 6 Taxes paid by enterprises in different sectors of the national economy (in mln euro)



Source: Lursoft data, 2020[7].

[6] *In particular, 'M75 Veterinary activities' that covers care and supervision of farm or domestic animals. These activities are carried out by qualified veterinarians in veterinary hospitals, as well as by visiting farms, inspecting dog kennels or houses, as well as in their consultation and surgical offices or elsewhere. It also includes the transport of animals by ambulances.*

Construction is under F Construction, with separation of F41 Construction of buildings, F42 Civil engineering and F43 Specialised construction activities.

[7] *Database of Latvian enterprises*

The medium and long-term prognosis of the labour market also well explains the productivity gap in Latvia:

Latvia is in one of the leading positions by productivity growth rates among the EU Member States, yet wages have been growing faster than productivity, weakening competitiveness of Latvian businessmen in the field of costs. The increase in nominal unit labour costs (ULC) also evidences of the growing risks of losses in cost competitiveness.

Latvian economic growth is supported by the increase in productivity. Its dynamics in the last years have been more rapid than in the EU on average. In the last three years (2017-2019), productivity has increased by 9% (by 2.1% on average in EU28). In 2019, productivity (GDP per employed) in the Latvian national economy generally reached 49.8% (almost 69% according to PPS) of the EU average and, compared to 2016, the productivity gap reduced by 6 percentage points. However, in comparison with several developed countries of the EU, the productivity gap is still large.

Labour costs in Latvia are one of the lowest in EU Member States. In 2019, labour costs per employed in the economy of Latvia were 50% of the EU average in total, whereas in the manufacturing industry – 37%. Compared to 2016, in 2019, labour cost gap has decreased by 8.1 percentage points, (by 7.7 percentage point in manufacturing). However, based on the productivity indicator in the national economy lagging the EU average reduced by 6 percentage points, and by 4.8 percentage points in manufacturing. This means that the wage convergence process is faster than productivity convergence. On open EU labour markets, wage equalisation (convergence) is unavoidable, and this must be taken into account. Therefore, strengthening of Latvia's competitiveness will largely depend on the ability to reduce the productivity gap.[8]

The main challenges on the Latvian labour market in the medium term relate to the **ageing of the workforce and the shortage of labour.** The trends towards an ageing workforce will have the greatest impact on the availability of the medium-skilled labour force, particularly in sectors such as transport services and storage, construction, manufacturing, agriculture and trade. Similarly, labour shortages may come about in sectors where demand for higher-skilled labour is expected to increase significantly. It should be borne in mind that technology polarises the labour market by creating highly skilled, well-paid jobs on the one hand, leaving low-skilled, low-paid jobs on the other, pushing out medium-skilled jobs from the labour market altogether.

Personal labour productivity almost in all sectors except administration, defence, security and health care which were especially pressurized in those times as well as education that could not simply be put on hold and interestingly construction – still actively contributing to overall economy.

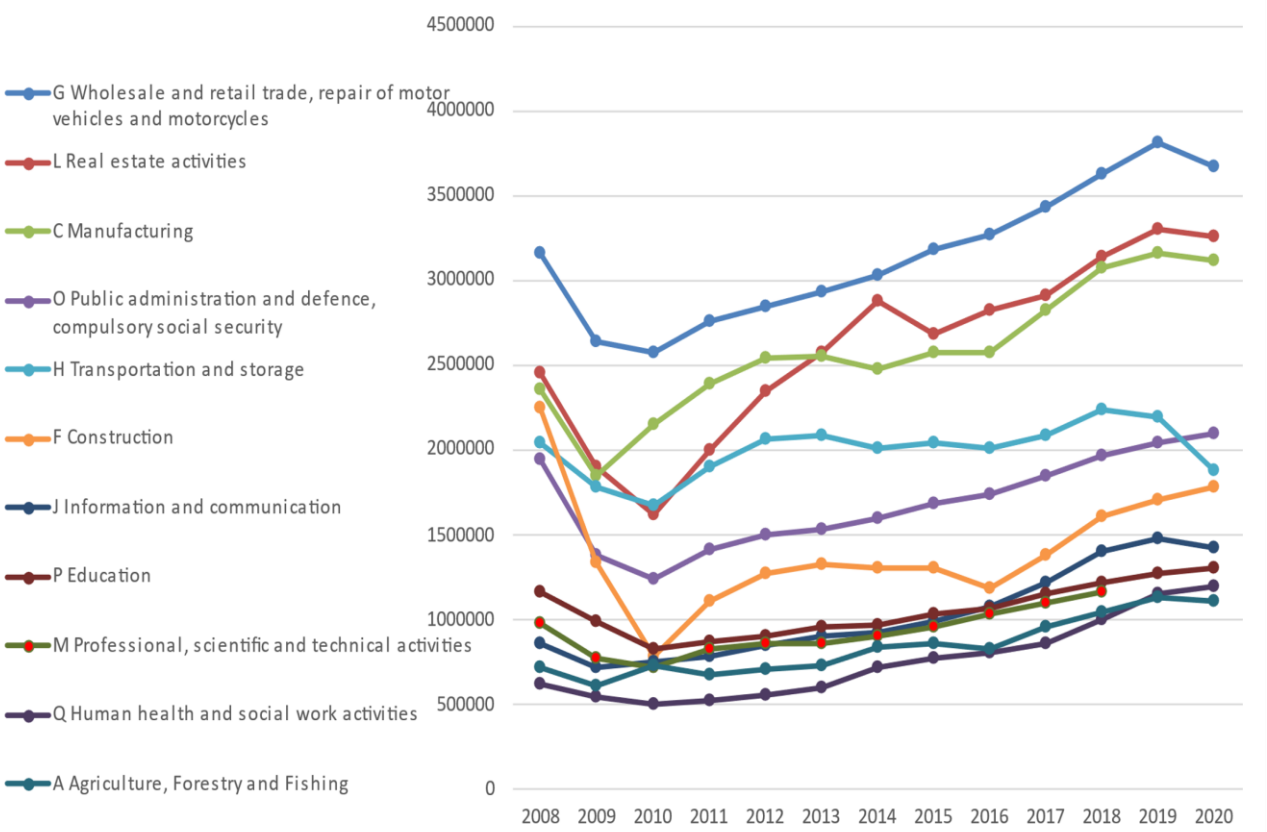
The low level of productivity in Latvia's economy is largely determined by the low productivity in manufacturing. In 2019 this was just 38% (or 52% measured in PPS) the EU average. As the experience of developed countries shows, it is manufacturing that has a potentially greater innovation capacity. Low investment in R&D, low overall innovation performance and an average educational performance are negatively affecting Latvia's efforts to achieve higher productivity.[9]

[8] *Informative Report on Medium and Long-Term Labour Market Forecasts, Ministry of Economics, June 2020, pages16-18.*

Notably, other sources show as well that highly skilled employees will be on elevated demand. Unfortunately, such workforce in Latvia is very limited and thus strategic political push has been given in latest strategic planning to create additional incentives for STEM direction of studies, improving digital skills and life-long learning. It is also very important that simple, manual jobs (also in construction industry, not just in wholesale, retail or manufacturing) are rapidly substituted with technology and automatization has reached already towns like Smiltene (eg. cashier automatization in Smiltene's food shop).

Overall, Latvian's economy competitiveness depends on increase the currently low **levels of productivity** which is **dependent on investments in: human capital, technologies, innovation and research and digitisation.**

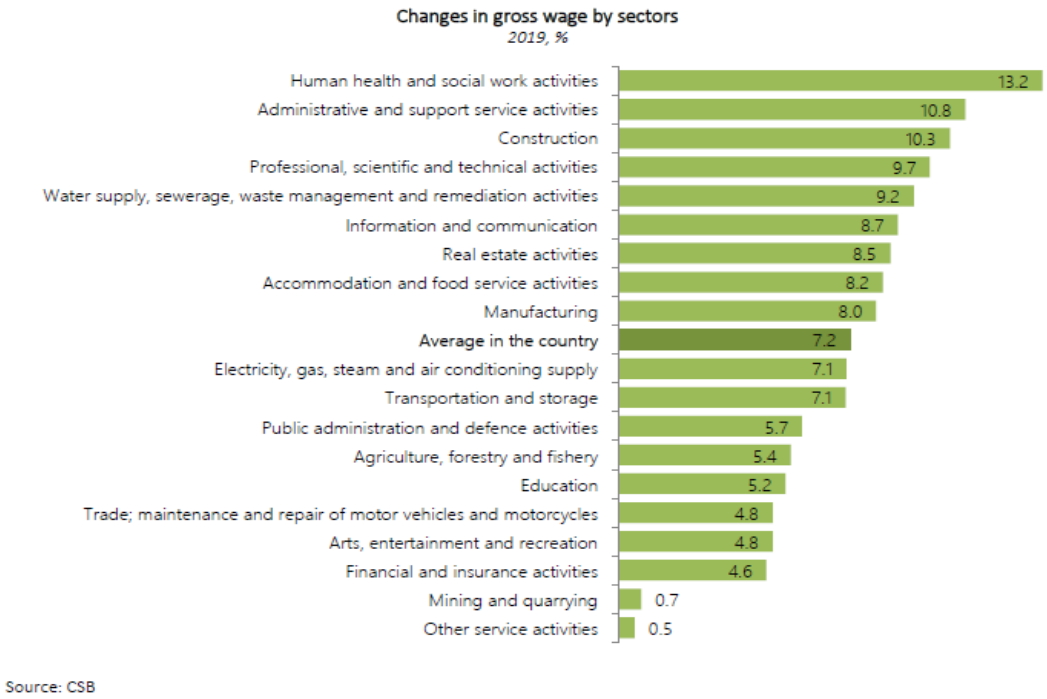
Figure 7 Labor productivity of persons working in enterprises in different sectors of the national economy (in mln euro)



Source: Own elaboration based on CSB data

Although, gross wages change should be analyzed not only to a economic lens, but also through a political one (as first top two sectors – public administration and human health sectors are highly related to governmental decisions), it is visible also here that construction and professional activities (which includes veterinary medicine) come as jobs with high income opportunities.

Figure 8 Changes in gross wages by sectors in 2019 (in %)



Quote from: Informative Report on Medium and Long-Term Labour Market Forecasts, Ministry of Economics, June 2020

3.4. Selection of Latvian economic sectors necessary for further research

Several crucial factors relevant for Latvian sectoral qualifications and skills development can be summarized on the basis of recently published analytical and strategic documents mentioned already before:

Figure 9 Crucial factors impacting sectoral qualifications and skills development in Latvia

1.	*Economic growth will remain largely based on productivity growth in the coming years.*
2.	*Not all sectors are able to adapt equally to the new conditions, and not all sectors will be able to recover equally rapidly as the situation stabilises.*
3.	*Labour force ageing trends, as well as the low reproduction rates will have the greatest impact on the availability of medium qualification labour force in the medium and long term.*
4.	*Regional labour market disparities may hamper normal labour market recovery, create risks of structural unemployment and reinforce labour shortages.*
5.	*The labour market will be increasingly affected by economy digitisation trends and job automation.*
6.	*Changing structure of the economy will have a major impact on low qualification jobs.*
7.	*The number of higher qualification jobs will continue to increase in both the medium and long term*
8.	*The risk of insufficiency of medium qualification labour force with vocational education continues to grow.*
9.	*There is still a large proportion of young people entering the labour market without a specific qualification and skills*
10.	*In 2019, 7.4% of the population aged 25-64 years were involved in lifelong learning. The level of participation of citizens in lifelong learning in EU Member States exceeds 20%. Participation of the population in adult education remains insufficient and requires evidence-based strategic planning on national level.*

Source: Informative Report on Medium and Long-Term Labour Market Forecasts, Ministry of Economics, June 2020; Summary and recommendations pp.94-98

As the national strategy for the improvement of digital skills in vocational education has been recently developed by Ministry of Education and Science in collaboration with the Organisation for Economic Co-operation and Development (OECD) within Education and Skills Development Guidelines 2021-27[10] there is little to report but much to be achieved.

Table 1 The most prospective sectors of economy in Latvia in pre-pandemic, pandemic, medium and long term data

Development trends of sectors

annual average changes, %

	2013-2019	2020-2021	2022-2027	2028-2040
Agriculture, forestry and fishery	3.7	0.6	3.4	1.8
Manufacturing	1.9	-0.8	5.7	3.1
Other industry	-0.1	-2.1	2.8	3.4
Construction	3.2	-1.4	5.4	2.1
Trade	3.8	1.5	4.5	2.5
Transportation and storage	1.0	-5.8	3.9	2.5
Accommodation and food service activities	6.0	-15.5	5.8	2.3
Information and communication	4.6	3.4	6.1	3.5
Financial and insurance activities	-1.5	-1.0	3.7	3.4
Real estate activities	1.7	0.6	3.5	2.5
Business services	2.4	-4.2	6.8	3.3
Public administration	2.3	0.8	3.1	2.6
Education	2.4	1.5	3.2	2.6
Human health and social work activities	5.9	3.6	4.2	3.3
Arts, entertainment and recreation	3.4	-10.9	7.7	2.8
GDP	2.8	-0.9	4.6	2.8

Source: CSB data until 2019, MoE forecasts starting from 2020

Quote from: Informative Report on Medium and Long-Term Labour Market Forecasts, Ministry of Economics, June 2020

Table 2 The key four sectors indicated as most prospective by the Ministry of Economics in Latvia

Period	Pre-pandemic time	Times of pandemic	Medium-term prognosis	Long-term prognosis
1.	Accommodation and food services	Information and communication	Arts, entertainment, and recreation	Information and communication
2.	Human health and social work activities	Human health and social work activities	Business services	Financial and insurance activities
3.	Information and communication	Trade	Information and communication	Other industry
4.	Trade	Education	Accommodation and food services	Business services

Source: own elaboration.

[10] Also, the Ministry of Environmental Protection and Regional Development (VARAM) released to the public consultation "Digital Transformation Guidelines for 2021-2027". * The document sets long-term priorities and strategic guidelines for the country's digital development and changes to be implemented in all areas of the economy and life in order to ensure the digital environment use and development in Latvian society and the state administration.

Obviously, the sector which will be most rapidly developing is information and communication technologies (ICT). The rapid digital transformation will need to be supported not only by tools and platforms, but by real workforce with most up to date qualifications.

Though the optimist model predictions of the Ministry of Economics from few months ago assumed we will move to economic growth regeneration and manage to substantially increase it by 2027 (to 4.6%), the current trend of very low virus mutations, new international restrictions coming, very low vaccination intake in Latvia brings the risk of a new lockdown and losses for all businesses and sectors.

In short term also construction sector suffered. Nonetheless, in medium term many sectors will still depend on construction of new roads and investment projects like Rail Baltica. Transportation and storage will still depend on renovation of old roads and continuing infrastructure improvements. Connectivity, as discussed earlier, is crucial for improving overall Latvian competitiveness. The construction industry, however, will need to take into account the long-term transformation to less physical mobility, energy efficiency and transformation to other forms of energy as well as shrinking volumes of petroleum products and hard coal from Russia.

In sum, **the demand for higher-skilled labour is expected to increase significantly – professional, scientific and technical services and information and communication services,** especially in STEM fields[1]. However, taking into account the long term national economy trends as well as regional trends in VET education (and the fact that programming decisions in Latvia are centralized), veterinary medicine and construction industry are both sectors that will be steadily important if the digitalization will happen fast enough. Overall, the prognosis of Ministry of Economy shows that by 2025 Latvia can be missing 31000 workers with specialized vocational training.

4. Analysis of perspectives of training activities carried out by the *Smiltene Vocational Education Center*

4.1. Institutional analysis of Smiltene Vocational Educational Centre

The uniqueness of Smiltene Technical School is based on almost 100 years of activity-based traditions, which are integrated into modern educational processes, including veterinary medicine education program, which is being implemented without interruption for 75 years (since 1945). The unique educational programs of Smiltene VEC are not offered elsewhere in Latvia or are offered to a very limited extent, especially in veterinary medicine, road construction and inclusive education. Smiltene VEC is also having an extensive infrastructure rich in both cultural and historical heritage, yet at the same time study programs are supported by modern technical support and use of technologies.

> *"Vocational education institutions have the opportunity to develop adult learning as a stable and socially necessary activity. Educational institutions, in cooperation with the region's entrepreneurs, need to follow local and global economic trends in order to be able to anticipate and offer content and formats that will promote both regional development and the competitiveness of individuals and organizations in tomorrow's economy."*
>
> *The Latvian Sustainable Development Strategy "Latvia 2030"*

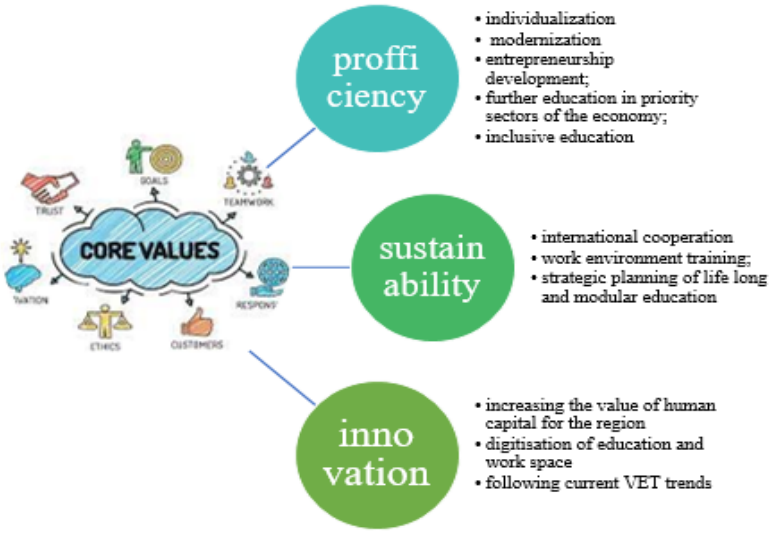
Due to renewed strategic planning of national skills and education offer development for years 2021-2027[11] as well as the new EU funds programming period starting, Smiltene Technical School invested last year in preparing a new strategy for development and investment for this period. This robust analysis of internal resources and capacities is aligned with newest regional and national strategies and economic trends prognosis, is now the fundament of development planning for the school.

There are three core values that Smiltene Technical School follows:

- Profficiency,
- Sustainability,
- Innovation.

presented on the graph below.

Figure 10 Core values of Smiltene Technical School



Source: Smiltene Technical School strategy for development and investment fopr years 2021-2027

[11] *Guidelines for the Development of Education 2021-2027. "Future skills for the society of the future"*

The document also includes an overall SWOT analysis of the educational institution – its strengths in educational programs and its resources as well as points for improvement and seeking additional funding. The below table shows the well understood external regional and national context of operating.

Table 3 SWOT analysis of Smiltene Technical School

Strengths	Weaknesses
* Modern infrastructure and training materials technical base * High level of qualification of teachers * Implementation of work-based learning, such as educational programs * Wide range of continuing education programs and extracurricular activities * In the region of recognition of Smiltene Technical School and its implementation educational programs, in the country, among cooperation partners in Europe * Implementable regional, national and international mobility and cross-border cooperation measures for learners and teachers * Provide a wide range of curriculum and environmental support for learners with special needs * we provide support for pedagogical mutual experience exchange activities, performing a meaningful pedagogical professional improves the requirements of the relevant regulatory enactments * A wide and stable circle of diverse cooperation partners in Latvia and abroad * The study materials developed in the study process and the website of Smiltene Technical School are freely available * A system has been established to monitor the progress of study practice, qualification practice and program implementation * E-learning infrastructure available to everyone * A 'green course' in ensuring the work of Smiltene Technical School has been started	* Low teacher substitutability index, high workload * Significant resources are being invested in the management of many buildings and properties, which reduces investment in improving educational programs * The own resources of Smiltene Technical School are invested in order to equate the level of preparation of 9th grade graduates with the standards of professional education in the programs in which 9th grade graduates start their studies. * Insufficient experience in setting up training companies, which would provide more opportunities to provide work-based learning * Existing legislation restricts the action of Smiltene Technical School to flexibly adjust educational programs in response to changes in the labor market * Not all training rooms and buildings are modern and resource efficient * Information and Communication Technology (ICT) infrastructure is morally obsolete and undercapacity * No common strategy for efficient resource management has been developed * No reimbursement of transport costs for students from remote regions, especially from low-income families
Opportunities	**Threats**
* Support programs for various external financiers are available, which can be used for the development of Smiltene Technical School * Strengthen and expand cooperation with employers, NEPs and international partners, etc. * To solve the current issue of teachers, looking for cooperation opportunities with employers * Development of the quality and infrastructure of the educational environment * To continue further education of professional subject teachers in order to promote work with various teaching methods and the latest technologies, thus making the learning process more interesting and understandable for the learners * To further develop unique professional secondary education programs (veterinary medicine, construction, inclusive education), emphasizing their role in economic development * Increasing the competence of learners in qualification examinations	* Campaign-type additional funding for the implementation of programs * Complicated program licensing and accreditation procedures * State policy that hinders the development of vocational education and does not provide similar rules for the opening of programs in general and vocational education * The number of students who have failed and dropped out of education is not decreasing * Long periods of distance learning, which makes it difficult for students to qualitatively prepare for final exams * Travel restrictions that hinder the acquisition of international experience to increase the competitiveness of the persons involved * Decrease in the number of students due to the deteriorating demographic situation and increased emigration

* Development of digital skills and experience of digital events for all * Qualitatively implement internal communication processes, involving everyone * Updating of existing education programs and introduction of new continuing education and professional development programs corresponding to the needs of the Latvian economy and the qualification system of specific sectors * To expand the range and scope of modular vocational education, non-formal education programs and services provided at Smiltene Technical College	* The principle of succession and legitimate expectations does not work in the supervisory institutions of Smiltene Technical College * Change of priorities of cooperation partners * Low average level of basic education * Centralization of vocational education * The number of young people in Latvia is decreasing * Competition with general education schools for attracting learners is increasing

Source: Smiltene Technical School strategy for development and investment fopr years 2021-2027

It is important to notice that Smiltene VEC the national priorities of inclusion, quality, digitalisation, innovations and the "green transformationare also taken into account especially by strengthening the e-environment by: development of employees' digital skills (intensive training); establishment of an ICT unit; renewal of ICT infrastructure; Internet connection modernization; website improvement; development of digital learning platforms (Moodle environment, Microsoft Teams group); digitization of study programs - study materials, purchase of simulators; purchase of adapted training technologies and technological solutions; purchase of specialized computer software; providing access to up-to-date databases for the development of the learning process.

4.2. Analysis of the portfolio of training programs implemented by the institution

857 students study at Smiltene Technical College (aso of the 2020/2021 school year), including:

- 728 learners study in programs financed from the state budget;
- 27 learners study in paid part-time groups;
- In continuing education programs financed by the European Union (EU) structural funds - 102 learners are taught.

The key educational programs can be found in the table below including the description of their uniqueness for the region and country.

Figure 11 Study programs and their description

Study Departments after graduating from 9th grade.	All Programs	What's unique about the programs
a Tourism Sector Programs Division	Hospitality services specialist Cook Confectioner	- Has a long tradition in Smiltene VEC - Many students go on Erasmus + exchanges Smiltene VEC has a learning - Classroom/restaurant for students to practice - Used to be very popular program before the pandemic - at least 30 new students every year * Cook and catering service specialisations are not so popular any more, there are 3 more schools offering this programme in Vidzeme. * Students were serving Latvian president in November 2020, when he was visiting Smiltene VEC.
b Veterinary Programs Division	Veterinarian assistant Livestock technician	- Veterinary medicine is the oldest and most traditional curriculum of Smiltene Technical School, which the school has been implementing without interruption for 73 years. Smiltene Technical School is the first school in Latvia to start training veterinary paramedics.

		- There are only two schools in Latvia where secondary vocational education in this field can be obtained - in Bebrene and Smiltene
c Mechanical Engineering and Construction Sector Programs Division	Construction and road construction machinery technician Hydraulic construction technician Road construction technician (specialization) Car mechanic Transport construction technician	- Smiltene Technical School is the only school in Vidzeme region, where you can learn the profession of road construction technician, which is now very popular. - Smiltene Technical School has an excellent material base for future road construction technicians to enter the labor market knowingly, having mastered the latest technologies. - We also offer tractor driving license to students.

Source: internal analysis.

The statistics related to the enrolment and graduation of students in most relevant, most popular and best-established study programs are presented in the table below.

Figure 12 Statistics of students enrolling and graduating

	Number of students who enrolled and graduated								
	2015	2015-2019	2016	2016-2020	2017	2017-2021	2018	2019	2020
Veterinary medicine	23	23	31	25	53	35	30	41	52
Road construction	12	10	27	19	28	18	29	30	30
Car mechanic	19	15	31	18	30	19	29	17	30
Road construction machinery mechanic	60	45	56	31	60	45	30	18	30

Source: internal analysis

The internal analysis, based on opinion of the school experts – teaching staff, directors responsible for study programs, internal strategists has shown that within abovementioned programs in years 2022-2025 it is forecasted to enroll:

- In veterinary medicine around 50 to 60 students per year
- In road construction around 20-30 students per year
- In road construction machinery mechanic around 50-60 students per year

The car mechanic study program, due to strong regional competition as well as centralized decision being made, will be discontinued from the next year.

4.3. Correlation of program implementation forecasts with the development tendencies of the national economy

The digital transformation of veterinary medicine is already happening. Patient Information Management Systems is a norm in many clinics, but even more advanced technologies of analyzing longitudinal data, using artificial intelligence for diagnosis basic tests or 3D printing of prostheses is possible. In context of remote areas virtual assessment of basic problems such as continuous treatment of chronic diseases, food intake monitoring etc. is a significant relief of transport burden.

Digitalization of this profession eases the connection with patients but also improves overall efficiency of clinics.

Our analysis has also shown that even veterinary medicine assistant or livestock technician are the profession demanding high qualifications and very particular skills.

And the work with animals' health cannot be fully automatized.

Last, but not least, existing infrastructure, high popularity of study program in Smiltene VEC and the young teaching staff leads to the choice of hybridization of its modules.

"Programs of vocational and general education institutions must not only prepare young people as employees, but also on entrepreneurial career development opportunities. Along with the necessary qualities such as initiative, creativity and entrepreneurship, school leavers should acquire practical knowledge of starting and running a business. "

The Latvian Sustainable Development Strategy "Latvia 2030"

Similarly, the road construction technician and Road construction car mechanic are professions with high popularity in Smiltene VEC. The program is supported by wwell developed infrastructure on site as well exceptionally good connections with enterprises in the region. At the same time, closely collaborating companies need highly skilled, self-confident, qualified and eager to continuously learn new workers. Construction industry is one of the quickest changing sectors of business due to Building Information Management (BIM) systems, 3D printing used in building, robotics, machine learning, drones, big data use and the Internet of Things (IoT) growing popularity[12].

This report also has proven that in Latvian context construction industry has not lost its relevance throughout pandemic time, will be essential in upcoming decade and must significantly improve on digital skills to sustain demand for the qualified workforce.

5. Description of the results of the round table discussion

Due to coutry restrictions related to COVID-19, the meeting was organized on an online platform MS Teams on 21 June 2021 at 11.00.

Timely invitation has brought 13 participants to the meeting (the attendance table below).

Table 4 Meeting attendance list.

No.	Name and surname	Position
1.	Madara Ciemiņa	HYBVET project manager
2.	Weronika Felcis	Researcher
3.	Ingrīda Paegle	Smiltene VEC Assistant director
4.	Rolands Aģis	Strategic analyst of Smiltene VEC
5.	Aigars Melderis	Lawyer in Smiltene VEC
6.	Maira Kupriša	Smiltenes Tehnikums career consultant
7.	Mārīte Dragone	Head of the Veterinary medicine programme in Smiltene VEC
8.	Rudīte Benta	Assistant teacher in Veterinary medicine programme in Smiltene VEC
9.	Līga Mačule	Teacher in Veterinatry medicine programme in Smiltene VEC and HYBVET project participant
10.	Kristaps Emīls Radziņš	Teacher in Road construction programme in Smiltene VEC and HYBVET project participant
11.	Ainārs 8CBR (Guest)	**Company** 8CBR Head of development department
12.	Gunta Grigore	Head of Education department of Smiltene **municipality**
13.	Līga Ice (Guest)	Education department assistant in Smiltene **municipality**

Source: MS Team meeting statistics.

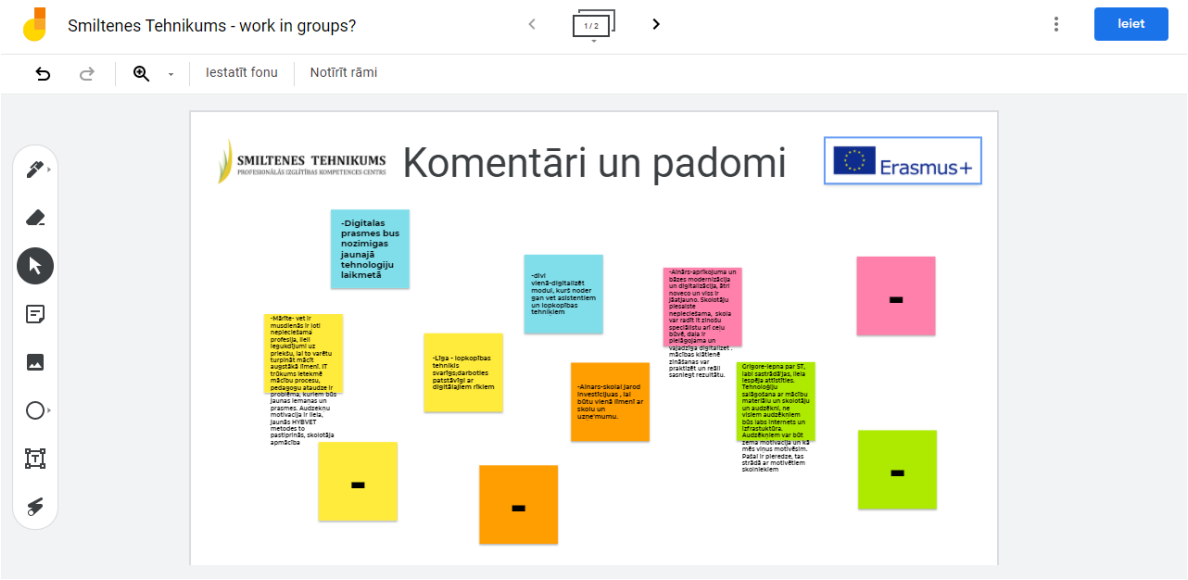
Although this report is being prepared in English, we decided to organize this meeting in Latvian to make our local experts more comfortable with sharing their opinions. Both,

[12] Internet of Things is used in construction industry to streamline processes, reduce waste, increase safety, and ultimately save money and time.

results of the analysis and questions leading the discussion, were translated to Latvian.
Secondly, in order to motivate and encourage participants to engage we used the tools:

- Impressive and novel way of presenting the results in Prezi
- Engaging game regarding VET on Kahoot!
- Warm up questions gathered in polls on Mentimeter
- Notes and comments gathered in Google Jamboard

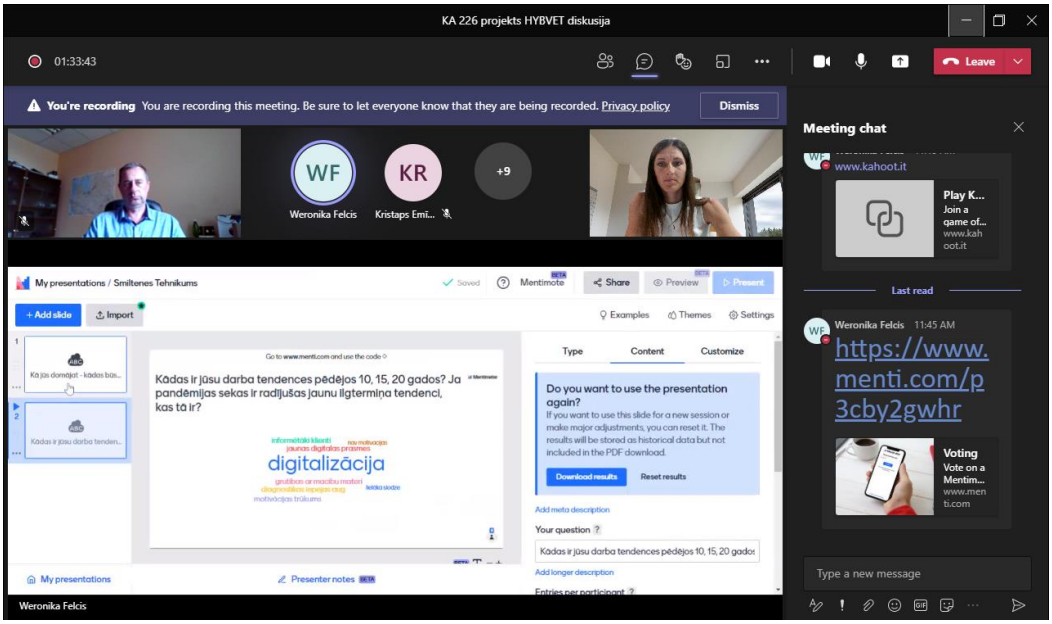
Figure 13 Usage of interactive tools during the meeting.



Source: Photo from the round table discussion, own repository.

The picture from the meeting can be found below.

Figure 14 Printscreen from the meeting.



Source: Photo from the round table discussion, own repository.

6. Conclusions

Guidelines for the Development of Education 2021-2027 mention several critical problems in multiple levels of education in Latvia:

- Weak pedagogy and generation of academic staff
- Insufficient educational offer for modern needs
- Insufficient digital skills
- Lack of skills demand in the labor market
- Low motivation and involvement in adult education[13]

And thus, based on medium and long-term labor market forecasts the guidelines set out the current education development goals and action directions for the next seven years. The overarching goal of education development for 2021-2027 is to *provide quality education opportunities to all Latvians in order to promote the development and realization of their potential throughout their lives and to build their ability to change and responsibly manage constant changes in society and the economy*. The strategic goals are:

- Highly qualified, competent, and excellence-oriented teachers and academic staff
- A modern, high-quality educational offer focused on the development of highly valued skills in the labor market
- Support for everyone's growth (more accurate student profiling, dynamic development of adult education)
- Sustainable and efficient management of the education system and resources (digitization and strategic planning)[14]

Smiltene Technical School, concluding the review of literature review, strategic documents, internal analysis and first project partners meeting will proceed with hybridization of 2 study programs: veterinary medicine assistant and road construction technician. For the reasons already shown in this report, these study programs are the most relevant for the school and require most urgent support in digitalization of the learning material.

Executive summary of 2020 Latvia Productivity Report

In order to help Latvia's economy, recover in the aftermath of the COVID-19 crisis by supporting economic activity and in order to secure its long-term competitiveness by increasing the production capacity of the region and accelerating the transition to a green and digital economy, it is necessary to improve all communication infrastructure.

Veterinary medicine assistant and Livestock technician are the trademark of Smiltene Technical School:

- Longest taught profession - 75 years
- One of two programs in the country, which is very popular
- It attracts best students – very ambitious and determined
- It is close to medicine - original field of hybrid simulation
- School owns the veterinary clinic for practical work which can apply the hybrid-simulation tools

The road construction Technician and Road construction car mechanic are the the most prestigious study programs of Smiltene Technical School:

- Smiltene remains being called a "road construction capital"
- Many relevant businesses are based in Smiltene and the cooperation with the enterprises is very close – for example 8CBR, founded 60 years ago is one of the best construction companies in the country

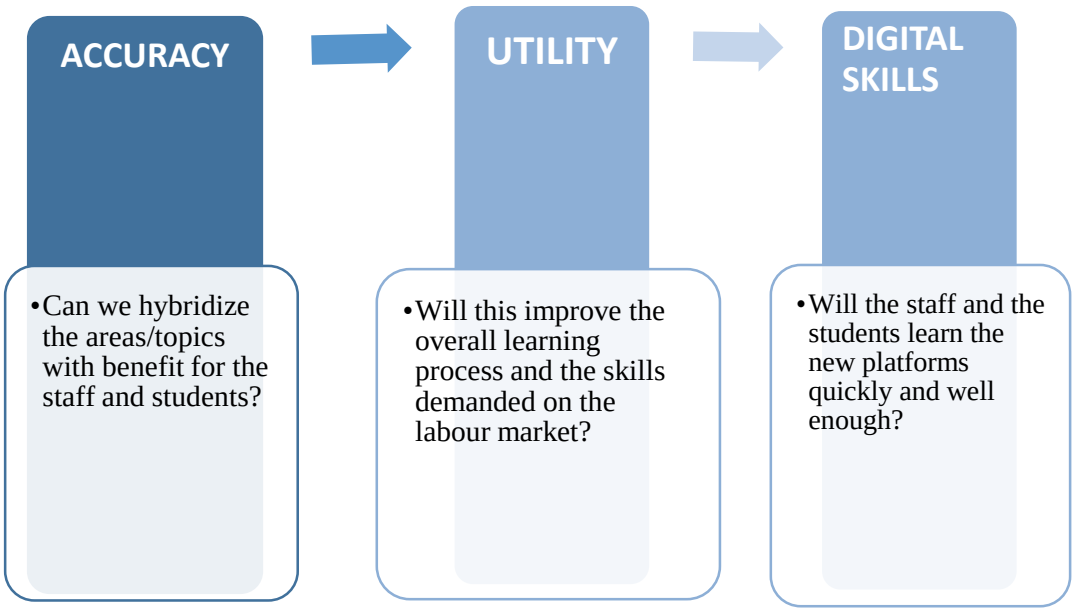
[13] Guidelines for the Development of Education 2021-2027. "Future skills for the society of the future"

[14] Ibidem.

- It is a prestigious, well paid profession proven to remain relevant in medium and long term laboru market prognosis
- Infrastructure and machinery necessary for teaching up to date skills are available in the school
- High automatization of the sector will bring rapid changes within the profession thus the digitalization of this study program is critical

The actual modules, study materials, assessments that will be under the hybrid-simulation reconstruction will be chosen on the later stages of project implementation based on criteria presented on the graph below:

Figure 15 Criteria for study materials hybridization in Smiltene Technical School



Source: Internal analysis

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