ASAP

The agricultural students are preparing for Industry 4.0

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VOŠ a SZeŠ
BENEŠOV

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1. Introduction

Our society has been lately embodied in the new industrial revolution, so called the fourth industrial revolution – Industry 4.0. We have been going through the development of digitization, automation and robotic automation that penetrate all sectors including agriculture. Modern agriculture mechanization takes advantage of electronics, digital technology and automation. Changes that Industry 4.0 brings have substantial influence on required qualification on labour market and will also place new demands on graduates´ knowledge and skills. The students must be prepared for working in agriculture that will be based on new technologies, automation and digitization. The main orientation of future development is "precise agriculture" connected with technical progress in the area of navigation systems, electronics and IT. It is needed to implement new elements of vocational preparation with regard to new needs of labour market. It is important to strengthen the cooperation among schools and social partners. The process of implementation changes into curricula takes unfortunately specific time. From this reason we decided to realize this project. We used the opportunity how students and teachers could gain knowledge and experience by personal visits in agricultural companies, farms, by producers of agricultural mechanization or through experts´ workshops, at an international level, across EU countries. Because of there are different conditions how to adapt to Industry 4.0 into practice across Europe.

We wanted to give to the students and teachers of vocational subjects, opportunity to compare conditions for agriculture and implementation of new technologies into agricultural practice. This project should enable them to get real overview focused on concrete technologies and results of farming in a sample of four EU countries. Their participation in international learning activities should bring them new view on a real implementation of new technologies and conditions in agricultural sector in these countries. The participants should visit involved schools to compere agricultural education, and conditions for practical training or cooperation with social partners. This project should show them both the implementation of new technologies in agricultural sector and the level of agricultural education conditions and quality in the European framework. The project should increase vocational competences of students and teachers. Another goal was to increase students´ motivation to improve vocational knowledge and skills, including language skills. The last but not the least goal was the transfer of gained knowledge and experience to their schools, curriculums, school facilities and teaching to the partners´ schools.

We realized four international learning activities – three in physical form and one because of COVID pandemic in online form. These international learning activities took place in the United Kingdom, the Czech Republic and Sweden, the international learning activity in Denmark was replaced by virtual mobility. All international activities included presentations about partner countries, the situation in agriculture, the introduction of new technologies in agriculture, the education system and partner schools. Another part consisted of visits of the participants on farms, in agricultural companies, by producers of agricultural mechanization, that consisted from tours and discussions with the employees or the owner. The last part consisted experts´ workshops. The international learning activities included an accompanying cultural programme to familiarise the participants with the socio-cultural environment of the visited country.

The project started in school year 2019/2020 with 2-nd year students of agriculture. Students prepared presentations about their school, school farm, the Czech Republic and above all presentations of some enterprises which are leaders of the Forth Agricultural 'Revolution either in plant or animal production. Every participant of the project did his or her part in preparation and of course everyone presented his or her work during the first meeting in our partner school Easton and Otley College in the United Kingdom in October 2019.

The work was interrupted due to pandemic so the students who started the project left the school. Another group of the 3-rd year students followed and went on with work on the project. In April 2022 they welcome participants form partners´ schools again with their own presentations introducing others to the Czech Republic, their school and school farm. During the week they with others visited some leading companies using modern technology. They became acquainted with some equipment (drones), some progressive suppliers of machinery (Pottinger) a farm using technology regarded as the feature of the Forth Agricultural 'Revolution (Eurofarms) and others. Before and after it they were searching on the internet to get more information and prepared their presentations for the next meeting. This meeting was held at Munkagardsgymnasiet in Sweden in May 2022. The participants visited the machinery producer Vederstadt, made excursion to Berte mill and from an expert gain a lot of information about Swedish agriculture. The Danish School, farms and companies were presented online.

2. The Czech Republic and Czech agriculture

The Czech Republic, also known as Czechia, is a landlocked country in Central Europe. The Czech Republic has a hilly landscape that covers an area of 78,871 square kilometres (30,452 sq mi) with a mostly temperate continental and oceanic climate. There are about 10 million inhabitants in the Czech Republic. The capital and largest city is Prague. The Czech Republic is a unitary parliamentary republic and is divided into 14 districts.

Czech agriculture is among the most advanced in eastern Europe, with better than average yields. The country does not suffer from a shortage of agricultural land, but its land is used far less efficiently than that in western Europe. With the end of communism, land that had been confiscated after World War II to form large state-controlled farms was gradually restored to its previous owners. Although members of smaller collective farms were entitled to withdraw their land from the collective, small land holders did not necessarily receive their own land back; instead, they often were allotted a plot of comparable worth at another location. The agricultural market is now wholly liberalized, with about one-fourth of farmland cultivated by individuals, one-third by cooperatives, and about two-fifths by corporations. There are about 26 000 businesses on total area of nearly 3,5 million hectares in the Czech Republic. It means that the Czech Republic is one of the countries with low number of farms but number one with average farm size. The average area of Czech agricultural holding is around 133 hectares.

Wheat, sugar beets, barley, rye, oats, and potatoes are the most important crops. Pigs, cattle, sheep, and poultry are the dominant livestock. High-quality hops used by the country's breweries are cultivated in Bohemia. Moravia, particularly southern Moravia, is a grape-growing region.

3. Agriculture College and Agricultural Secondary School in Benesov

Agricultural College and Agricultural Secondary School was founded in 1895 and since then is that granted qualification to many students. Agricultural Secondary School offers to the graduates of Elementary schools four branches of studies:

1. Agri Enterprising	Business in Agriculture – since 2022 Business in Precise Agriculture
	Equestrian Studies
	Mechanization in Agriculture – since 2022 Mechanization in Precise Agriculture
2. Veterinary studies	Veterinary Technician
	Pet Specialist
3. Horticulture	Garden Construction and Maintenance
4. Natural Science Lycée	Science and Research
and three apprentice branches:	Farmer
	Rider and horse breeder
	Gardener.

There are two branches of studies at Agricultural College: Business in Agriculture and Veterinary Assistant. Currently there are more than 500 students studying at the school. The students of all branches study all common agricultural subjects and some special subjects. The study lasts four years or three years (apprentice branches) and the school leaving examination includes both practical nad theoretical parts.

4. Agricultural education and conditions for practical training at Agriculture College and Agricultural Secondary School in Benesov

The practical training of our students is provided by our school farm or by means of our partner enterprises. Our school farm is situated about three kilometres from school in a small village Pomnenice.

Plant Production

8 ha arable land (wheat, potatoes, barley, maize)

10 ha pasture land

Animal breeding

beef cows, dairy cows, horses, goats, poultry, rabbits, pet animals

Mechanization

Tractors: Zetor 6748 Zetor 5211 New holland T5050 Case maximum 120 Trailers Bss 9t
Combine harvester Fortschrift E 512
Machinery- soil preparation: OpalAgri- Saturn III – compactor StS Olbramovice – plow two-sided

Practical Training from the perspective of our agricultural students

We have three types of practical training.
1. Class practical training: The first one is practical training which our class has as part a normal school schedule. According to our timetable we go to our school farm and we do things that we need to do. We learn things like ploughing, seeding, cultivating and many others. These practices we have only sometimes, because our farm is too small for too many people from our school.
2. Individual practical training: The second type of our practice is individual practical training. In this case two of us go to farms, where our school has contract for this practice. We have two types of individual practical training, the first is animal and the second is plant practical training. During plant production practising we learn things like cultivating the field, sowing techniques and many others. During animal production practising we learn to take care animals, what we do with animals and how we feed them, but that´s not all. We learn a lot of others useful things from this area. I think this is very useful for us, but it is a pity is that we do not have more practical training. We have this practical training only twice in a school year and it takes one week. We have only two one-week period practicing in a school per year. One - week in animal production and one - week in plant production. Summer holiday practical training
3. School summer holiday practical training: It is the last type of practical training a tour school. In this case two of us go to farm where our school has agreement for this practice. Length of practice differs according to which class you are study. In the first school year we have only one week of this practice, in second school year we have two weeks of this practice, in second school year we have two weeks of practice and in third school year we have three weeks of this practice.

5. Cooperation with social partners

The cooperation with social partners is very important for us. We cooperate with various kind of companies – agriculture companies, family farms or manufacturers, dealers and service providers of agricultural machinery. It is ongoing on the fields of:

- students´ placement for practical training
- participation of experts in teaching
- experts´ workshops
- excursions
- teachers' internships in companies
- lifelong learning courses for teachers and students
- innovating or creating a new curriculum.

6. The Transnational learning activity in the Czech Republic

This transnational learning activity was realised in the period of 4th to 8th April 2022 according to the originally planned programme, except for the visit of agricultural machinery fair Techagro which was cancelled by the organizers. On Monday the participants visited agricultural company DZS Nova Bystrice which is focused on plant production, animal production and energy production in a biogas plant. The company grows wheat, barley, rape, poppy, corn and fodder plants. It is specialized on cattle breeding – 745 dairy cows with market milk production. The participants could see here a biogas station and newly built, fully automated cow sheds, together with milking robots. They got to know the agricultural company operation. They were mainly interested in the large area of the cultivated land, because such a large agricultural company is unique in the partner countries. On Tuesday morning the students introduced their presentations. Czech students introduced Czech country, its culture, Czech agriculture, Czech educational system and our school. Then the students showed the partners round the school. The participants also visited the school farm in Poměnice and could see an interesting presentation dealing with UAV and their use in plant production. Telink Ltd. Company presented three UAMs DJI brand, these were Phantom 4, AGRAS 30 and Matrice 300, used in various areas in agricultural sector. UAM Matrice 300 equipped with RGB camera was actively introduced. In Terra software a flight plan was carried out for a chosen plot and the flight height was adjusted so that the taken photos could be put together and processed by means of software. The UAM carried out taking photos in an automatic regime, without any intervention of the pilot. The flight was controlled on LCD TV. From the taken photos 3 D model of the terrain was created, from which the slope of the plot and consequent run-off of rainfall is possible to determine. It is possible to use the obtained data for water erosion prediction. On Wednesday there were two excursions to Southern Moravia. The first excursion lead to Pottinger Vodnany – they produce machinery used for soil cultivation, such as ploughs, passive and also active tillers. The participants learnt some information about the company portfolio and the development of the production. The production procedure starts with storing a semi product – metallurgic material, which is subsequently divided. The individual parts are sized by means of cutting operation or mechanical working. The parts exposed to an extreme load undergo thermal refinement. The welding of bigger construction units follows, together with surface finish, and final assembly. Some selected machines are tested. The second excursion was in Eurofarms company. This company belongs to Spearhead holding which is focused on plant production and energy production in a biogas plant. The company is one of the few which use the system of controlled machine movement in fixed tracks on the plot, so-called CTF. This system reduces uncontrolled land passing and prevent its compression. The machinery consists of John Deere tractors and harvester threshers, and suspended machines Horsch and Vaderstad. The working width at the basic module is 9 m, but it is only 4.5 m at the share cultivator, because of higher tensile resistance at deeper loosening and absence of adequate towing vehicle that would not have any other use. The unit operation is monitored in the central dispatching by means of telemetric system. On Thursday we visited Miller farm. This family farm is focused on both plant production and cattle breeding. Their orchards with fruit trees are utilised for production of fruit liquors. The farm breeds dairy cattle, Holstein and Jersey breeds. There is a closed herd turnover and robotic feeding of LELY Vector system is applied there. The feedstuff is bedded five times a day and it is heaped up by LELY robot in the cowshed. The milking cows and heifers housing is in cowsheds with free movement. The cows are milked by means of milking robots LELY Astronaut A4, namely in number of two head of cattle at Holstein cows and one at Jersey cows. The farm in collaboration with a mini dairy processes its products. Their products are various kinds of

cheese, cultured milk, and other dairy products which are delivered to the customers by sale vehicles. The farm also sells raw by means of an automatic selling stand (“milkautomat”) at the farm. Then the participants visited Prague so that they could see, in brief, some Czech culture. On Friday they went to Dobrickov, to visit Kubat family farm. This is a small family farm, which, nevertheless, was among the first farms that bought a milking robot. The participants could see all farm buildings, machinery, and equipment. They discussed with the farmer problems of breeding, and milking robots and their advantages. The farmer also told the participants about the farm history, its establishing after the Velvet revolution, the development of the farm, farming on rented land, financial issues, individual family members work, milk yield, and milk quality. The educational activity was finished with evaluation. The students elaborated the data for their presentations in Sweden.

7. Summarization of strengths and weaknesses between vocational preparation and the development in agricultural sector with emphasis on Industry 4.0 and new trends and technologies

New trends

Agriculture 4.0 – the future of farming technology

- system off-line (drones, soil sampling)
- collecting dates with time gap before application – soil analysis (NPK) – putting into SW-application, in CZ farmers use services (MJM Litovel since 90-th)
- system on-line (sensors)

Dates are immediately used in application (optical collecting dates from leaves of a plant and applying the results immediately – N-Yara sensor) – in CZ – quite often.

Precise Agriculture

- deals with the dates considering different conditions of the land,
- Is crucial to get the maximum amount of information about the land (soil composition, topsoil thickness, nutrient supply, etc.).

New technologies

1) Sensors

They re placed in the soil, on plants, in tractors, flatbed trucks – simply wherever it is necessary to monitor the condition of anything.

2) GPS and navigation

The use of GPS technology in agriculture could be divided into three areas:

- for navigation with manual control, where the operator controls the machine according to LEDs or display,
- for assisted steering navigation, where the operator only turns the machine at the headland,
- navigation with full autopilot (switch on/off of the individual sections).

3) Drones for agriculture

- crop and soil monitoring technology from the air,
- using unmanned aircraft gives possibility to take highly accurate multispectral images of soil blocks with coverage of up to hundreds of hectares per flight,
- give much higher resolution than satellite images, regardless of cloud cover.

4) Controlled Traffic Farming (CTF) and ComTrac System

The ComTrac system is a solution where all machines run in a single track. The remaining area is then not affected by the crossings. CTF works at multiples of 3/6/9/12 metres. The idea is driving in rails of these metres.

Positives of CTF

- less pressure on the ground
- no ploughing
- possibility of higher has-field
- less of nitrogen looses
- less of water erosion.

Negatives of CTF

- navigation and special machinery are a must
- in the Czech Republic you need escort to move machinery for CTF.

Digitalization of agriculture and precise agriculture application in the Czech Republic is currently utilised in different levels. Robotic milking operation is the furthest developed method in dairy cattle raising. There are also some farms that operate even robotic cattle feeding. The situation in plant production is more complicated. There are some applications of navigation systems used currently and the system of machinery movement in integrated traffic tracks (CTF) can be seen now. The systems of telemetry are also being developed in the practice. The machinery with ISO-BUS controlling, however, not always its potential is fully utilized, mainly in relation to precise agriculture. The applications that are most frequently used from precise agriculture are not dependent on external data collecting and processing, which is e.g. controlling of a working mesh change and related automatic sections or action elements turning off, also on headland.

The biggest complication in precise agriculture is cohesion between data collecting, their processing and consequent implementation of a particular intervention in the form of e.g. application maps. The systems that are used work mainly on-line. The existing problems are high cost of e.g. soil sampling and analyses, providing images by means of UAV, their processing, and also lack of qualified labour in this sphere. There are some companies which offer the services of their specialists who deal with these tasks, but the services are not complex. In case the company provides data collecting and processing from UAV or satellites, it does not offer soil or plants sampling and analyses. These services are offered by other companies. On the farms which mostly utilize a precise agriculture system are dependent on machine operators, they miss skilled management that would be able to link partial sections in a full meaning unit and by this way to ensure the system affectivity. Robotics in plant production is currently being tested, examined; we will have to wait for a “full” implementation.

Our school is facing to the current problems of the lack of qualified staff in the field of precise agriculture by adjusting of the existing curricula so that we could better prepare our graduates for the work in the systems of precise agriculture. Our school bought a simulator of precise agriculture in the form of a navigation system linked with an ISO-BUS controlled drill, a spreader of industrial fertilizers, and an applicator of plant protection preparations, in conjunction with physical automatic navigation system which is installed on a tractor, together with attachment of ISO-BUS compatible machines. The first of these ISO-BUS pendant machines is a spreader of industrial fertilizers with controlling of a working mesh change, automatic turning on and off on headland and applying fertilizers according to application maps. This tractor and spreader of industrial fertilizers unit is equipped with a sensor for variable application particularly nitrogen fertilizers in a real time. Another element for precise agriculture education is acquisition of an UAV equipped with two cameras for agronomic data collecting, in vegetation and also out of vegetation period, together with related hardware and software for processing the data obtained. The output will be obtained in the form of application maps for variable application of industrial fertilizers, the maps will be used in the work of the above-mentioned unit of a tractor and spreader of industrial fertilizers.

Questionnaire for students

The future development of agriculture

* Povinné

1. Where are you from? *

- ◯ Czech Republic
- ◯ Denmark
- ◯ Great Britain
- ◯ Sweden

2. What does it mean for you Industry 4.0 in agriculture? *

3. What is the future of agriculture? *

4. How will agriculture look like in 5 years? *

Questionnaire for students

68	02:53	Aktivní
Odpovědi	Průměrná doba vyplňování	Stav

1. Where are you from? (0 b.)

Czech Republic	18
Denmark	16
Great Britain	19
Sweden	15

2. What does it mean for you Industry 4.0 in agriculture? (0 b.)

68
Odpovědi

Nejnovější odpovědi

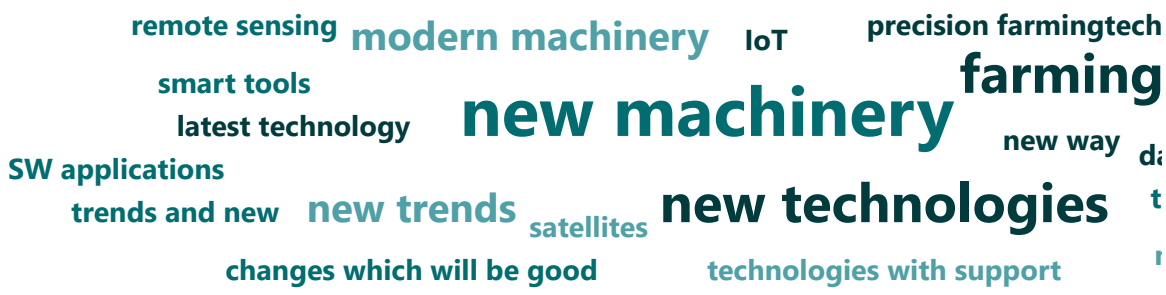
"development of machines, industrialization of animal husb...

"Smart farming "

"NEw modern machinery"

↻ Aktualizovat

Počet respondentů, kteří odpověděli **new machinery** na tuto otázku: **5** (**8**%).



3. What is the future of agriculture? (0 b.)

68
Odpovědi

Nejnovější odpovědi
"easier, faster, more modern"
"Automatick GPS system"
"Robots, self driving tractors"

↻ Aktualizovat

Počet respondentů, kteří odpověděli **smart agriculture** na tuto otázku: **5** (**8**%).

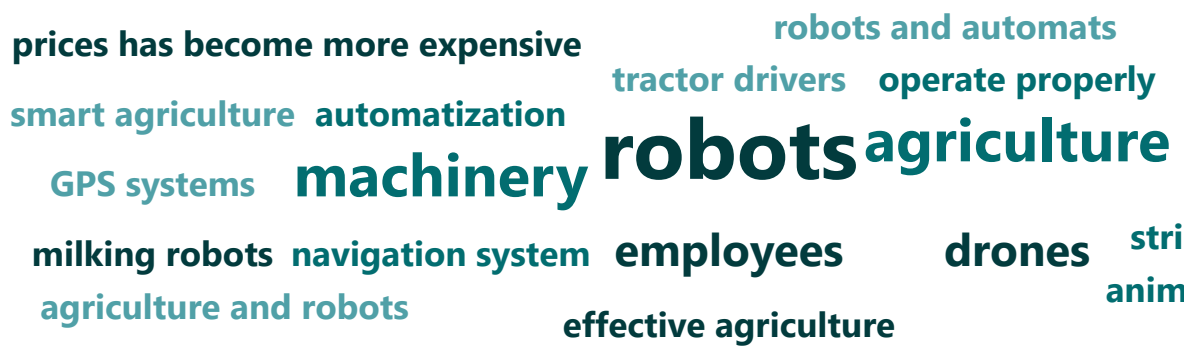
4. How will agriculture look like in 5 years? (0 b.)

68
Odpovědi

Nejnovější odpovědi
"More automatic, less workforce"
"More and more automatick system come to the agriculture"
"More robots , less human power"

↻ Aktualizovat

Počet respondentů, kteří odpověděli **robots** na tuto otázku: **7** (**11**%).



Summarization from students' questionnaires:

The Agriculture 4.0 means for students new modern machineries and technologies, development of machines and industrialization of animal husbandry, using drones, GPS navigation systems, robots and other automation in animal production. It means a new way of looking at farming where we can use the latest technology to benefit us for example precision farming technology, including sensors, smart tools, satellites, the IoT, remote sensing and proximal data gathering.

Students see the future of agriculture in robots, self driving tractors, automatic GPS systems, sowing grain seeds how make more food flour, new technologies and more automated systems. The agriculture of the future will be easier, faster and more modern. The future of agriculture is looking good, there will be changes which will be good and bad, there will always be demand for food and dairy products so it will still be essential to keep a good farm, unfortunately they think there is too much thought in changing fuel and less carbon footprint which is rubbish as no one or nothing will save the planet. The future of agriculture is where we can use technology to lower our inputs to benefit us whilst being able to get the highest profits. There will also be more driverless tractors. The future of agriculture is connected with the term „Smart Agriculture ".

There will be more robots, automatic systems and less workforce in Agriculture in five years. They think that there will be more stricter rules with tractor drivers for example and be harder to operate properly on the roads as tractors are getting a bad name. We could find a opinion that agriculture will be become more min till or no till as prices has become more expensive so we lower out inputs. Students think that it will be less employees in the Agriculture but the employees working in agriculture will need more IT knowledge and skills.

Questionnaire for teachers

(your position at school and your opinion about agricultural education)

* Povinné

1. Are you from: *

- ◯ Czech Republic
- ◯ Denmark
- ◯ Great Britain
- ◯ Sweden
- ◯ Other

2. How many years of teaching in the Agricultural sector do you have? *

3. What level of education do you represent? *

- [ ] Practical apprenticeship Schools
- [ ] Vocational High Schools
- [ ] Higher vocational School
- [ ] University
- [ ] Other

4. Answer the following questions: **Are you satisfied with ....** *

	Strongly disagree	Disagree	Undecided	Agree	Agree strongly	I do notkno
... your profession?	○	○	○	○	○	○
... with financial rewadr (salary?	○	○	○	○	○	○
... the support of school management ?	○	○	○	○	○	○
... quality of students at your school?	○	○	○	○	○	○
... school equipment?	○	○	○	○	○	○
... atmosphere at your school?	○	○	○	○	○	○

5. Answer the following questions: *

	Strongly disagree	Disagree	Undecided	Agree	Agree strongly	I do notkno
Do you have an opportunity for professional growth(attending various training courses, etc.)	◯	◯	◯	◯	◯	◯
Do you have a possibility to influence events at your school? (school rules, student transfer, etc.)	◯	◯	◯	◯	◯	◯

6. The cooperation with parents is: *

- ◯ satisfying
- ◯ rather satisfying
- ◯ rather unsatisfying
- ◯ unsatisfying

7. I have an overview of the curricula of VET schools in the agricultural sector. *

- ◯ Yes
- ◯ No

8. What is the future of Agriculture?

9. How will Agriculture look like in 5 years?

10. What skills of student do you see as the most relevant regarding "Agriculture 4.0" or "Smart Agriculture"?

    Your answer: *

11. What kind of skills of student in Agriculture are still missing? *

12. At the end of their studies, do many students have an idea of the opportunities offered by the future profession?

    Your answer: *

13. Do you have any other comments or questions?

    Your answer:

Questionnaire for teachers (4)

16	10:11	Aktivní
Odpovědi	Průměrná doba vyplňování	Stav

1. Are you from: (0 b.)
   13% (2 z 16) respondentů odpovědělo na tuto otázku správně.

Czech Republic	2	✓
Denmark	4	
Great Britain	5	
Sweden	5	
Other	0	

2. How many years of teaching in the Agricultural sector do you have? (0 b.)

16
Odpovědi

Nejnovější odpovědi
"20"
"25"
"5 but now in a different sector "

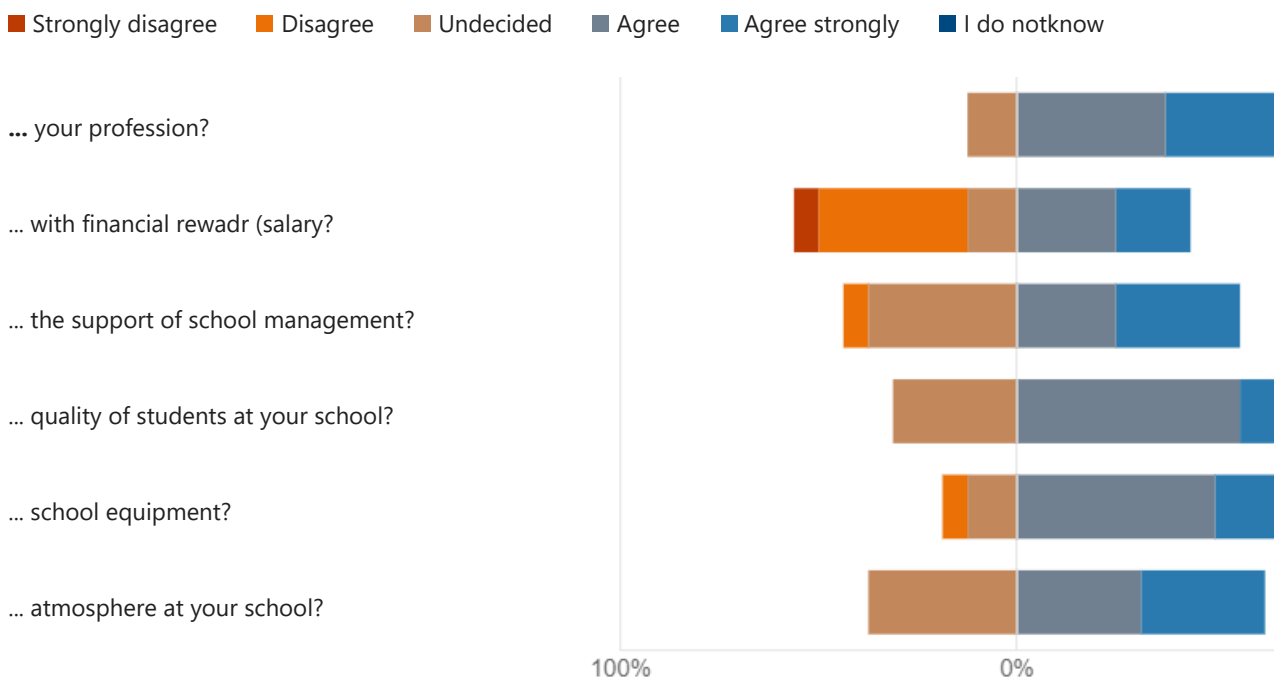
↻ Aktualizovat

Počet respondentů, kteří odpověděli **YEARS** na tuto otázku: **4** (**27**%).

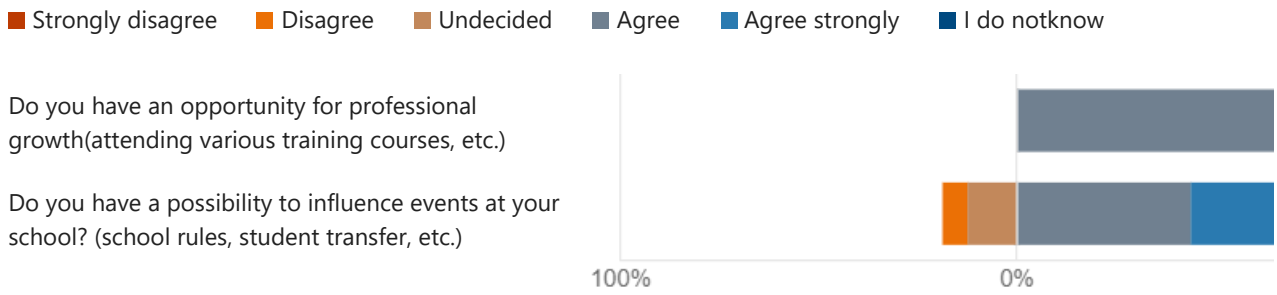
3. What level of education do you represent? (0 b.)

Practical apprenticeship Schools	8
Vocational High Schools	4
Higher vocational School	3
University	3
Other	2

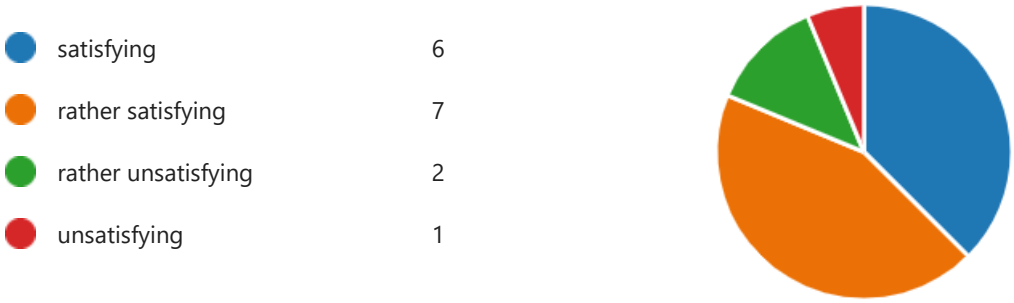
4. Answer the following questions: **Are you satisfied with ....** (0 b.)



5. Answer the following questions: (0 b.)



6. The cooperation with parents is: (0 b.)



7. I have an overview of the curricula of VET schools in the agricultural sector. (0 b.)

Yes	11
No	5

8. What is the future of Agriculture? (0 b.)

15
Odpovědi

Nejnovější odpovědi

"It is using of IT technologies, various types of application a...

"I think the future is very good. We have the possibilities to...

"It has to adapt to changing climate and food shortages"

↻ Aktualizovat

Počet respondentů, kteří odpověděli **system** na tuto otázku: **4** (**29**%).

9. How will Agriculture look like in 5 years? (0 b.)

14
Odpovědi

Nejnovější odpovědi

"It depends on the money that farmers will be able to inves...

"More digital, more precise. Not so much waste. The journe...

"Huge divides between farming priorities and population d...

↻ Aktualizovat

Počet respondentů, kteří odpověděli **farm** na tuto otázku: **4** (**31**%).

10. What skills of student do you see as the most relevant regarding "Agriculture 4.0" or "Smart Agriculture"? (0 b.)

Your answer:

16
Odpovědi

Nejnovější odpovědi

"work with IT technologies "

"The skill to rethink and adapt to new knowledge. And to d...

"Unsure"

↻ Aktualizovat

Počet respondentů, kteří odpověděli **skills** na tuto otázku: **4** (**27**%).

11. What kind of skills of student in Agriculture are still missing? (0 b.)

16
Odpovědi

Nejnovější odpovědi

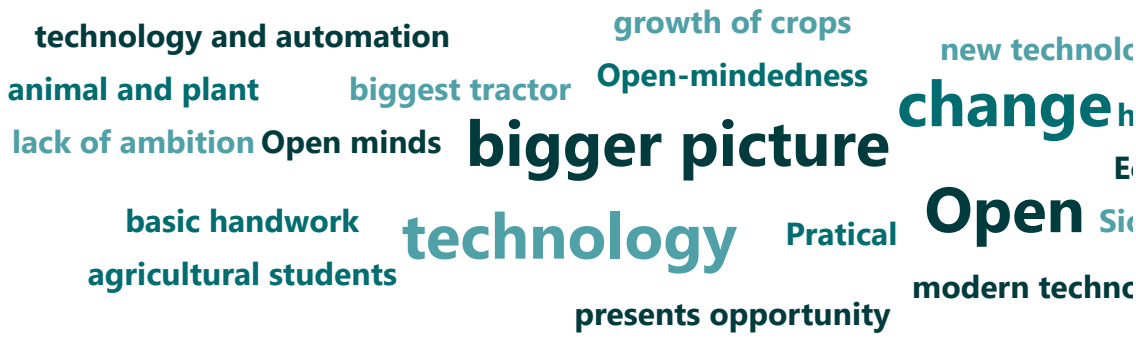
"practical skills with agricultural mechanization"

"Economy skills"

"Being able to embrace change"

↻ Aktualizovat

Počet respondentů, kteří odpověděli **bigger picture** na tuto otázku: **2** (**13**%).



12. At the end of their studies, do many students have an idea of the opportunities offered by the future profession? Your answer: (0 b.)

16

Odpovědi

Nejnovější odpovědi

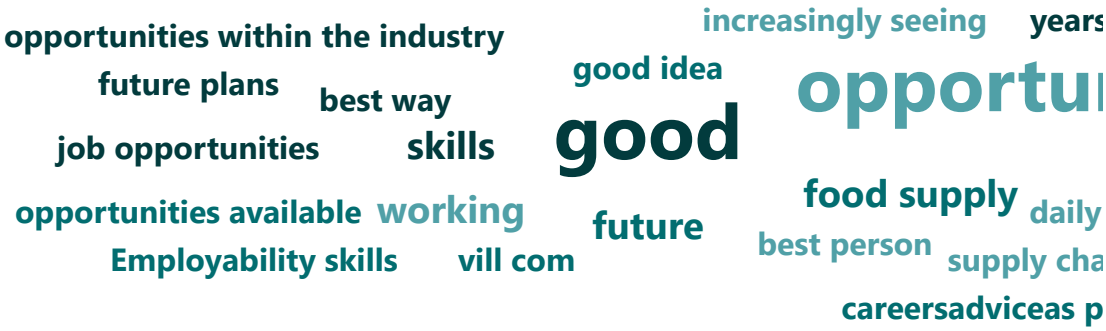
"I think so."

"I think, not many but some. Most of the students go direct...

"I believe there are opportunities for hard working individu...

⟳ Aktualizovat

Počet respondentů, kteří odpověděli **good** na tuto otázku: **4** (**27**%).



13. Do you have any other comments or questions? Your answer: (0 b.)

7

Odpovědi

Nejnovější odpovědi

"No."

"I think the students learn a huge amount from going to ot...

⟳ Aktualizovat

Počet respondentů, kteří odpověděli **no** na tuto otázku: **4** (**67**%).

9. Conclusion

Participants gained new knowledge about Industry 4.0 implementation into agriculture, about production and using new technologies and mechanization into crop production and animal breeding, sources of alternative energy and sustainability. They had an opportunity to compare conditions for agriculture, agricultural business and implementation of new technologies in involved countries. Students are through increasing of vocational and language competences better prepared for labour market entering. This project supported further professional development of teachers. The involved teachers compered vocational education in agriculture and its conditions, shared experience, compere cooperation with social partners, facilities for vocational subjects and practice and transfer gained experience into their schools and curricula. They solved strengths and weaknesses between vocational preparation and the development in agricultural sector. During the project implementation were created webpage, Facebook account, presentations, photos from visited farms and companies, questionnaires for teachers and students and final brochures. In the connection with the project implementation were created new curricula for education in agriculture, a lifelong learning course about agricultural machinery and improved material equipment of schools.