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Project: Strategic VET development in Mechanical Engineering and Metalworking Industries

Strategic and Action Plan

Developed by

Lithuanian Engineering Industries Association LINPRA





Strategy Plan

Situation

A strategy for development of VET system in Mechanical Engineering and Metalworking Industries is needed for the Lithuanian engineering and metalworking industries and society as well. The main reason for such strategy development is the need of high skilled workforce for the engineering and metalworking industries and not enough supply of labour to satisfy this demand.

The main problem of specialists' shortage is caused by the following factors:

- *Demographic changes*

According to Euromonitor International (2014), Lithuania is experiencing rapid depopulation. In 2030 its population will reach 2.6 million, 29.2% smaller than it was at its peak in 1992. In 2012-2030 only population groups aged over 60 will experience growth. Although the fertility rate will rise in this period, the number of births will fall due to the declining number of women of childbearing age. Furthermore, emigration will continue to be high in 2012-2030. Vilnius will be the only major city to achieve population growth up to 2030. The demographic changes imply the threat of specialists' shortage as the whole population is getting smaller.

- *Youth attitude towards engineering professions*

Youth in Lithuania tend to have skeptical view about the engineering professions. There prevails a general opinion that engineering professions are among the ones with lowest social benefits and salaries. Youth also believe that engineering professions require very hard and dangerous physical work which they find not attractive anymore

- *Lack of youngsters preparation for professional education in companies*

Youngsters also have very little practice during their studies and came to companies poorly prepared for real life situations and practical work. Youth usually have very few possibilities to practice the knowledge they gain while studying and cannot apply them when they start working in the companies.

- *Lack of youth, teachers and parents knowledge about engineering professions and carrier possibilities in engineering industry*

Another factor leading to engineering and metalworking industries professionals' shortage is the lack of knowledge that youth, teachers and parents have. There is very little information provided in the schools. Students are not introduced to all advantages and disadvantages of engineering and metalworking industries professions', they do not know what job they can expect, what are career and personal development opportunities. There are no public



events, conferences or seminars for youth, teachers and parents organized about engineering and metalworking industries.

- *From the companies point of view the professional orientation is not related to the practice*

Lithuanian companies are certain that professional orientation is not related to the practice. What they mean by that is that subjects which students learn in the various education institutions are not always the ones that specialists will need in their work. There is the discrepancy between the actual work specifications and the ones described by the teachers in various education institutions. The methods and processes presented in the schools are no longer relevant and applicable in the companies.

- *Gender – not enough girls/women in engineering industry*

In Lithuania there is a tendency of men choosing engineering and metalworking industries jobs and women trying to avoid such work. Women are not aware of the opportunities they might have while choosing to become a part of engineering industry.

- *Companies are not motivated to participate in the professional orientation and the whole field of education*

Companies in Lithuania are usually not interested in various society projects and activities enhancing the professional orientation and the whole field of education. They do not see the benefit of such activities and do not believe that they might have a huge influence on the people choices.

Aims and tasks

A strategy for development of VET system in Mechanical Engineering and Metalworking Industries has aims for the economy, aims for the image of the branch and aims for the support of the development of education system.

- *Aims for economy*

The main aims for the economy are to secure the economy with well skilled workers in current time and for the future and involve qualified people into industry. This will affect the economy of Lithuania positively by increasing the supply of needed skilled labour.

- *Aims for image of the branch*

One of the aims is to increase CSR (corporate social responsibility) from the employers' side for the society (for the employees and their families' future). Moreover, a strategy for development of VET system in Mechanical Engineering and Metalworking Industries intends to



inform, inspire and engage youth to choose engineering professions. One more aim is to create a better image of engineering industry for the society as a whole.

- *Aims for the support of the development of education system*

A strategy for development of VET system in Mechanical Engineering and Metalworking Industries has aims to increase participation of employers by supporting national education system from the economy side and making cooperation with it. A strategy also aims to foster the per mobility-transition system.

Target groups

A strategy for development of VET system in Mechanical Engineering and Metalworking Industries has target groups set. All the activities performed and methods used will be designated to them. The target groups are the following:

- Youngsters
- Parents
- Companies
- Teachers

Main directions

A strategy for development of VET system in Mechanical Engineering and Metalworking Industries has main directions that it will be oriented to. There are five different directions, including Pre-school education, General education, Professional education, Studies, HRD and training. Each direction has its own aims which are presented below.

1. Pre-school education. Aims:

- To wake up interests in technical topics and connections in the early age
- To find experimental entrances to natural science and technology
- To activate the reading skills in the early age
- To sensitize teachers and educators
- To suggest advanced training to natural science and technology in schools and kinder gardens

2. General education. Aims:

- To help discover personal and individual potentials
- To inform about various activities in the engineering and metalworking industries



- To train and support the teachers
- To provide examples of economics-learning content
- To accompany and support school developments

3. Professional education. Aims:

- To foster the attractiveness of vocational training in engineering and metalworking companies
- To support enterprises with compound solutions
- To test new training concepts
- To guarantee a high-level-training level

4. Studies. Aims:

- To increase the attractiveness of natural science studies
- To secure and develop practical relevance of teaching contents
- To initiate new study models
- To ensure next generation of young academic employees on the demands of the companies

5. HRD and training. Aims:

- To offer and communicate high-quality training courses
- To identify and control the companies' demand
- To assure and develop training quality
- To initiate actual topics

Partners

The strategy for development of VET system in Mechanical Engineering and Metalworking Industries will be implemented and followed by cooperating with the various partners – companies and employers' representatives, actors of education system, branch associations, trade unions and media.

- As the practice shows, companies and employers representatives are great partners for collecting feedback, developing innovative future orientated learning environment and predicting the future needs in education.
- Such partners as the actors of the education system like Ministry of Education, Ministry of the Economy, different Universities, VET providers, providers of afterschool activities and schools are very beneficial for creating a practice and needs orientated and integrated education system.



- Other branch associations might become great partners while focusing the employers' point of view towards education and exchanging the experiences.
- Trade unions might play their role as a social partner while developing VET system.
- Media is a partner for dissemination activities and informational support to the society.

Measures

In order to implement the strategy for development of VET system in Mechanical Engineering and Metalworking Industries, reach the aims, fulfill the tasks and satisfy the target groups' needs specific measures are foreseen to be taken.

- *Infomobile*

One measure taken will be implementation of the Infomobile as a mobile information system providing the information about the engineering and metalworking industries and presenting the work possibilities.

- *Network of education partners*

Developing the network of education partners will be also a measure to implement the strategy for development of VET system in Mechanical Engineering and Metalworking Industries. The network will be helpful for collecting information and exchanging experience and resources for using and financing Infomobile.

- *STEAM system*

There is foreseen a creation of STEAM system, including schools, research centers and municipalities centers. The STEAM system will combine the organizations actively enhancing and promoting science, technology, engineering, arts and mathematics. For their achievements and participation organizations will be able to get a sign of excellence in STEAM.

- *Directions of using Infomobile*

Another measure taken will be development of possibilities and directions for using Infomobile in schools, companies and various municipalities' events – town festivals, career days, etc.

- *LINPRA Committe*

In order to implement the strategy for development of VET system in Mechanical Engineering and Metalworking Industries a permanent Committee inside LINPRA will be created. It will be responsible for education and training strategy review.



- *Database improvement*

Database improvement is planned to be a measure as well. It will be useful for providing all the needed information in the field of education in engineering and metalworking industries. It will contain data about schools, professions, job possibilities and career opportunities.

- *Monitoring system*

One more measure will be created monitoring system, evaluating and indicating specific labor market needs in the industry.

- *Initiative for companies*

Finally, there will be organized an initiative to motivate companies for participation in the education process.

All the measures provided will be extremely helpful and beneficial while implementing the strategy for development of VET system in Mechanical Engineering and Metalworking Industries, reaching the aims, fulfilling the tasks and satisfying the target groups' needs.



Action plan

The first action plan part – creating and printing materials for Infobuss, is foreseen to be implemented until the July 2017, starting from March 2016. The materials include leaflets, booklets, posters, etc. They will consist of engineering industries professions' descriptions, information related to Infobuss, information about the Lithuanian engineering industries professions' providers and other information related to engineering industry in Lithuania.

The working plan of the Infobuss is foreseen to be developed during the July 2016 – August 2016. The working plan will contain the timetable of Infobuss visits to Lithuanian schools, fairs, companies, public events and other.

Actions to prepare the transfer of Infobuss started from March 2016 and will be finished until the August 2016 when the Infobusses will be transferred. These actions include the preparation of documents needed for the Infobusses transfer. Technical work needed to run the Infobusses will start when they will be transferred. It is foreseen to be no later than August 1st 2016. The technical work will include the electrical and equipment installation, internal design and external design. The technical work is foreseen to be done until the September 2016.

Teaching of instructors/operators will be executed during the August 2016. The teaching material (in Lithuanian) that instructors/operators will be obliged to learn until the August 2016 is in the Appendix A.

The website and database for Infobusses exploitation and utilization is in the development process from December 2015. The final version of the website containing the Lithuanian engineering companies and education providers will be developed until the July 2017. Until the June 2016 it is foreseen to develop the design and structure of the website with general information about the Infobusses and its services. Website and database link - <http://infomobilis.lt/>.

The strategy adaptation is present from December 2015. It includes implementation of the Infomobile as a mobile information system providing the information about the engineering and metalworking industries and presenting the work possibilities, developing the network of education partners, creation of STEAM system, including schools, research centers and municipalities centers, development of a permanent Committee inside LINPRA for VET system in Mechanical Engineering and Metalworking, database improvement, monitoring system creation and organization of an initiative to motivate companies for participation in the education process. The strategy is foreseen to be fully implemented 3 years after the project ends.

Visits and meetings with stakeholders and partners are foreseen to be organized 1 time per 3 months. During the meetings the strategic VET development in mechanical engineering and metalworking industries will be discussed and implemented.

Communication with the society has been actively elaborated from February 2016. Until the June 2016 3 articles had been published (<http://linpra.lt/lt/apie-asociacija/aktualijos/modernus-infomobilis-skat-judc.html>),



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<http://www.statybunaujienos.lt/naujiena/Modernus-infomobilis-laboratorija-skatins-susidomejima-inzinerinemis-profesijomis/6880>, <http://www.delfi.lt/mokslas/mokslas/galite-reikalauti-kad-si-laboratorija-atkeliautu-ir-pas-jus.d?id=70301286>). More articles will be published in August and September 2016.



Appendix A

Training material for Infobusses instructors/operators

❖ Pamokų Infomobilyje tipai

1. Pavadinimas - Įvadas į metalo ir elektronikos pramonės profesijų pasaulį (mokinių pradžiamokslis).
 - Pamokos trukmė – 45 min.
 - Mokinių grupės skaičius – 10-12 žmonių.
 - Mokinių amžius – 11 ir daugiau metų.
2. Pavadinimas – Taikomosios technologijos metalo ir elektronikos pramonėje (labiau patyrusiems mokiniams).
 - Pamokos trukmė – 45 min.
 - Mokinių grupės skaičius – 10-12 žmonių.
 - Mokinių amžius – 14 ir daugiau metų.
3. Pavadinimas – Praktinės išvalgos apie metalo ir elektronikos verslo pasaulį (patyrusiems mokiniams).
 - Pamokos trukmė – 90 min.
 - Mokinių grupės skaičius – 8 žmonės.
 - Mokinių amžius – 14 ir daugiau metų.

❖ Pamokų organizavimo planas

1. Kaip pradėti pamoką?

- Pasisveikinimas, galimas trumpas video filmuko parodymas, pamokos eigos išdėstymas, interaktyvių klausimų apie inžinerines profesijas bei darbą uždavimas. Tinkamiausia vieta pasisveikinimui – lauke, prie įėjimo į Infomobilį. (Trukmė - 5 min darant 45 min pamoką, trukmė – 15 min, darant 90 min pamoką).

2. Pamokos eiga

- Galimas pasiskirstymas grupėmis, kurioms skiriamos skirtingos užduotys. Atlikus užduotis vykdomas jų aptarimas.
- Galimas tam tikrų įrenginių pristatymas visai grupei, pateikiant pavyzdžius, kur šie įrenginiai naudojami.
- Galimas video medžiagos rodymas.

3. Pamokos užbaigimas



- Pozityvus mokinių pastangų ir dėmesio įvertinimas, informacijos apie konkrečias mokslo bei darbo galimybes pateikimas, mokinių klausimų atsakymas, dovanėlių atsiminimui dalinimas, malonus atsisveikinimas. (Trukmė – 5 min.)

❖ **Instruktoriaus/operatoriaus surenkama informacija**

- Infomobilio stovėjimo vietos nuotraukos
- Energijos tiekimo galimybės
- Infomobilio laikymo vieta naktį
- Problemos, su kuriomis buvo susidurta
- Viešbučiai, kuriuose patogiausia apsistoti (jei tokie buvo reikalingi)
- Mokinių nuomonė

❖ **Galimi mokinių motyvavimo būdai**

- Puikios karjeros galimybės
- Puikus atlyginimas
- Saugus darbas
- Profesijos paklausa rinkoje
- Lanksčios darbo valandos
- Įdomios darbo vietos

❖ **Dovanėlės mokiniams atminimui**

- Lankstinukai ir bukletai mokiniams, tėvams ir mokytojams
- DVD/USB
- Užduočių pavyzdžiai
- Saldainiai
- Pačių mokinių pasigamintos detalės

❖ **Žaidimų Infomobilyje pavyzdžiai**

- Žaidimas „Judanti sija”- reikia išsirinkti dvi vienodai sveriančias statulėles ir jas padėti ant judančios sijos svarstyklių taip išlaikant jos pusiausvyrą.
- Žaidimas „Karuselė“ - lavinama žaidėjo reakcija. Jis turi nukreipti krentančius kamuoliukus tam tikra kryptimi.
- Žaidimas „Elektros grandinė“ - reikia apskaičiuoti elektros stiprį bei varžą, ir sujungti elektros grandinę, pasirenkant pačias tinkamiausias sudedamąsias dalis.
- Žaidimas „Užkoduotas pranešimas“ - tikslas perskaityti užkoduotą pranešimą. Duodama iškodavimo instrukcija ir žaidėjas stengiasi perprasti šį kodą.



- Žaidimas „Rekonstrukcija“ - žaidime iš duoto brėžinio reikia rekonstruoti senovinės šventyklos kompleksą ir sukurti jos trimatį vaizdą.
- Žaidimas „Kubas“ – reikia išvardinti 10 kubo savybių. Padeda mokiniams suvokti matematikos panaudojimo galimybes, netikslaus testavimo pavojus.

Svarbiausia per pamokas padaryti mokiniams išpūdį, o ne suteikti daug informacijos!