# EDUTRONIX

## Interactive Education Module for Mechatronics

## Project information

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| Project acronym | EDUTRONIX |
| Project title | Edutronix - Interactive Education Module for Mechatronics |
| Programme | Erasmus+ |
| Key Action 2 | Cooperation for innovation and good practices, Strategic partnerships for education and vocational training |
| Project number | 2015-1-PL01-KA202-016561 |
| Beneficiary organisation | CKZ - Centrum Ksztalcenia Zawodowego w Wysokiem Mazowieckiem |
| Project web site | http://www.edutronix.eu |
| Report version | V1 |
| Date of preparation | September 2016 |
| Draft by | AIJU - Asociacion de Investigacion de la Industria del Juguete, Conexas y Afines with the support of PP - Perfect Project LLC |

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## TABLE OF CONTENTS

*The report presented here covers the period April 2016 - September 2016. It reflects the work shared with partners to date for the definition of the features of the interactive Edutronix module related to entrepreneurs needs.*

*The final version will be made available and disseminated at the end of the project.*

For the reader benefit, we anticipate the contents of the report below.

**In Chapter 1** you will find a questionnaires templates in hard copy done both in English and Polish languages to achieve a feedback during individual meetings at the companies, as well as internet surveys with additional Spanish and Italian language versions to make it easier and possible to receive even more feedback from international companies cooperating with our partners.

**Chapter 2** presents the list of selected companies using the latest technologies and on the same hand according to our best knowledge are rapidly developing and are best source of information about modern technologies and production processes needs on the “real market”.

**Chapter 3** Focuses on the received feedback and shows the results of questionnaires with graphic visualization and descriptive form of interpretation done by specialized team.

**Chapter 4** Identifies the main issues to consider during creation of EDUTRONIX module with connection to the real needs of entrepreneurs on the market with analysis of key survey question with a short descriptive summary.

# INTRODUCTION

The **Edutronix project,** works toward the development and implementation of training methods to adjust the curricula in mechatronic within Technical Vocational High Schools to the changing needs of business, to improve the effectiveness of teaching and learning through practical and blended education, to create curricula linked to vocational tasks performed in the work environment.

In Intellectual Output No 3 we are meant to project a possible EDUTRONIX model use in enterprises.

The application of the practical use of some solutions in mechatronics is more, and some less common, and thereby less needed for labor market in enterprises, so in engineering related to the design, manufacture and operation of the model should take into account the need for solutions for the construction of the module based on the experience of companies in mechatronics industry.

Reported issues consider all key matters related to “real market”:
1. Competition in mechatronics on a global scale,
2. The analysis of product quality issues in use of mechatronic devices and production lines,
3. The technical level of production of modern machines, equipment, and methods of construction,
4. Finding methods and solutions to reduce costs and increase productivity using model,
5. Development of technology, machinery, equipment, methods and tools supporting the further development and production using knowledge based on model.

All those issues were considered by entrepreneurs’ representatives which were filling both hard copy or Internet version of the surveys and stays in close connection to the analysis of the results of the feedback received by the Intellectual Output working team from AIJU as a leader and PP as a partner to create this report.

Thanks to the experience of entities chosen, listed and kindly asked to give the response from every country of strategic partnership within this project, we hope make it possible to examine the draft terms of usefulness and application to the actual workplace following the path of educational process on the model.

The report therefore takes into account the capabilities and technologies used by real market participants and the actual economic life, i.e. entrepreneurs using or companies having in their production lines mechatronic solutions based on knowledge possible to receive by the model. The criteria taken into account in preparing this outcome include three key elements:
1. Market
2. Competitiveness
3. Innovation

As part of the outcome report gives the answer to the question what kind of tasks shall we teach by the mechatronic module to receive the knowledge which might be used in enterprises? What kind of tasks shall we learn through module by teachers for students of mechatronics and which we can apply? What can be achieved through the integration of mechanical systems with electronic and through the teaching of mechatronics on such a model? What do we require to construct such mechatronic systems? How to reach these requirements?

## QUESTIONNAIRES TEMPLATES

Project team working on the result was at the beginning about to create all the tools to receive as much feedback as possible from entrepreneurs on 3 quite different markets in Poland, Italy and Spain. Despite the fact that CIS as an Italian partner was not directly involved in this Intellectual Output, the CIS project team prepared and made it possible to contact the Italian companies as well to diverse the feedback itself and to make the results more useful and universal for further dissemination.

Basing on previous contacts of all consortium partners with entrepreneurs' project team developed a hard copy of questionnaire to survey the needs to make it possible to receive a feedback and share the view during individual meetings with representatives of the companies. It also made possible to receive a feedback by fax or scan via e-mail to maximize the possibilities and make it as easy as possible for entrepreneurs to gain access to it and not to waste too much of their time.

The shape and content of the questionnaire was also discussed during International Partners Meetings by the administrative team to consider all the possible problems at the very beginning of collecting the answers.

There were 2 language versions created – Polish created by Polish Partner and English as entrepreneurs are mainly quite good with language skills, English is the most universal language and two different markets (Spanish and Italian has to be covered). Despite that the English language is the language of the project so it was needed to make it available.

The survey was made anonymous with all the relevant contacts to the team in case of any problems or questions during response and with all visual and text relations to the project and financing within Erasmus+ framework.

Please find English version below on the following pages:

Project co-financed by European Union

***Dear respondent,***

*Please fill out the questionnaire for the project "**EDUTRONIX – Interactive Education Module for Mechatronics**". The aim of the survey is to determine the needs and expectations of employers on skills of students / graduates of vocational schools in mechatronics field. All comments will be useful and helpful not only in the implementation of the project, but also benefit industry by reforming the vocational education system. The survey is anonymous.*

***Thank you very much for your precious time***

1. Which field/branch/industry your company belong to?

   .....

2. What skills and knowledge in the field of mechatronics should employee of your company have? (*Please select **5** most important*)

   ☐installation of equipment,

   ☐maintenance of mechatronic systems,

   ☐the possible use of mechatronic devices and systems,

   ☐operation of mechatronic devices and systems,

   ☐operate "in the cloud" and virtual designing,

   ☐physical design of mechatronic devices and systems,

   ☐operate, design and develop solutions in CAD and/or 3D programs,

   ☐operate other specialized computer programs

   (which programs? .....)

   ☐use the knowledge and skills for development of mechatronic devices and systems,

   ☐other (please specify) .....

   ☐need not have any skills on the above subject.

3. Useful model to study mechatronics should meet the following requirements / allow to: (*Please arrange them in order: 1 - most important, 10 - least important*)

   ☐ perform installation of mechanical, electrical, electronic, pneumatic and hydraulic components,

   ☐ test all components mentioned above individually and all together,

   ☐ perform basic adjustments,

   ☐ diagnose faults and their removal in the previously assembled mechatronic system,

   ☐ learn basic programming of programmable logic PLC controllers,

   ☐ develop technical drawing reading/writing skills,

   ☐ conduct examinations of professional competence/skills by school or entrepreneur,

   ☐ develop group working skills,

☐ give additional qualifications e.g. energetic or other specific,

☐ other (please specify) .....

4. What kind of ICT skills are mostly used by your employees and which are the most important? (*Please select **5** most important and arrange them in order: 1 - most important, 5 - least important*)

☐use of social media for business development,

☐use of mobile devices,

☐operate the spreadsheets,

☐operate text editors,

☐operate "in the cloud",

☐conduct meetings by videoconference,

☐operate graphic programs,

☐operate specialized computer programs (which programs?

.....)

☐use the knowledge and skills of IT for business development,

☐other (please specify) .....

☐need not have any information on the above subject.

5. What aspects are taken into account in the process of finding a candidate for workplace? (*Please arrange them in order: 1 - most important, 5 - least important*)

☐ education,

☐ experience,

☐ foreign language (technical vocabulary),

☐ soft skills (ability to work in a team, communication, openness, punctuality, etc.),

☐ manual skills (dexterity, assembling, operating, precision, finishing, modeling, etc.),

☐ other (please specify): .....

6. What factors are taken into account in the recruitment process?

☐flexibility,

☐ability to adapt,

☐continuous learning and improvement,

☐experience in a similar or the same position and/or industry,

☐experience from other positions / industries,

☐activity in the labor market,

☐activity in school and school organizations, internships, etc.

☐field of education/courses/certificates,

☐other (please specify):……

7. What are the needs regarding the level of the candidate's knowledge of foreign language? (which language/s? ……)

☐knowledge of a foreign language is irrelevant,

☐basic,

☐communicative,

☐advanced including (technical vocabulary),

☐fluent.

8. In which areas do you see the biggest competence gaps in the skills of potential employees? (*Please select **3** most important*)

☐flexibility in the workplace,

☐adaptation to new conditions,

☐continuous learning and improvement,

☐knowledge of a foreign language (technical vocabulary),

☐customer service,

☐skills based on experience,

☐analytical thinking,

☐practical and manual skills,

☐other areas (please specify)……

9. Which skills are most needed? (*Please select **5** most important*)

☐communication,

☐teamwork,

☐independence,

☐planning,

☐organizational,

☐technical,

☐programming,

☐designing,

☐continuous learning and improvement,

☐personal culture,

☐computer skills and computer programs,

☐ability to learn fast,

☐resistance to stress,

☐creativity,

☐knowledge of software, work tools (please specify):

.....

☐other (please specify):

.....

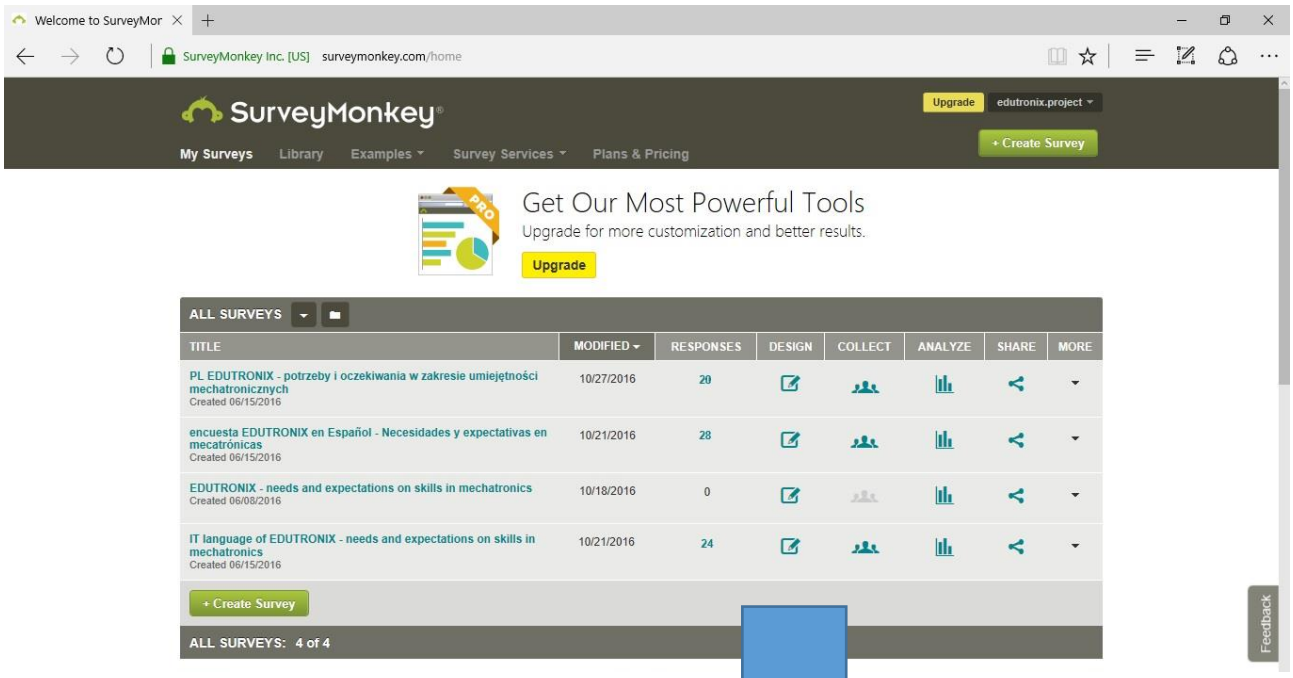
.....

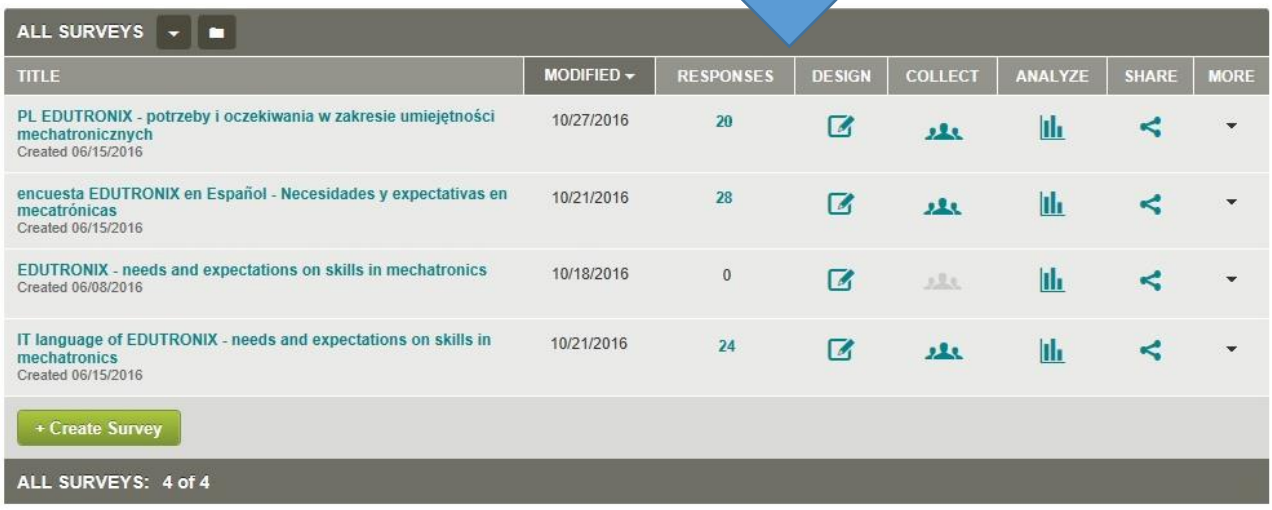
During discussions and working on the questionnaire with first few entrepreneurs in Poland and Spain the result development team from both AIJU and PP decided that ICT tool need to be involved into the process of preparing and collecting the data to ease all the processes and to make it possible to reach even the entrepreneurs which we would never have a possibility to ask in personal way.

The idea was made alive with one of the freeware on-line software developed with a brand name of SurveyMonkey (https://www.surveymonkey.com/). From now on all the companies was not only phoned to kindly give us a feedback in standard "paper" way, but when they try to refuse of giving us any feedback because of lack of time or other matters we kindly ask them for an e-mail to send a link to on-line survey which they might fill in and give us a feedback in their free time while using a computer at work, at home or even at the mobile devices of the representatives of the company or a person which was responsible or designated to fill it by those representatives.

Also the language versions (despite English and Polish) for such an Internet source of survey feedback was decided to be created. Please note that an English version on the platform was created only for purpose of further translations, so it does not have any responses. All four language versions (Polish, English, Spanish and Italian) were made available on the platform of Monkey Survey and all of the graphs showed in Chapter 3 comes as a screenshot from this tool as well.

Please find a copy of all language versions available on the on-line survey platform "SurveyMonkey" below:

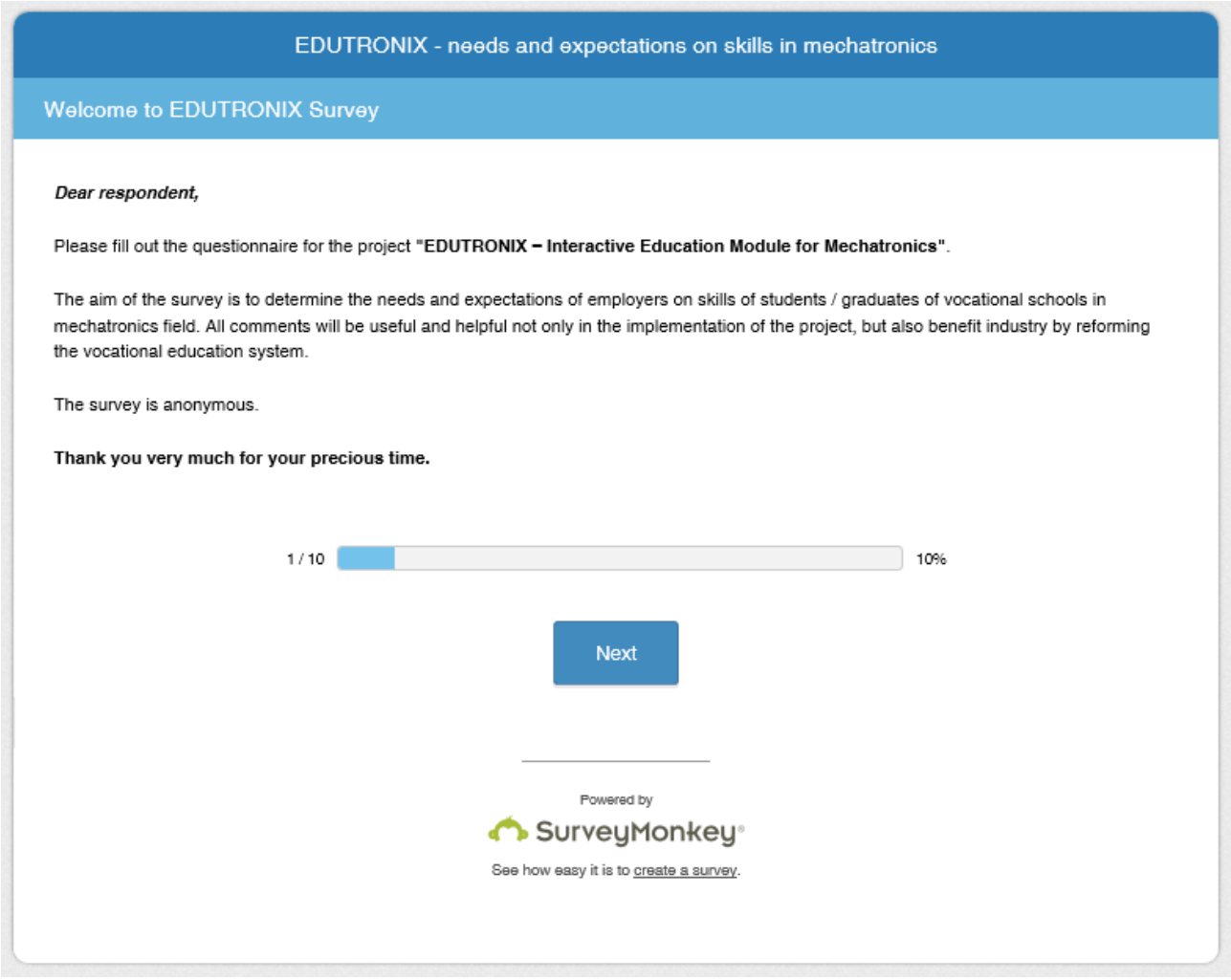

Welcome to SurveyMor
SurveyMonkey Inc. [US] surveymonkey.com/home
SurveyMonkey
Upgrade
edutronix.project
My Surveys
Library
Examples
Survey Services
Plans & Pricing
+ Create Survey
Get Our Most Powerful Tools
Upgrade for more customization and better results.
Upgrade
ALL SURVEYS
TITLE
MODIFIED
RESPONSES
DESIGN
COLLECT
ANALYZE
SHARE
MORE
PL EDUTRONIX - potrzeby i oczekiwania w zakresie umiejętności mechatronicznych
Created 06/15/2016
10/27/2016
20
encuesta EDUTRONIX en Español - Necesidades y expectativas en mecatrónicas
Created 06/15/2016
10/21/2016
28
EDUTRONIX - needs and expectations on skills in mechatronics
Created 06/08/2016
10/18/2016
0
IT language of EDUTRONIX - needs and expectations on skills in mechatronics
Created 06/15/2016
10/21/2016
24
+ Create Survey
ALL SURVEYS: 4 of 4
Feedback

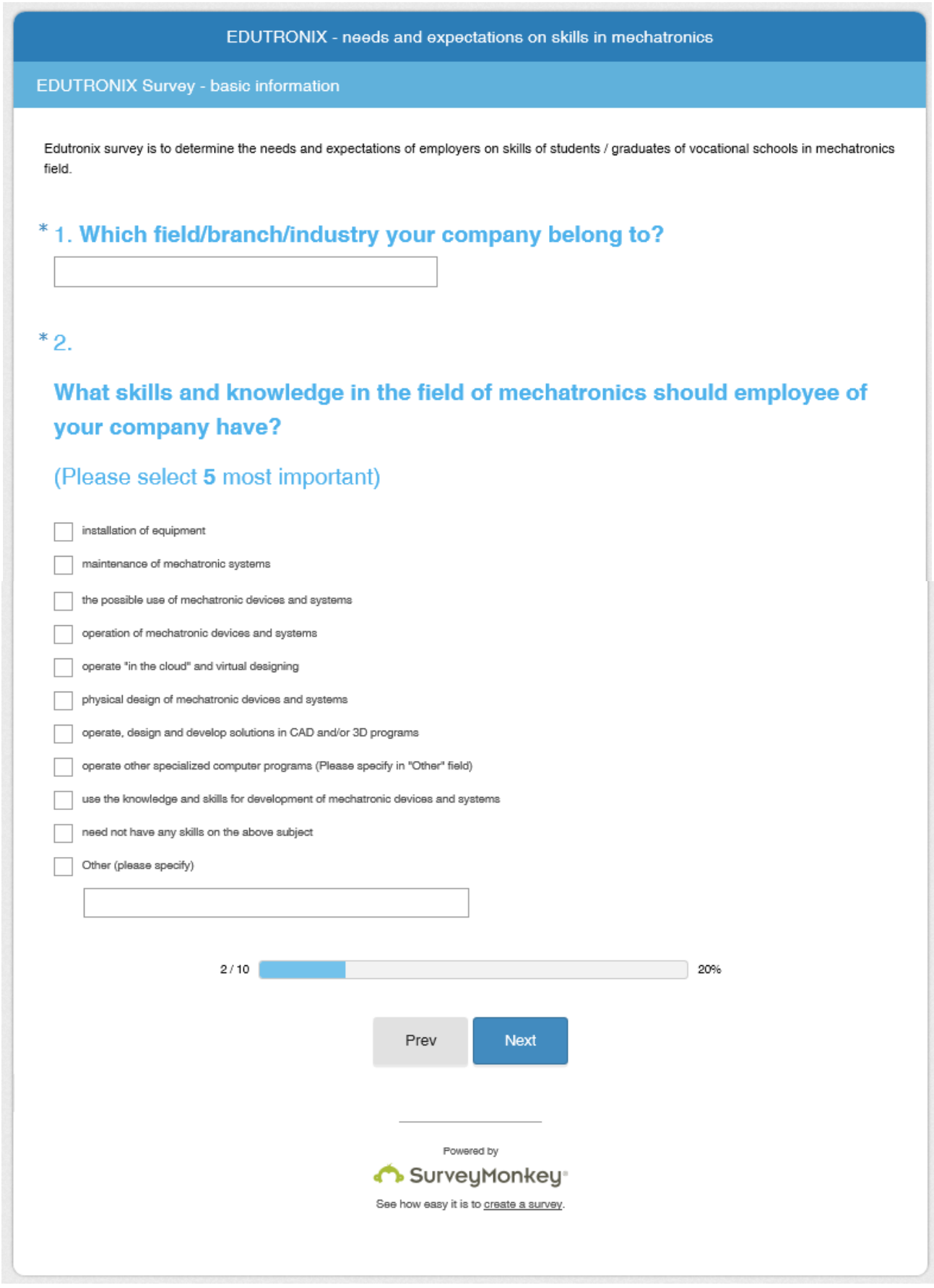

ALL SURVEYS
TITLE
MODIFIED
RESPONSES
DESIGN
COLLECT
ANALYZE
SHARE
MORE
PL EDUTRONIX - potrzeby i oczekiwania w zakresie umiejętności mechatronicznych
Created 06/15/2016
10/27/2016
20
encuesta EDUTRONIX en Español - Necesidades y expectativas en mecatrónicas
Created 06/15/2016
10/21/2016
28
EDUTRONIX - needs and expectations on skills in mechatronics
Created 06/08/2016
10/18/2016
0
IT language of EDUTRONIX - needs and expectations on skills in mechatronics
Created 06/15/2016
10/21/2016
24
+ Create Survey
ALL SURVEYS: 4 of 4

The on-line tool gave as a possibility to monitor the progress of the collection of all the responses from companies from different countries and were much more useful for further analyses. The tool also gave a possibility to collect and share the surveys in many ways and give a live feedback during step by step data collection with all relevant requirements we wanted to be preserved in the questionnaire.

Please find a link to the on-line survey in English below:

https://www.surveymonkey.com/r/?sm=7mzsuJcyrHf05YBdxdEA0CahAPlPXovNheQAszvHu_2FY_3D





EDUTRONIX - needs and expectations on skills in mechatronics

EDUTRONIX Survey - basic information

Edutronix survey is to determine the needs and expectations of employers on skills of students / graduates of vocational schools in mechatronics field.

* 1. Which field/branch/industry your company belong to?

* 2.

What skills and knowledge in the field of mechatronics should employee of your company have?

(Please select **5** most important)

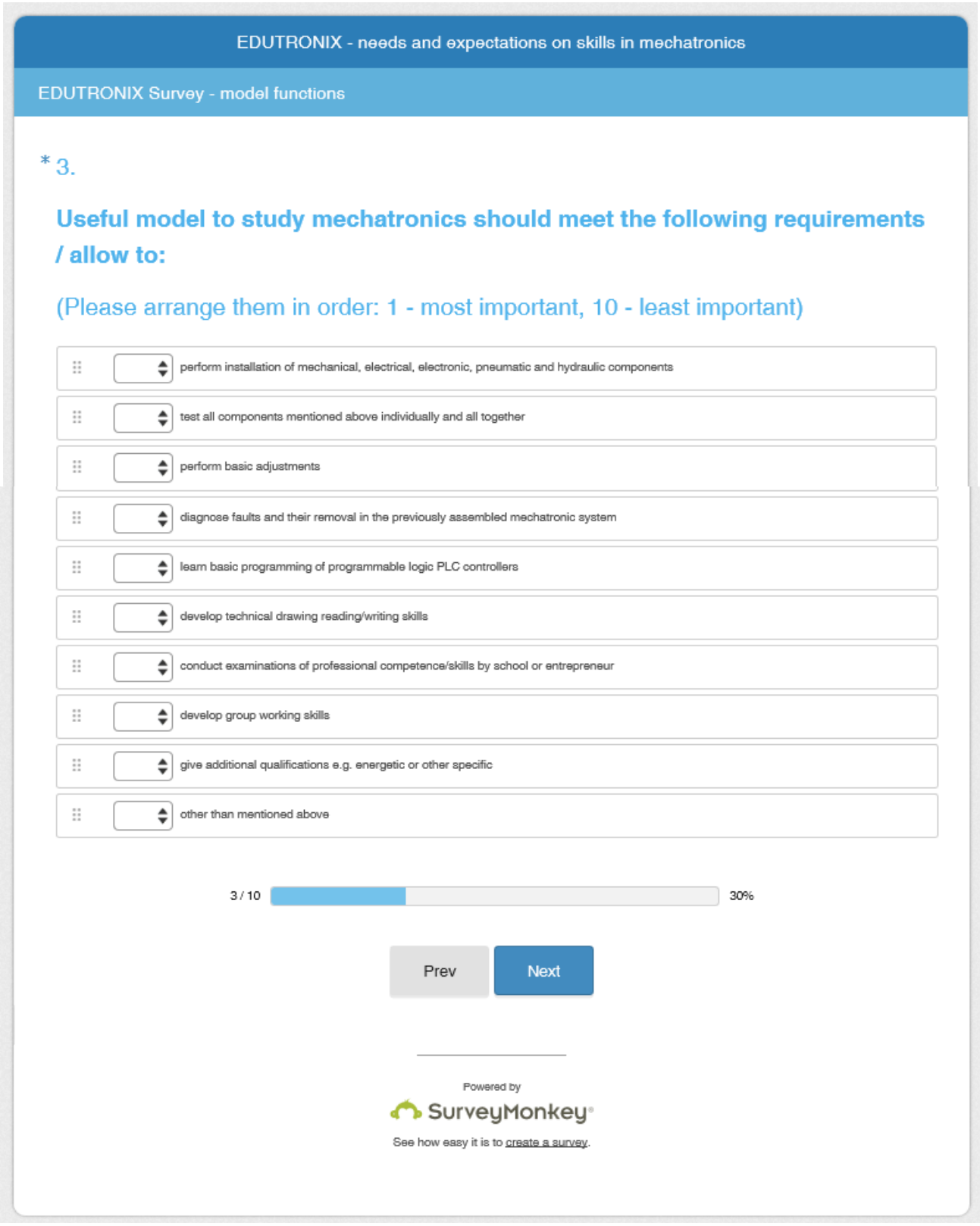
- [ ] installation of equipment
- [ ] maintenance of mechatronic systems
- [ ] the possible use of mechatronic devices and systems
- [ ] operation of mechatronic devices and systems
- [ ] operate "in the cloud" and virtual designing
- [ ] physical design of mechatronic devices and systems
- [ ] operate, design and develop solutions in CAD and/or 3D programs
- [ ] operate other specialized computer programs (Please specify in "Other" field)
- [ ] use the knowledge and skills for development of mechatronic devices and systems
- [ ] need not have any skills on the above subject
- [ ] Other (please specify)

2 / 10 20%

Prev Next

Powered by SurveyMonkey

See how easy it is to create a survey.


EDUTRONIX - needs and expectations on skills in mechatronics
EDUTRONIX Survey - model functions
* 3.
Useful model to study mechatronics should meet the following requirements / allow to:
(Please arrange them in order: 1 - most important, 10 - least important)
perform installation of mechanical, electrical, electronic, pneumatic and hydraulic components
test all components mentioned above individually and all together
perform basic adjustments
diagnose faults and their removal in the previously assembled mechatronic system
learn basic programming of programmable logic PLC controllers
develop technical drawing reading/writing skills
conduct examinations of professional competence/skills by school or entrepreneur
develop group working skills
give additional qualifications e.g. energetic or other specific
other than mentioned above
3 / 10
30%
Prev
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SurveyMonkey
See how easy it is to create a survey.

EDUTRONIX - needs and expectations on skills in mechatronics

EDUTRONIX Survey - ICT skills

* 4.

**What kind of ICT skills are mostly used by your employees and which are the most important?**

(Please select **5** most important and arrange them by priority: 1 - most important, 5 - least important)

| | Most important | 2 | 3 | 4 | Least important |
|---|---|---|---|---|---|
| use of social media for business development | ○ | ○ | ○ | ○ | ○ |
| use of mobile devices | ○ | ○ | ○ | ○ | ○ |
| operate the spreadsheets | ○ | ○ | ○ | ○ | ○ |
| operate text editors | ○ | ○ | ○ | ○ | ○ |
| operate "in the cloud" | ○ | ○ | ○ | ○ | ○ |
| conduct meetings by videoconference | ○ | ○ | ○ | ○ | ○ |
| operate graphic programs | ○ | ○ | ○ | ○ | ○ |
| operate specialized computer programs (please specify in "Other" field) | ○ | ○ | ○ | ○ | ○ |
| use the knowledge and skills of IT for business development | ○ | ○ | ○ | ○ | ○ |
| Other or need not have any information on the above subject | ○ | ○ | ○ | ○ | ○ |

Other (please specify)

4 / 10 40%

Prev Next

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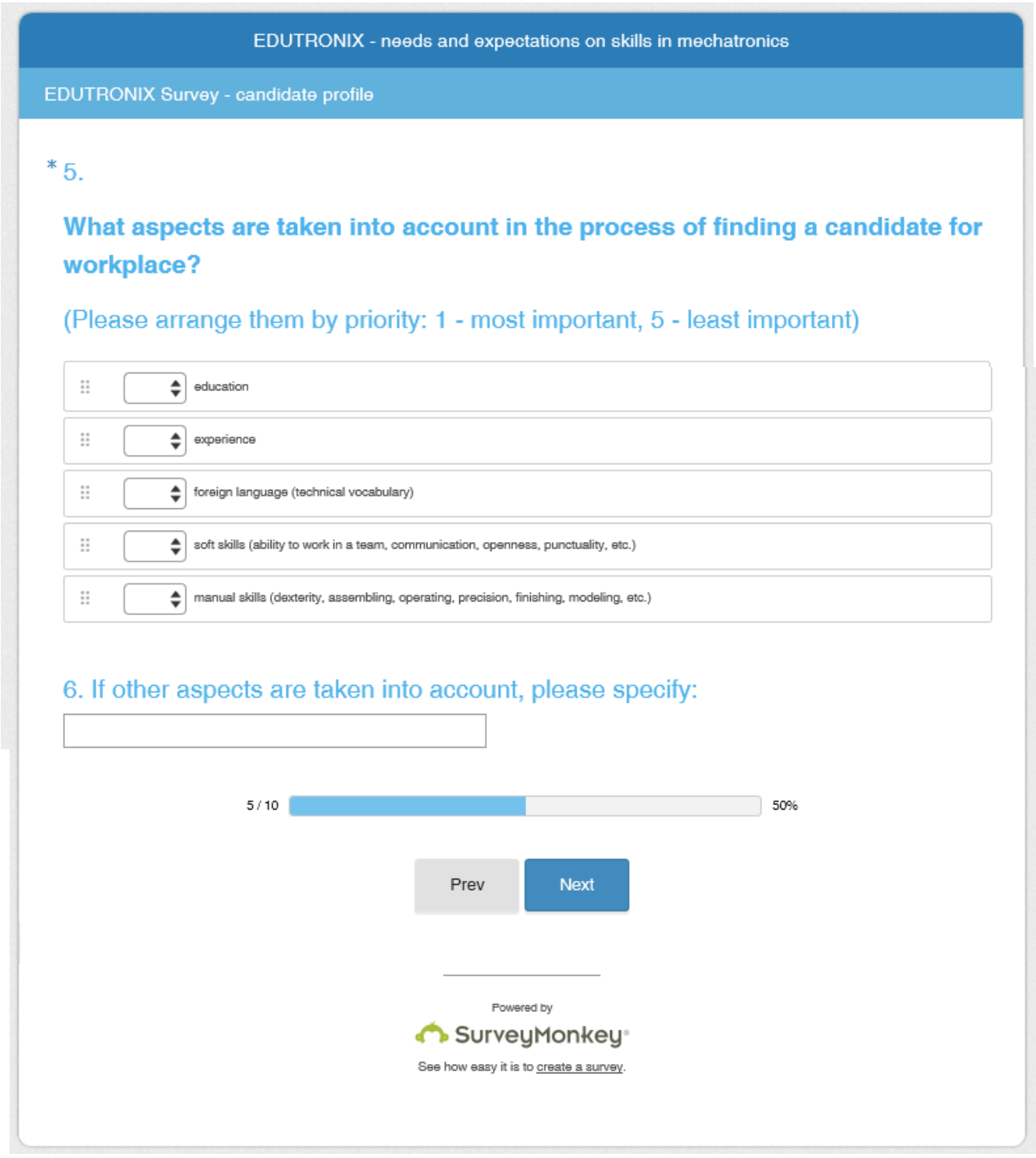
See how easy it is to create a survey.


EDUTRONIX - needs and expectations on skills in mechatronics
EDUTRONIX Survey - candidate profile
* 5.
What aspects are taken into account in the process of finding a candidate for workplace?
(Please arrange them by priority: 1 - most important, 5 - least important)
education
experience
foreign language (technical vocabulary)
soft skills (ability to work in a team, communication, openness, punctuality, etc.)
manual skills (dexterity, assembling, operating, precision, finishing, modeling, etc.)
6. If other aspects are taken into account, please specify:
5 / 10
50%
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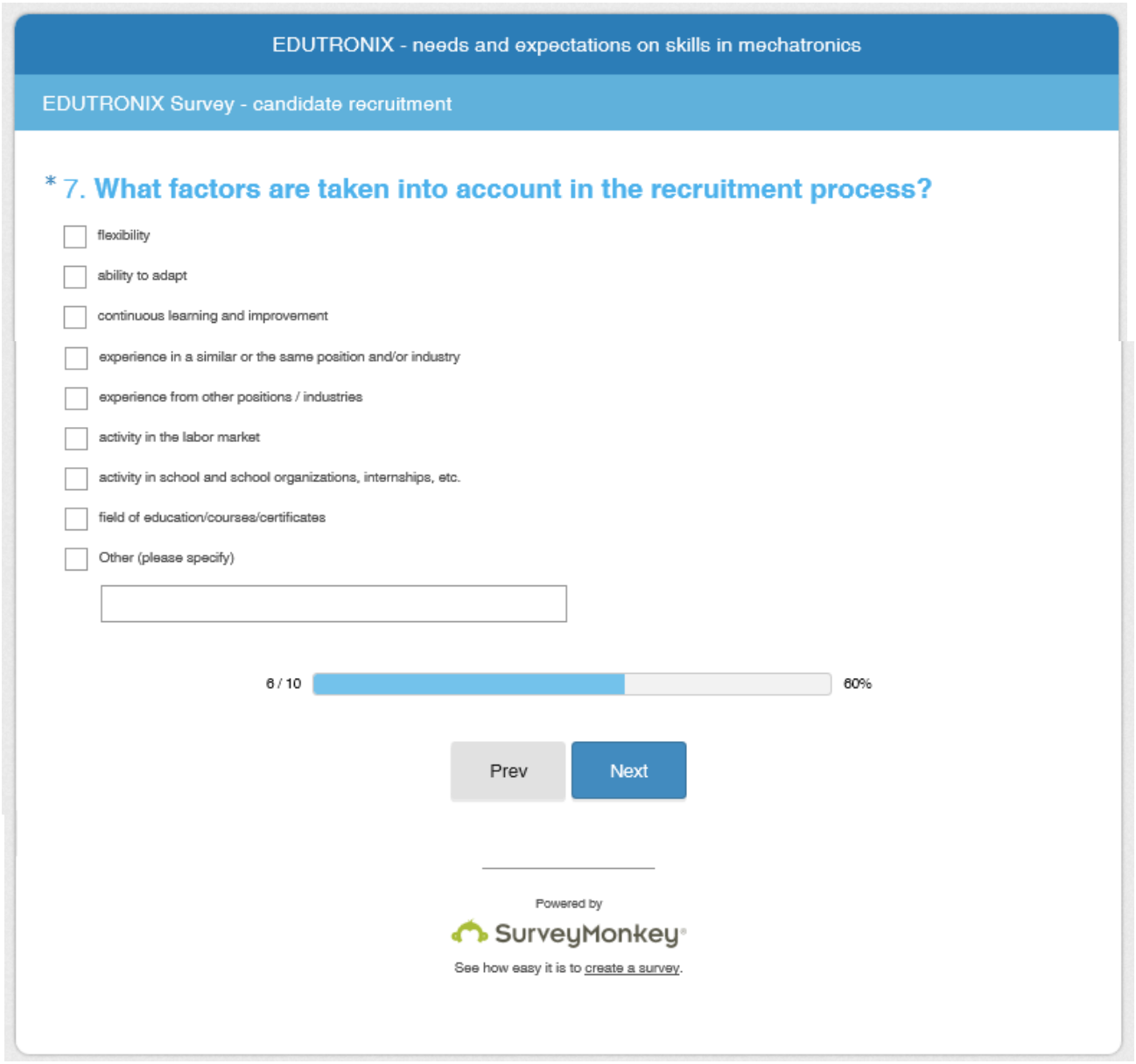
See how easy it is to create a survey.


EDUTRONIX - needs and expectations on skills in mechatronics
EDUTRONIX Survey - candidate recruitment
* 7. What factors are taken into account in the recruitment process?
flexibility
ability to adapt
continuous learning and improvement
experience in a similar or the same position and/or industry
experience from other positions / industries
activity in the labor market
activity in school and school organizations, internships, etc.
field of education/courses/certificates
Other (please specify)
6 / 10
60%
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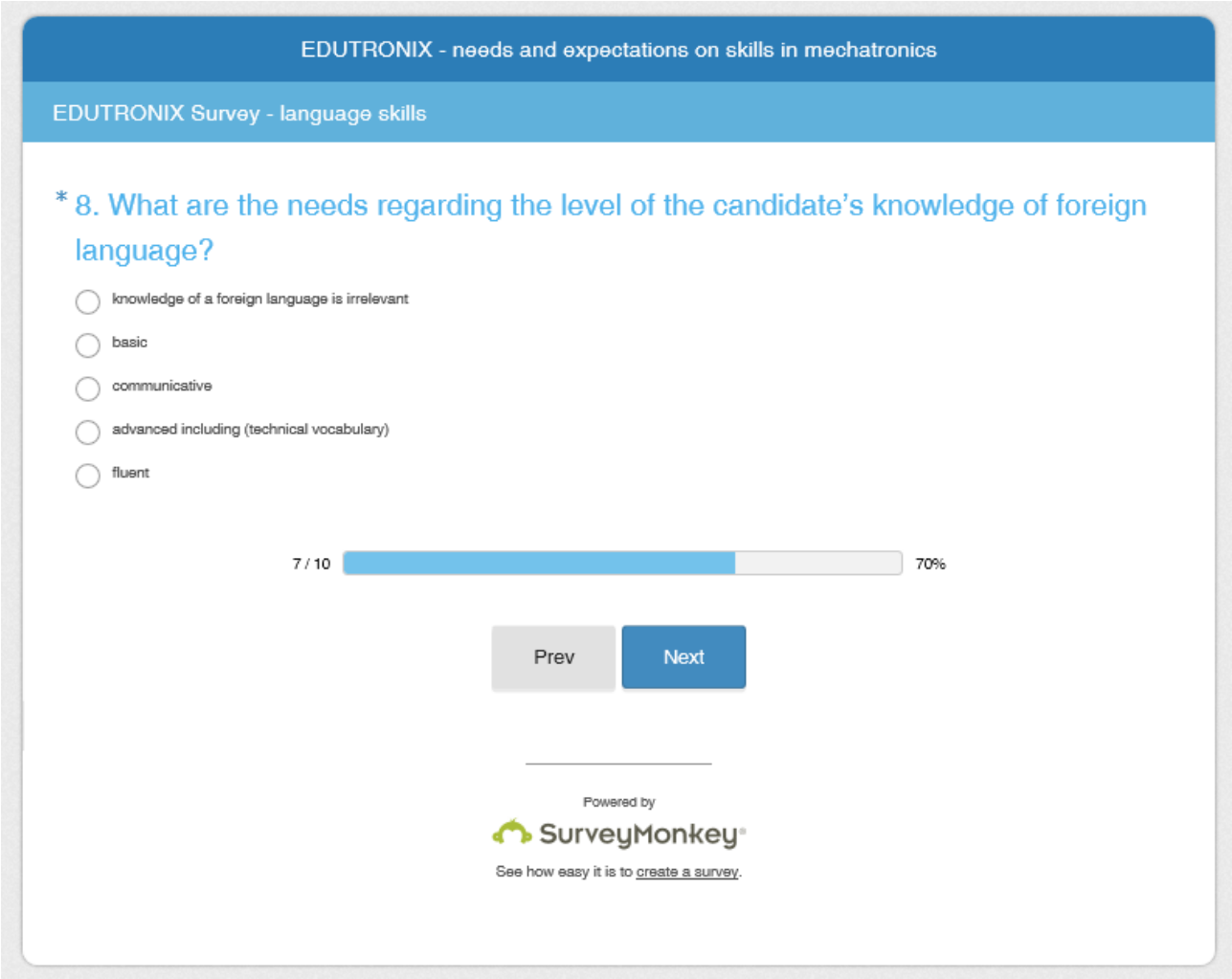
EDUTRONIX - needs and expectations on skills in mechatronics
EDUTRONIX Survey - language skills
* 8. What are the needs regarding the level of the candidate's knowledge of foreign language?
knowledge of a foreign language is irrelevant
basic
communicative
advanced including (technical vocabulary)
fluent
7 / 10
70%
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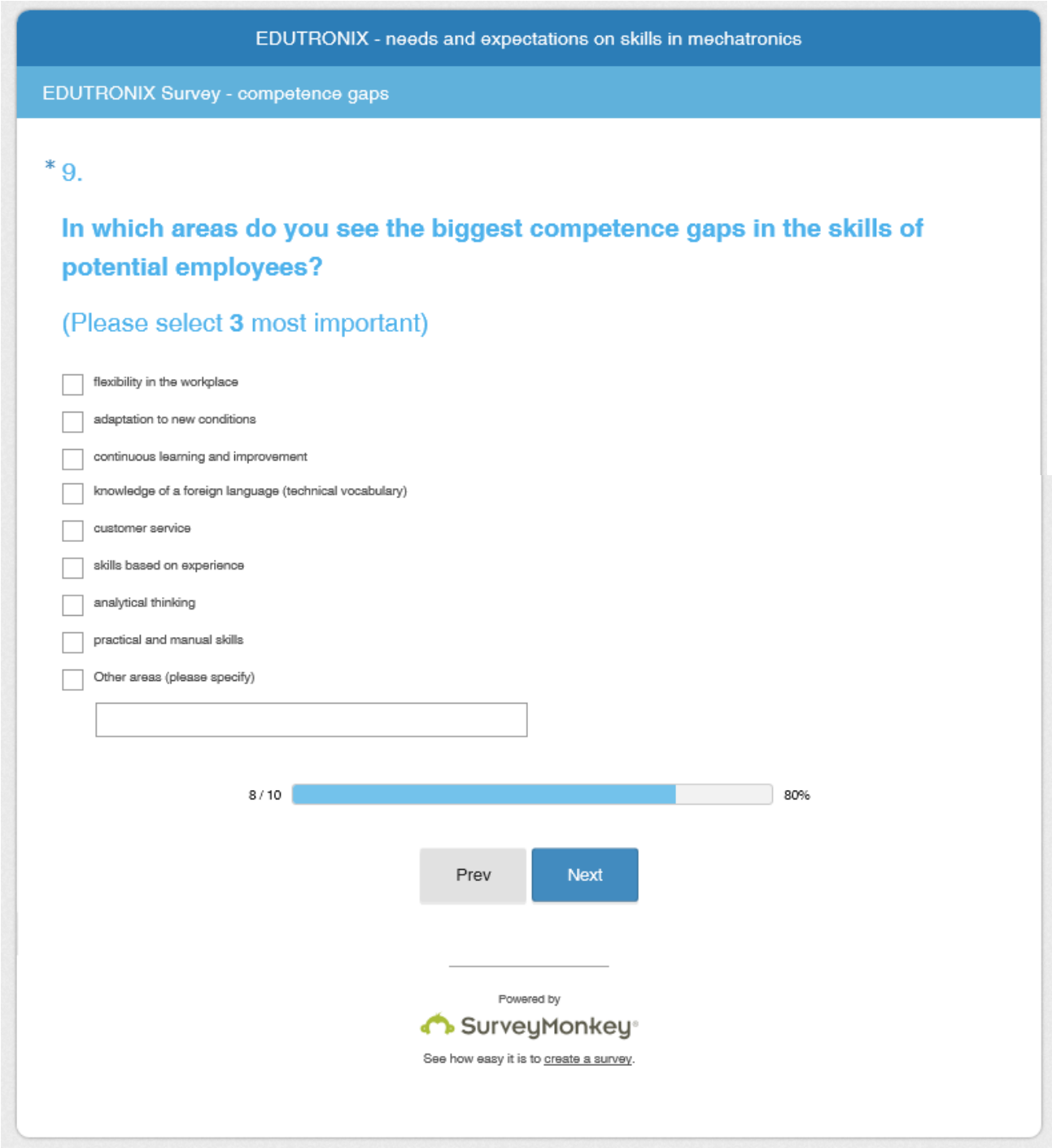
See how easy it is to create a survey.


EDUTRONIX - needs and expectations on skills in mechatronics
EDUTRONIX Survey - competence gaps
* 9.
In which areas do you see the biggest competence gaps in the skills of potential employees?
(Please select 3 most important)
flexibility in the workplace
adaptation to new conditions
continuous learning and improvement
knowledge of a foreign language (technical vocabulary)
customer service
skills based on experience
analytical thinking
practical and manual skills
Other areas (please specify)
8 / 10
80%
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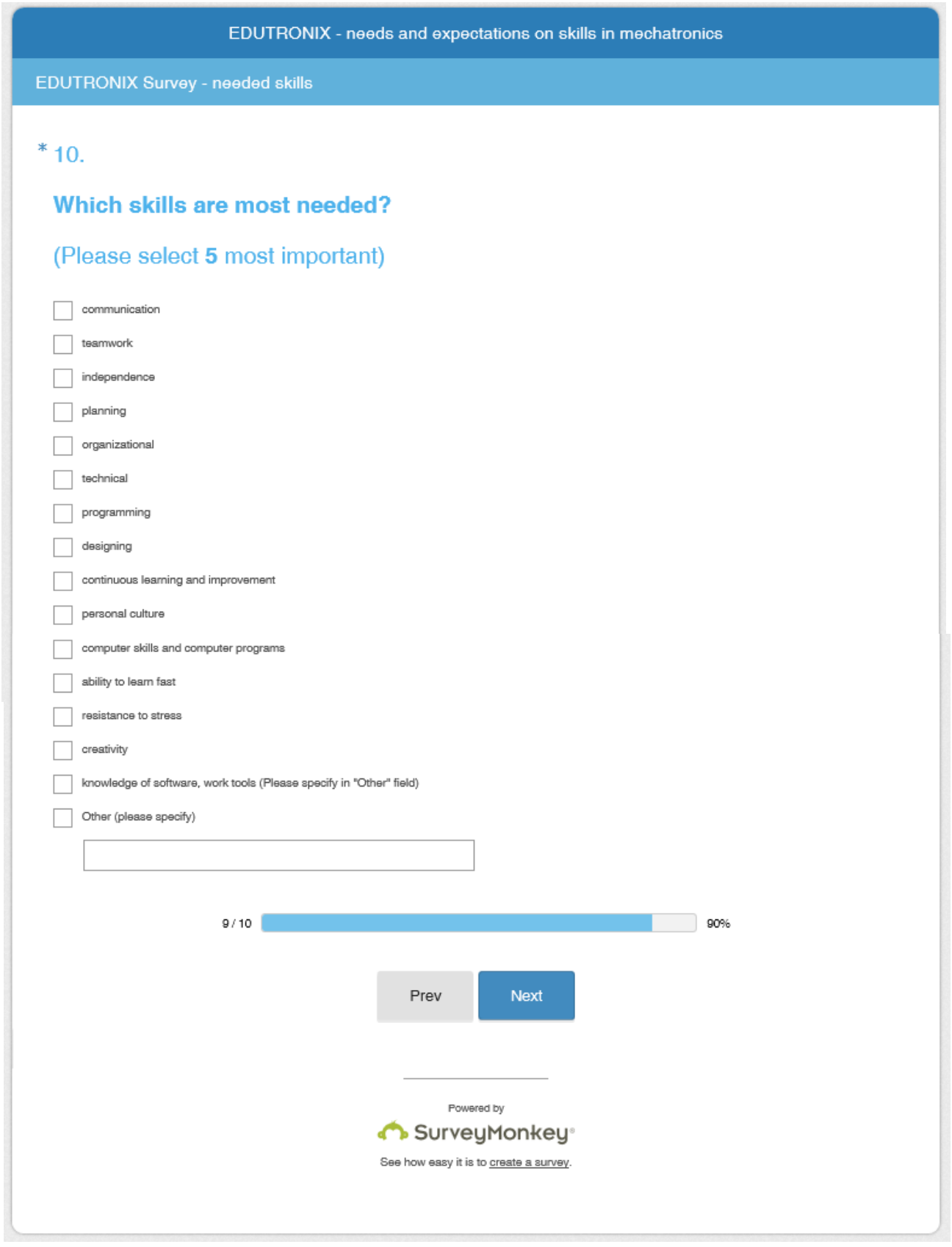
EDUTRONIX - needs and expectations on skills in mechatronics
EDUTRONIX Survey - needed skills
* 10.
Which skills are most needed?
(Please select 5 most important)
communication
teamwork
independence
planning
organizational
technical
programming
designing
continuous learning and improvement
personal culture
computer skills and computer programs
ability to learn fast
resistance to stress
creativity
knowledge of software, work tools (Please specify in "Other" field)
Other (please specify)
9 / 10
90%
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Powered by
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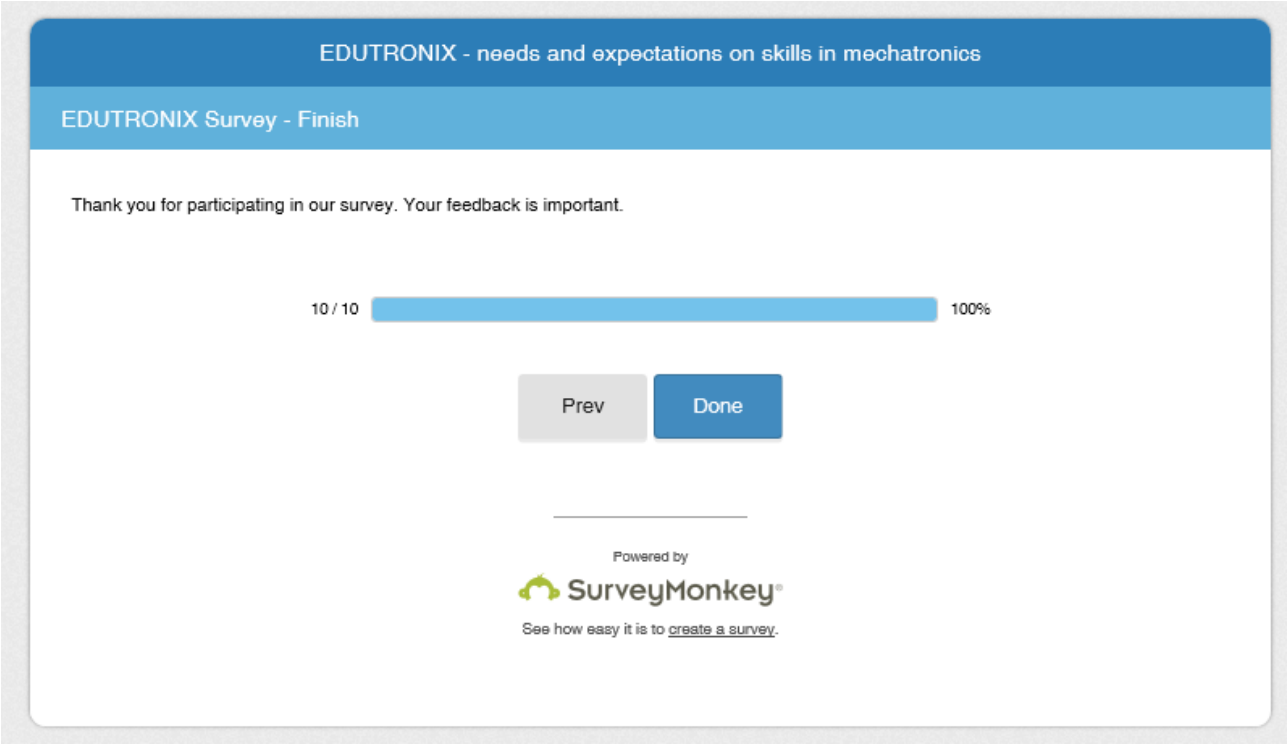
See how easy it is to create a survey.




That were all the tools and channels used for collecting data from entrepreneurs. According to all those feedbacks we can create an overview for global trends by viewing results across all responses from three different countries.

We could also dive into individual responses to view details of them or slice and dice our results, and create multiple views of the data collected – also in graphs presented in Chapter 3.

Switching between custom filters using robust comparison reporting made it possible to make in-depth analysis of the entrepreneurs needs especially relevant and possible to teach and develop by creating EDUTRONIX – an Interactive module for teaching mechatronics, which we personally hope will be a success story.

## LIST OF COMPANIES

The tools and channels for collecting data for report are important, but even more relevant in Intellectual Output No 3 were the target groups for sharing those tools and receiving a good quality feedback.

In Intellectual Output No 3 we are meant to project a possible EDUTRONIX model use in enterprises so making it without involvement of entrepreneurs itself were impossible. Please note that a key issue is not about “using” model inside of those companies in regular workday, but using a model to give skills and competences for future employees of those companies.

Creating a list of companies became a next issue as selecting them from all of the companies operating on 3 different markets were really a hard task.

At first the companies were sorted according to the field, branch or industry they were operating on. Then we need to create a short list for making the survey targeted only for the branches where mechatronics might be already in a use on regular basis or might be useful on the production lines in the future. It made clear that most of the companies need not to be micro or small, as the costs of implementation or use of mechatronic devices in the company is quite high. Than we created a short list where contact data (from secretaries to the Chairman of the boards) becabe a real issue, so we started creating a database of companies in 3 countries operating or having something already in common with mechatronics with all the relevant contacts and people responsible or kind enough to give us a good quality feedback from the tools already created and described in the first Chapter.

Partners created a short list basing also on their own knowledge about potential of the companies. Please note that companies in corresponding countries are from the same or neighboring cities of the partners in the consortium. It made possible to visit them with questionnaires, make easier contact with them via phone on the first contact or just be sure that it really is a company which might be giving a real feedback instead of filing out “just another” survey.

Lists were constantly updated in the process of creation during half a year period of work over the IO3 and even now after the report some of the companies were asking for a possibility to have an influence on the quality of the workforce they might operate with in the future. Some of the companies in Spain and in Poland – those where we had an opportunity to be personally giving the questions and creating a survey answers live with the representatives of those companies were really surprised that “finally somebody except them [entrepreneurs] is thinking about how to create a good employer”.

Companies are presented in the report as they were created in the process by every partner, so a slight differences or national language might occur. Branches were chosen by partner according to the local market and are also related with specific of those regions represented by every partner in the strategic partnership. Those lists originally included also a contact and personal data which should not be published so they were cut-out globally from all the lists for the purpose of presenting them in the report.

Please find the lists of the companies selected for collecting data in corresponding partner countries below:

List of companies in Spain contacted to determine needs and expectations toward EDUTRONIX:

| | Cuenta | POBLACION | PROVINCIA | Sector de Referencia |
|---|---|---|---|---|
| 1 | AJAC, S.C.C.L. | Mollet del Valles | BARCELONA | Toys |
| 2 | ALBERO, VILAPLANA Y CIA, S.L. | Ibi | ALICANTE | Toys |
| 3 | AMAYA SPORT, S.L. | Noain | NAVARRA | Toys |
| 4 | ANGEL TOMAS, S.A. - ATOSA | Santomera | MURCIA | Toys |
| 5 | ARTE MODEL, S.L. | Onil | ALICANTE | Toys |
| 6 | ARTESANIA BEATRIZ, S.L. | Castalla | ALICANTE | Toys |
| 7 | ARTSANA SPAIN, S.A.U. | Alcorcon | MADRID | Toys |
| 8 | ASCA BRINQUEDOS LTDA | Brasil | SAO PAULO | Toys |
| 9 | ASIVIL, S.L. | Onil | ALICANTE | Toys |
| 10 | ASTRO EUROPA, S.L. | Paterna | VALENCIA | Toys |
| 11 | BARATIJAS RUIZ, S.L. | Zaragoza | ZARAGOZA | Toys |
| 12 | BARRUTOYS IBERIA, S.L. | Terrassa | BARCELONA | Toys |
| 13 | BERJUAN, S.L. | Onil | ALICANTE | Toys |
| 14 | BULLYCAN, S.A. | Naquera | VALENCIA | Toys |
| 15 | CARTAMUNDI ESPAÑA, S.L. | La Roca del Valles | BARCELONA | Toys |
| 16 | CEPILLOS LOZANO, S.L | Mostoles | MADRID | Toys |
| 17 | CIFE SPAIN BUSINESS, S.L | Madrid | MADRID | Toys |
| 18 | CLADELLAS IMPORT, S.L. | Sta. Eulalia de Ronçana | BARCELONA | Toys |
| 19 | CLAUDIO REIG, S.L. | Ibi | ALICANTE | Toys |
| 20 | CREACIONES LLOPIS, S.L. | Banyeres | ALICANTE | Toys |
| 21 | D´ NENES DISEÑO, S.L. | Onil | ALICANTE | Toys |
| 22 | DEMARE TOYS, S.L. | Ibi | ALICANTE | Toys |
| 23 | DIGITAL BOOMONS, S.L. | Paracuellos de Jarama | MADRID | Toys |
| 24 | DINOVA, S.A. | Madrid | MADRID | Toys |
| 25 | DISET, S.A. | Barcelona | BARCELONA | Toys |
| 26 | EDUCA BORRAS, S.A.U | Sant Quirze del Valles | BARCELONA | Toys |
| 27 | EUROJUGUETES, S.L. | Riba-Roja de Turia | VALENCIA | Toys |
| 28 | FABRICA DE JUGUETES, S.L.U | Ibi | ALICANTE | Toys |
| 29 | FABRICAS AGRUPADAS DE MUÑECAS | Alicante | ALICANTE | Toys |
| 30 | FUNIGLOBAL DEVELOPMENT, S.L. | Cuarte | HUESCA | Toys |
| 31 | GAME-MOVIL, S.L. | Ibi | ALICANTE | Toys |
| 32 | GAMES PICO PAO, S.L | Villaralbo | ZAMORA | Toys |
| 33 | GARCIA FIESTAS, S.L. | Ibi | ALICANTE | Toys |
| 34 | GENERAL DE JUGUETES, S.A. | Villamayor | ASTURIAS | Toys |
| 35 | GIOCHI PREZIOSI | Sant Joan Despi | BARCELONA | Toys |
| 36 | GLOBAL IMPORT TOYS, S.L. | Sabadell | BARCELONA | Toys |
| 37 | GLOBOLANDIA, S.L. | Espinardo | MURCIA | Toys |
| 38 | GLOP GAMES, S.L.U | Madrid | MADRID | Toys |
| 39 | GONHER, S.A. | Ibi | ALICANTE | Toys |
| 40 | GUARDIAN PRODUCTS AND PROMOTIONS, S.L. | Vitoria-Gasteiz | ALAVA | Toys |
| 41 | GUISVAL, S.A. | Ibi | ALICANTE | Toys |
| 42 | HASBRO IBERIA, S.L. | Xirivella | VALENCIA | Toys |
| 43 | HERMANOS REGIDOR, C.B. | Castalla | ALICANTE | Toys |
| 44 | HERMEX IBERICA, S.L. | Sabadell | BARCELONA | Toys |
| 45 | HIJOS DE JOAQUIN DOMENECH, S.L | Guadassuar | VALENCIA | Toys |
| 46 | IBB AUTO RACING, S.L. | Odena - Igualada | BARCELONA | Toys |
| 47 | IMAGINARIUM, S.A. | Zaragoza | ZARAGOZA | Toys |
| 48 | IMC TOYS, S.A. | Terrassa | BARCELONA | Toys |
| 49 | INDUSTRIA AUXILIAR JUEMA, S.L. | Onil | ALICANTE | Toys |
| 50 | INDUSTRIAL JUGUETERA, S.A. | Ibi | ALICANTE | Toys |

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|---|---|---|---|---|
| 51 | INDUSTRIAL VERBENERA | Castellon | CASTELLON | Toys |
| 52 | INDUSTRIAS FALCA, S.L.U | Onil | ALICANTE | Toys |
| 53 | INDUSTRIAS PLASTICAS JISA, S.A | Cortes De Aragon | TERUEL | Toys |
| 54 | INSUMOS MUÑEQUEROS SA DE CV | Azcapotzalco | DISTRITO FEDERAL | Toys |
| 55 | INTERDIDAK, S.L. | La Eliana | VALENCIA | Toys |
| 56 | ITEM INTERNATIONAL S.A. | Castellbisbal | BARCELONA | Toys |
| 57 | JC TOYS SPAIN, S.L. | Castalla | ALICANTE | Toys |
| 58 | JOGUINERS AGRUPATS DE CATALUNYA | Mollet del Valles | BARCELONA | Toys |
| 59 | JOPI, S.L. | Onil | ALICANTE | Toys |
| 60 | JORDI SOLER PRIM | Cabanes | GERONA | Toys |
| 61 | JOVI, S.A. | Rubi | BARCELONA | Toys |
| 62 | JUAN ENRIQUE VIDAL ABAD | Ibi | ALICANTE | Toys |
| 63 | JUAN MIGUEL MARIN CRIADO | Castellon | CASTELLON | Toys |
| 64 | JUGUETES BERNA, S.L. | Onil | ALICANTE | Toys |
| 65 | JUGUETES CAYRO, S.L. | Denia | ALICANTE | Toys |
| 66 | JUGUETES DYAL, S.L. | Tibi | ALICANTE | Toys |
| 67 | JUGUETES FALOMIR, S.A. | La Eliana | VALENCIA | Toys |
| 68 | JUGUETES INDUSTRIALES, S.A. | Ibi | ALICANTE | Toys |
| 69 | JUGUETES MAYBRO, S.L. | Castalla | ALICANTE | Toys |
| 70 | JUGUETES PASTOR, S.L | Finestrat | ALICANTE | Toys |
| 71 | JUGUETES PICO, S.L. | Ibi | ALICANTE | Toys |
| 72 | JUGUETES ROMAN, S.A. | Ibi | ALICANTE | Toys |
| 73 | JUGUETES Y BARATIJAS MARTINEZ, S.L. | Castellon | CASTELLON | Toys |
| 74 | JUGUETES Y PELUCHES SANCHIS, S.A. | Alicante | ALICANTE | Toys |
| 75 | LAMAGIK, S.L | Onil | ALICANTE | Toys |
| 76 | LEGO, S.A. | Madrid | MADRID | Toys |
| 77 | LIMIT SPORT, S.L. | Onil | ALICANTE | Toys |
| 78 | LONDJI, S.L. | Banyoles | GIRONA | Toys |
| 79 | LUDILO, S.L. | Riba-Roja de Turia | VALENCIA | Toys |
| 80 | M. LLORENS JUAN, S.L. | Onil | ALICANTE | Toys |
| 81 | MANUFACTURA ARTESANIA ESPAÑOLA, S.L. - M.A.E. | Beniparrell | VALENCIA | Toys |
| 82 | MARCOS TOYS, S.L. | Riba-Roja de Turia | VALENCIA | Toys |
| 83 | MASGAMES ACTIVE TOYS, S.L. | Parets del Valles | BARCELONA | Toys |
| 84 | MASTER GIFT IMPORT, S.L. | Ronda | MALAGA | Toys |
| 85 | MATERIAL EDUCATIVO HENBEA, S.L | Moralzarzal | MADRID | Toys |
| 86 | MATTEL ESPAÑA, S.A. | Barcelona | BARCELONA | Toys |
| 87 | MI REFUGIO INFANTIL, S.L. | La Zubia | GRANADA | Toys |
| 88 | MINILAND, S.A. | Onil | ALICANTE | Toys |
| 89 | MISTRAL ENTERPRISE, S.L. | Almensilla | SEVILLA | Toys |
| 90 | MOLTO Y CIA, S.A. | Ibi | ALICANTE | Toys |
| 91 | MUNDIAL IMPORT, S.L. | Viladecans | BARCELONA | Toys |
| 92 | MUÑECAS ANTONIO JUAN, S.L. | Onil | ALICANTE | Toys |
| 93 | MUÑECAS ARIAS, S.L. | Castalla | ALICANTE | Toys |
| 94 | MUÑECAS BERBESA, S.L. | Onil | ALICANTE | Toys |
| 95 | MUÑECAS PAOLA, S.L. | Onil | ALICANTE | Toys |
| 96 | MUÑECAS RAUBER, S.L. | Onil | ALICANTE | Toys |
| 97 | MUÑECAS SAICA, S.L. | Onil | ALICANTE | Toys |
| 98 | NAIPES HERACLIO FOURNIER, S.A. | Legutiano | ALAVA | Toys |
| 99 | NARDIL, S.L. | Oiarzun | GUIPUZCOA | Toys |
| 100 | OLMITOS, S.A. | Mogente | VALENCIA | Toys |
| 101 | P & L OCIOTRENDS, S.L. | Castalla | ALICANTE | Toys |
| 102 | PALAU HERMANOS, S.L. | Ibi | ALICANTE | Toys |
| 103 | PANRE, S.L. | Castalla | ALICANTE | Toys |
| 104 | PEPRI, S.L. | Ibi | ALICANTE | Toys |
| 105 | PLANET GAMES, S.L. | Castelldefels | BARCELONA | Toys |
| 106 | PLASTIGAMAR, S.A. DE C.V. | Cuernavaca | MORELOS | Toys |

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|---|---|---|---|---|
| 107 | PLAYMOBIL - IBERICA, S.A.U. | Onil | ALICANTE | Toys |
| 108 | R.A.M. ROGEL CREACIONES, S.L | Onil | ALICANTE | Toys |
| 109 | ROBERTO GARCIA FIDALGO | Donostia-San Sebastian | GUIPUZCOA | Toys |
| 110 | ROMA JENSEN INDUSTRIA E COMÉRCIO LTD | Laranjal Paulista | SAO PAULO | Toys |
| 111 | SANTOS IMPORT, S.L. | Goian | PONTEVEDRA | Toys |
| 112 | SERVIC. E IND.DEL JUGUETE, S.A. | Alicante | ALICANTE | Toys |
| 113 | SIMBA ESPAÑA, S.A. | Madrid | MADRID | Toys |
| 114 | SMOBY TOYS ESPAÑA, S.L. | Ribarroja del Turia | VALENCIA | Toys |
| 115 | SUCESORES VDA. E. | Olot | GIRONA | Toys |
| 116 | SUMO DIDACTIC S.L. | Terrasa | BARCELONA | Toys |
| 117 | T.PLANET SHOPS, S.L. | Paterna | VALENCIA | Toys |
| 118 | TEB BARCELONA, SCCL. | Barcelona | BARCELONA | Toys |
| 119 | THE DOLL FACTORY EUROPE, S.L. | Onil | ALICANTE | Toys |
| 120 | TOIM, S.L. | Toledo | TOLEDO | Toys |
| 121 | TOINSA HIPERREGALOS, S.L. | Galapagar | MADRID | Toys |
| 122 | TOP TOYS VENDES I SERVEIS, S.L. | Les Franqueses del Valles | BARCELONA | Toys |
| 123 | TOYS SERVICE, S.L. | Sant Miquel de Balenya-Seva | BARCELONA | Toys |
| 124 | UNICE TOYS, S.L | Villatuerta | NAVARRA | Toys |
| 125 | VICAM TOYS, S.L. | Biar | ALICANTE | Toys |
| 126 | VICTORIA PARTY, S.L.U. | Zaragoza | ZARAGOZA | Toys |
| 127 | VIPAR, S.L. | Onil | ALICANTE | Toys |
| 128 | VTECH ELECTROCNICS EUROPE S.L. | Las Mercedes | MADRID | Toys |
| 129 | WOD Y OTROS, S.L. | Segovia | SEGOVIA | Toys |
| 130 | YTRES ASSEMBLY, S.L. | Aretxabaleta | GUIPUZCOA | Toys |
| 131 | YUHUHUGS, LLC | Miami Florida | MIAMI FLORIDA | Toys |

List of companies in Italy contacted to determine needs and expectations toward EDUTRONIX:

| | Ragione sociale | Comune Operativa | Nazione | Settore merceologico |
|---|---|---|---|---|
| 1 | A.E.B. SPA a Socio Unico | Cavriago | Italia | Metalmeccanica |
| 2 | A.L. ELETTRONICA SRL | Reggio Emilia | Italia | Meccatronica |
| 3 | ADEL SYSTEM SRL | Reggio Emilia | Italia | Metalmeccanica |
| 4 | AMA SPA | San Martino in Rio | Italia | Meccatronica |
| 5 | ARAG SRL CON SOCIO UNICO | Rubiera | Italia | Gomma Plastica |
| 6 | ARGO TRACTORS SPA | Fabbrico | Italia | Meccatronica |
| 7 | ASK INDUSTRIES SPA | Quattro Castella | Italia | Metalmeccanica |
| 8 | ASOTECH SRL | Sant'ilario d'Enza | Italia | Terziario |
| 9 | B810 SRL | Reggio Emilia | Italia | Terziario |
| 10 | BEMA SRL | Viano | Italia | Meccatronica |
| 11 | BENEVELLI SRL | Rubiera | Italia | Metalmeccanica |
| 12 | BETT SISTEMI SRL | Correggio | Italia | Gomma Plastica |
| 13 | BINACCHI SRL | Luzzara | Italia | Metalmeccanica |
| 14 | BOSCH REXROTH OIL CONTROL SPA | Reggio Emilia | Italia | Metalmeccanica |
| 15 | BREVINI FLUID POWER SPA | Reggio Emilia | Italia | Metalmeccanica |
| 16 | BREVINI POWER TRANSMISSION SPA | Reggio Emilia | Italia | Metalmeccanica |
| 17 | BUCHER HYDRAULICS SPA | Reggio Emilia | Italia | Metalmeccanica |
| 18 | C.O.B.O. SPA | Cadelbosco di Sopra | Italia | Meccatronica |
| 19 | CALF SPA | Montecchio Emilia | Italia | Metalmeccanica |

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|---|---|---|---|---|
| 20 | CLEVERTECH SRL | Cadelbosco di Sopra | Italia | Metalmeccanica |
| 21 | COMER INDUSTRIES SPA | Reggiolo | Italia | Metalmeccanica |
| 22 | CORGHI SPA | Correggio | Italia | Metalmeccanica |
| 23 | CRI-MAN SRL | Correggio | Italia | Metalmeccanica |
| 24 | DANFOSS POWER SOLUTIONS SRL | Reggio Emilia | Italia | Metalmeccanica |
| 25 | DIECI SRL | Montecchio Emilia | Italia | Metalmeccanica |
| 26 | DINO PAOLI SRL | Reggio Emilia | Italia | Meccatronica |
| 27 | DONELLI DI.MA.F. SPA | Poviglio | Italia | Metalmeccanica |
| 28 | ELETTRIC 80 SPA Unico Socio | Viano | Italia | Metalmeccanica |
| 29 | ELLEK AUTOMAZIONI SRL | Scandiano | Italia | Metalmeccanica |
| 30 | EMAK SPA | Bagnolo in Piano | Italia | Metalmeccanica |
| 31 | F.M. SRL | Correggio | Italia | Metalmeccanica |
| 32 | FABER-COM SRL | Poviglio | Italia | Metalmeccanica |
| 33 | FIVES OTO SPA | Boretto | Italia | Meccatronica |
| 34 | FLUID PRESS SPA | Albinea | Italia | Metalmeccanica |
| 35 | FONTANI & LASAGNI SRL | Reggio Emilia | Italia | Metalmeccanica |
| 36 | GALILEO ENGINEERING SRL | Reggio Emilia | Italia | Terziario |
| 37 | GHEPI SRL a Socio Unico | Cavriago | Italia | Gomma Plastica |
| 38 | GORRERI SRL | Brescello | Italia | Metalmeccanica |
| 39 | GRASSELLI SPA | Albinea | Italia | Meccatronica |
| 40 | HYDROCONTROL SPA - BU CAVRIAGO (RE) | Cavriago | Italia | Metalmeccanica |
| 41 | IMAX SRL UNIPERSONALE | Reggio Emilia | Italia | Sistema Moda |
| 42 | INTERPULS SPA | Albinea | Italia | Metalmeccanica |
| 43 | KAITEK SRL | Sant'ilario d'Enza | Italia | Metalmeccanica |
| 44 | LANDI RENZO SPA | Cavriago | Italia | Meccatronica |
| 45 | LODI SPA | Fabbrico | Italia | Metalmeccanica |
| 46 | LOMBARDINI SRL A SOCIO UNICO | Reggio Emilia | Italia | Meccatronica |
| 47 | META SYSTEM SPA | Reggio Emilia | Italia | Meccatronica |
| 48 | MOSS SRL | Reggio Emilia | Italia | Metalmeccanica |
| 49 | MOTOR POWER COMPANY SRL | Castelnovo di Sotto | Italia | Metalmeccanica |
| 50 | NEM SRL | Quattro Castella | Italia | Metalmeccanica |
| 51 | O.M.P. SRL A SOCIO UNICO | San Martino in Rio | Italia | Metalmeccanica |
| 52 | OGNIBENE POWER SPA | Reggio Emilia | Italia | Metalmeccanica |
| 53 | P.A. SPA | Rubiera | Italia | Meccatronica |
| 54 | PRESTON & BARBIERI SRL | Reggio Emilia | Italia | Meccatronica |
| 55 | Q&O CONSULTING SRL | Reggio Emilia | Italia | Terziario |
| 56 | RAIL SRL | Vezzano sul Crostolo | Italia | Metalmeccanica |
| 57 | RE:Lab SRL | Reggio Emilia | Italia | Terziario |
| 58 | REDOX SRL | Reggio Emilia | Italia | Metalmeccanica |
| 59 | REGGIANA RIDUTTORI SRL | San Polo d'Enza | Italia | Metalmeccanica |
| 60 | ROVATTI A. & FIGLI POMPE SPA | Fabbrico | Italia | Metalmeccanica |
| 61 | SALVARANI SRL | Poviglio | Italia | Metalmeccanica |
| 62 | SICAM SRL Società Unipersonale | Correggio | Italia | Meccanica avanzata |
| 63 | SITRONIC SRL | Montecchio Emilia | Italia | Metalmeccanica |
| 64 | STAD SRL | Scandiano | Italia | Metalmeccanica |

| | | | | |
|---|---|---|---|---|
| 65 | TECNOVE SRL | Novellara | Italia | Metalmeccanica |
| 66 | TECO SRL | Correggio | Italia | Metalmeccanica |
| 67 | VIMEC SRL | Luzzara | Italia | Meccatronica |
| 68 | VIMI FASTENERS SPA | Novellara | Italia | Metalmeccanica |
| 69 | WALVOIL SPA | Reggio Emilia | Italia | Meccatronica |
| 70 | XBW SRL | Reggio Emilia | Italia | Metalmeccanica |
| 71 | XION TECHNOLOGY SRL | Scandiano | Italia | Metalmeccanica |
| 72 | ZIVAN SRL | Poviglio | Italia | Metalmeccanica |

List of companies in Poland contacted to determine needs and expectations toward EDUTRONIX:

| | **Nazwa firmy do ankietowania:** | **Miejscowość** | **Kraj** | **Sektor** |
|---|---|---|---|---|
| 1 | *A+ Ceramics Sp. z o.o.* | *Białystok* | *Poland* | *Ceramics* |
| 2 | *AC Spółka Akcyjna* | *Białystok* | *Poland* | *Motor mech.* |
| 3 | *AGRO-WIKT Sp. z o.o.* | *Opoczno* | *Poland* | *Agriculture* |
| 4 | *AGWO SERWIS* | *Suwałki* | *Poland* | *Mechanic* |
| 5 | *ALEX Sp. z o.o.* | *Kleosin* | *Poland* | *Mechanic* |
| 6 | *Aluss Sp. z o.o.* | *Białystok* | *Poland* | *Mechanic* |
| 7 | *APS S.A.* | *Białystok* | *Poland* | *Automation* |
| 8 | *ASPI Sp. z o.o. Sp. kom.* | *Suwałki* | *Poland* | Mechanic |
| 9 | *AUTO-TECH* | *Czerwin* | *Poland* | Mechanic |
| 10 | *BALTRAS Monika Kiełczewska* | *Grajewo* | *Poland* | Mechanic |
| 11 | *BENDEX Sp. z o.o. Sp.k.* | *Wasilków* | *Poland* | Mechanic |
| 12 | *BIASONA Marek Bruzgo* | *Sokółka* | *Poland* | Mechanic |
| 13 | *BIASTAL Rafał Sadowski* | *Biała Podlaska* | *Poland* | Mechanic |
| 14 | *BUDRAD POLSKA Sp. z o.o.* | *Tykocin* | *Poland* | Mechanic |
| 15 | *ChM sp. z o.o.* | *Juchnowiec Kośc.* | *Poland* | Mechanic |
| 16 | *CONTRACTUS Sp. z o.o.* | *Sokółka* | *Poland* | *Agriculture* |
| 17 | *Danwood S.A.* | *Bielsk Podlaski* | *Poland* | *Wood* |
| 18 | *DEMEX PPH Jerzy Demiańczuk* | *Augustów* | *Poland* | Mechanic |
| 19 | ECOTECH Sp.z o.o. | Czarna Biał. | *Poland* | Mechanic |
| 20 | *EDBAK Sp. z o.o.* | *Strzyżewice* | *Poland* | Mechanic |
| 21 | *FABER-CNC Marcin Winnicki* | *Włocławek* | *Poland* | Mechanic |
| 22 | *FERROX Sp. z o.o.* | *Białystok* | *Poland* | *Intalation* |
| 23 | GONER STEEL Sp. z o.o. | Białystok | *Poland* | Mechanic |
| 24 | *HANBUD Henryk Pruszyński* | *Bielsk Podlaski* | *Poland* | *Construction* |
| 25 | *Instytut Innowacji i Kreatywności Sp. z o.o.* | *Suwałki* | *Poland* | *IOB* |
| 26 | *INTRATEL Sp. z o.o.* | *Białystok* | *Poland* | *ICT* |
| 27 | *INWEST-PRODUKT Hankowska Godlewski Kuryś Sp.J.* | *Białystok* | *Poland* | Mechanic |
| 28 | *JAZON Sp. z o.o.* | *Białystok* | *Poland* | Mechanic |
| 29 | *JOBIMET ZPHU Józef Bardłowski* | *Zaścianki* | *Poland* | Mechanic |
| 30 | *KarT Sp. z o.o.* | *Białystok* | *Poland* | Mechanic |
| 31 | *KEY COMPANY Sp. z o.o.* | *Zaścianki* | *Poland* | Mechanic |
| 32 | *KOLNEX Zajko i Wspólnicy Sp. z o.o.* | *Białystok* | *Poland* | Mechanic |
| 33 | *KOTNIZ - Zdzisław Nietupski* | *Zaścianki* | *Poland* | Mechanic |

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|---|---|---|---|---|
| 34 | *LIT Jacek Wojtkowski* | *Białystok* | *Poland* | Mechanic |
| 35 | *MALOW Sp. z o.o.* | *Suwałki* | *Poland* | *Metal* |
| 36 | *MEDGAL Sp. z o.o.* | *Białystok* | *Poland* | Mechanic |
| 37 | *METAL-FACH Jacek Kucharewicz* | *Sokółka* | *Poland* | Mechanic |
| 38 | *METAL-FACH Sp. z o.o.* | *Sokółka* | *Poland* | Mechanic |
| 39 | *MICHAŁ ZPUH* | *Wys. Maz.* | *Poland* | *Agriculture* |
| 40 | *NEOTECH Sp. z o.o.* | *Białystok* | *Poland* | *ICT* |
| 41 | *Polinvest Sp. z o.o.* | *Zaścianki* | *Poland* | Mechanic |
| 42 | *POM Augustów Sp. z o.o.* | *Augustów* | *Poland* | Mechanic |
| 43 | *PROMOSTAL Sp. z o.o. Sp.k.* | *Czarna Biał.* | *Poland* | Mechanic |
| 44 | *PROMOTECH Sp. z o.o.* | *Białystok* | *Poland* | *Metalworks* |
| 45 | *PROMOTECH-KM Sp. z o.o.* | *Łapy* | *Poland* | Mechanic |
| 46 | *Pronar Sp. z o.o.* | *Narew* | *Poland* | Mechanic |
| 47 | *SALAG Sp. z o.o.* | *Suwałki* | *Poland* | Mechanic |
| 48 | *SaMASZ Sp. z o.o.* | *Białystok* | *Poland* | Mechanic |
| 49 | SKR Janów | Janów | *Poland* | Mechanic |
| 50 | *Spółdzielnia Mleczarska MLEKOVITA* | *Wys. Maz.* | *Poland* | *Milk* |
| 51 | Stolarski TECH Sp. z o.o. | Białystok | *Poland* | Mechanic |
| 52 | *SZYBAS Grzegorz Dębowski* | *Łomża* | *Poland* | Mechanic |
| 53 | *T-Matic Computer Plus Sp. z o.o.* | *Białystok* | *Poland* | *ICT* |
| 54 | *TOCK - AUTOMATYKA Krzysztof Toczydłowski* | *Białystok* | *Poland* | Mechanic |
| 55 | TOMSTEEL | Białystok | *Poland* | Mechanic |
| 56 | *WHITE HILL SOFTWARE* | *Białystok* | *Poland* | *ICT* |
| 57 | *ZAKŁAD OBRÓBKI SKRAWANIEM DARMET Sp. z o.o.* | *Białystok* | *Poland* | *Metalworks* |
| 58 | *ZAKREM Sp. z o.o.* | *Grajewo* | *Poland* | Mechanic |
| 59 | *ZAPROM Tomasz Pruszyński* | *Bielsk Podlaski* | *Poland* | Mechanic |

Nevertheless, all the efforts taken to contact all of them in some cases was not enough to reach a person inside of those companies who can or want to give us any feedback. That was one the reasons why an ICT tool with on-line survey was created to make it easier. In some cases, we receive just a few answers with no answers in other parts, what made a survey quite difficult to assess and almost impossible to compare with the others.

Totally we received 72 out of 262 full answers feedback made by 28 out of 131 asked companies from Spain, by 24 out of 72 Italian companies and 20 out of 59 companies from Poland. Feedback rate at the level of 27,48% gives over ¼ target group covered and can be considered as a high enough representative group for assessment. Please note that a feedback rate in Spain (21,37%) according to an Italian (33,33%) or Polish (33,90%) in most cases was justified, refused or might be ignored just because of a high awareness of competition in mechatronics on a global scale, mentioned in Introduction to this report, so should not be considered as having bad influence on final analysis of the surveys presented in summary in Chapter 4.

Despite the answers from the surveys we received from those companies also some key remarks which we think can be somehow solved also by our EDUTRONIX module and which are not directly connected with mechatronics, but still are an important issue influencing the labor market and quality of its workforce.

## THE RESULTS OF QUESTIONNAIRE (WITH THE GRAPHS)

The questionnaire created and presented, send or given for all 262 companies in 3 countries with success rate of good quality feedback from over ¼ of the respondents shows that problems related to the quality of the workforce on the market is forcing them to seek for new solutions and need their reaction instead of waiting for situation to change itself.

Most of the asked companies were reacting enthusiastically while they were given an introduction about the main goals and aim of the EDUTRONIX project. Some of them were even asking after filling a questionnaire what else can they do or how can they help (including themselves) to made available on the market more people with really needed skills, with good qualifications and with right attitude to work and toward tasks given by entrepreneur for his employees.

The respondents in face to face personal meetings while they were filling out the questionnaire for the project "EDUTRONIX – Interactive Education Module for Mechatronics" were also lured into in-depth discussion about general situation on the workforce market, about any specific needs of the particular branch or the company itself to have the best possible background despite just the bare answers from the survey.

The aim of the survey was to determine the needs and expectations of employers on skills of students and graduates of vocational schools in mechatronics field. All comments, even those from unfinished, partly finished or refused was useful and helpful for the team working on the Intellectual Output No 3 not only in the process of creation of the report, but we hope will also influence the implementation of the project, possibilities of the EDUTRONIX module as its main goal but also will benefit industry by reforming the vocational education system in the way the entrepreneur needs it to be.

The survey was made anonymous just to be sure that none of the companies which were really interested in the survey feedback and its influence on the market will not have a chance to use it against each other “by name” to try to find out who else is experiencing the same or similar problems or where are a week point of the competitive company. The statistics given within and by this report is a reflection of the market from a specific and very competitive part of it represented by large number of companies which knows each other either by competition or cooperation so the intention of the team working on the report was to help the market in general instead of helping any particular company providing them any sensitive data.

Questions given for the companies are described in this report one after another as they were asked to be answered by the companies’ representatives with some key issues described right after presenting the question and its feedback.

The project team and the scientists involved in the process of preparing, collecting, analyzing and summarizing the data would like to thank again very much for precious time of all of the companies which made an effort to invite us personally or to answer the survey in any way and give us a full feedback even with some additional comments which were very relevant to understand and describe the whole issue with the quality of the workforce on the labor market.

Please find all the questions feedback below:

**Question 1 was about which field/branch/industry your company belong to?**

Answered: 64 Skipped: 8

The answers were possible as a text field to fill in.

The answers given was a full spectrum of fields so it made us sure that we are not focusing only on a part of the market but on a wider group which represents a different points of view and can share with us a different deeds regarding their own branch on the same hand being crucial for the wider market.

The questionnaire was not made for helping any particular branch or industry (despite that most of the answers came from toy production branch as it was the main industry in the industrial zone in Spain where just most of the answers came from, so this question was not connected with all forthcoming or even was not obligatory to fill in so the number of answers does not equal the 72 given surveys and was not a question to determine whether the survey was considered as fully or partially answered.

Just for an overview of this spectrum of branches which were analyzed the given answers were as follows:

**15** x Toy industry

**9** x Toy factory

**9** x Mechanic

**7** x Metal industry

**4** x Plastic and artificial materials

**3** x Mechatronic

**3** x Metalwork

**3** x Communication

**2** x Agricultural machinery

**2** x Food industry

**2** x Agricultural machinery and equipment

**2** x Construction, building industry

**2** x Furniture industry

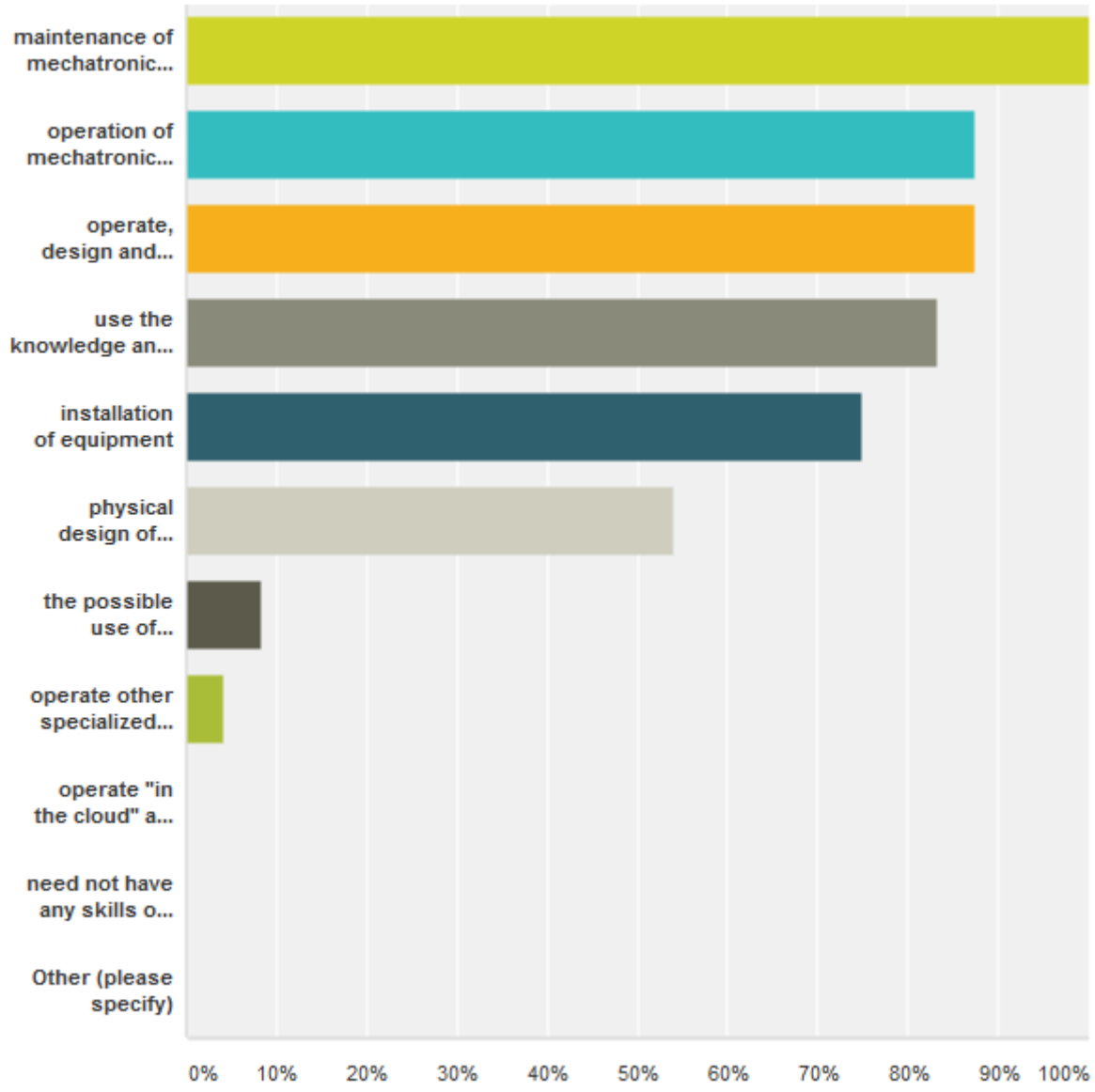
**1** x Furniture production

**Question 2 What skills and knowledge in the field of mechatronics should employee of your company have?** (Please select 5 most important)

Answered: 72 Skipped: 0 – as it was an obligatory to select 5 most important

The answers were possible as choosing exactly 5 most important skills and knowledge out of the list or defining other custom skills and knowledge needed in that particular company.

The graph showing the results:



| Answer Choices – | Responses – |
|---|---|
| – maintenance of mechatronic systems | 100.00% 72 |
| – operation of mechatronic devices and systems | 87.50% 63 |
| – operate, design and develop solutions in CAD and/or 3D programs | 87.50% 63 |
| – use the knowledge and skills for development of mechatronic devices and systems | 83.33% 60 |
| – installation of equipment | 75.00% 54 |
| – physical design of mechatronic devices and systems | 54.17% 39 |
| – the possible use of mechatronic devices and systems | 8.33% 6 |
| – operate other specialized computer programs (Please specify in "Other" field) | 4.17% 1 |
| – operate "in the cloud" and virtual designing | 0.00% 0 |
| – need not have any skills on the above subject | 0.00% 0 |
| – Responses Other (please specify) | 0.00% 0 |
| Total Respondents: 72 | |

As shown above 100% entrepreneurs indicated that one of the most important skills and knowledge required of employees is maintenance of mechatronic systems. It shows that employers look for people that know this.

Edutronix, as an educational module for teaching mechatronics, must include maintenance of mechatronic systems in order to meet labor market's demand. Most of the employers, that is 87,5%, also agree that operation of mechatronic devices and systems, as well as operation, design and development of solutions in CAD and/or 3D programs also belong to the most important skills and knowledge needed at their companies. Those should also be included in Edutronix as skills that are needed by companies.

Another required skill is the use of the knowledge and skills for development of mechatronic devices and systems which was indicated by 83,33% of entrepreneurs. Also installation of equipment was indicated as one of the most important skills. 75% of employers pointed its importance.

More than half of the entrepreneurs also look for people who know physical design of mechatronic devices and systems. Edutronix might take into account those skills as the ones that are sought by employers. Potential employees have to possess all of the skills mentioned above in order to get a job. Edutronix as an educational module for teaching mechatronics should include all of those skills and knowledge so that every student of mechatronics would be able to enter labor market with all required by employer skills and knowledge.

The possible use of mechatronic devices and systems, as well as operation of other specialized computer programs are indicated as important by less than 10% of businesspeople. It may mean that those skills are not essential which means that they are not as important as those that were mentioned before. The only skill that was not chosen by any company is operation "in the cloud" which makes it insignificant for employers. It also means that it is not necessary to include it into Edutronix module. None of the employers think that skills and knowledge in the field of mechatronics are not required in their companies, there were also no other skills mentioned.

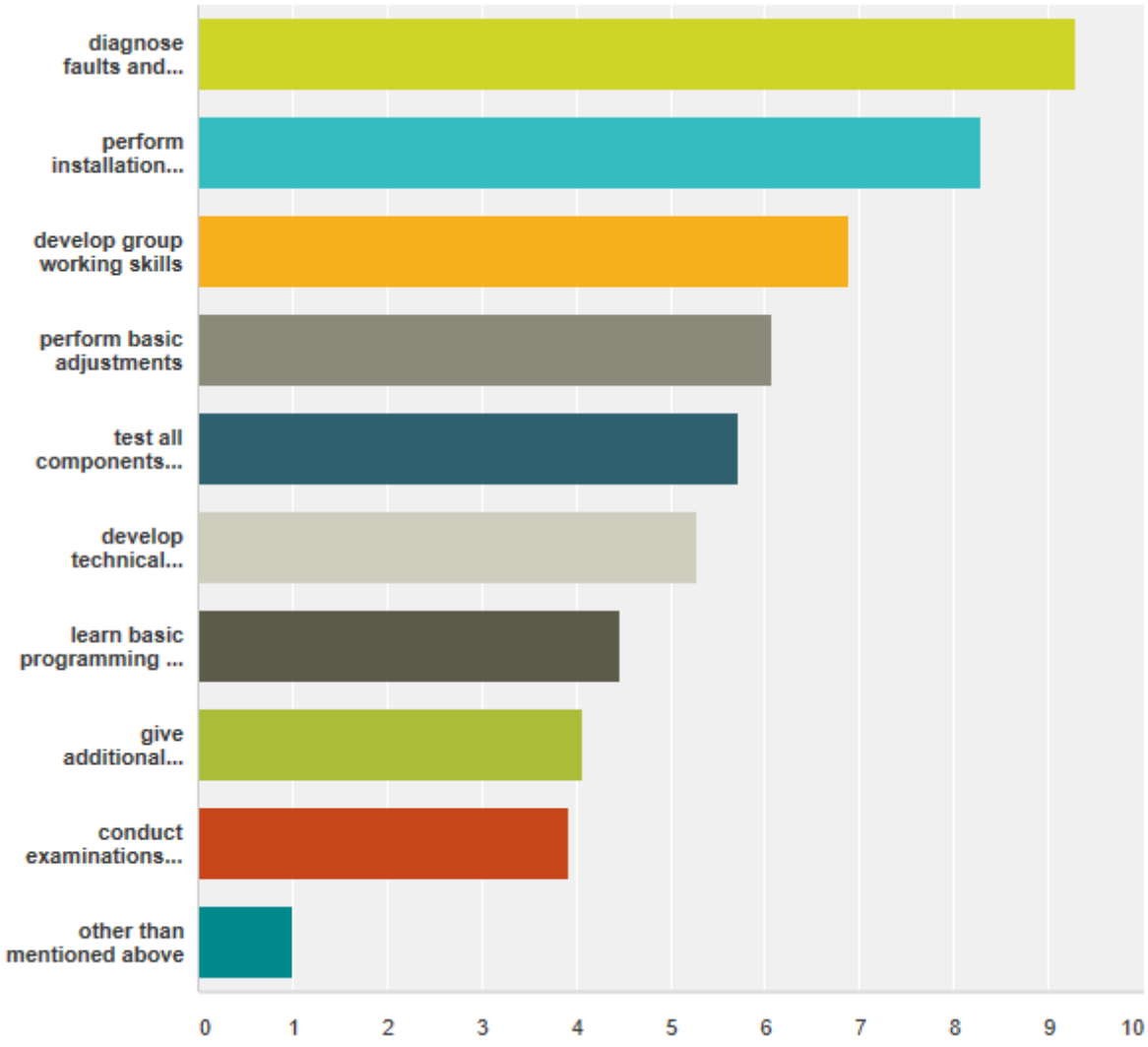
Entrepreneurs are mostly looking for employees that have skills and knowledge regarding maintenance of mechatronic systems; operation of mechatronic devices and systems; operation, design and development of solutions in CAD and/or 3D programs; use the knowledge and skills for development of mechatronic devices and systems; installation of equipment physical design of mechatronic devices and systems. Those skills should be also taught by Edutronix module.

**Question 3 Useful model to study mechatronics should meet the following requirements / allow to:** (Please arrange them in order: 1 - most important, 10 - least important)

Answered: 72 Skipped: 0 – as it was an obligatory to arrange all of them in order

The answers were possible as choosing an importance of every out of 10 mentioned functionalities important to teach skills and gain knowledge by the participants of the VET training during education processes.

The graph showing the results:



| – | 1 – | 2 – | 3 – | 4 – | 5 – | 6 – | 7 – | 8 – | 9 – | 10 – | Total – | Score – |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| – diagnose faults and their removal in the previously assembled mechatronic system | 33.33% 24 | 62.50% 45 | 4.17% 3 | 0.00% 0 | 0.00% 0 | 0.00% 0 | 0.00% 0 | 0.00% 0 | 0.00% 0 | 0.00% 0 | 72 | 9.29 |
| – perform installation of mechanical, electrical, electronic, pneumatic and hydraulic components | 33.33% 24 | 0.00% 0 | 33.33% 24 | 29.17% 21 | 4.17% 3 | 0.00% 0 | 0.00% 0 | 0.00% 0 | 0.00% 0 | 0.00% 0 | 72 | 8.29 |
| – develop group working skills | 0.00% 0 | 33.33% 24 | 0.00% 0 | 20.83% 15 | 16.67% 12 | 25.00% 18 | 4.17% 3 | 0.00% 0 | 0.00% 0 | 0.00% 0 | 72 | 6.88 |
| – perform basic adjustments | 33.33% 24 | 0.00% 0 | 0.00% 0 | 8.33% 6 | 12.50% 9 | 12.50% 9 | 0.00% 0 | 12.50% 9 | 20.83% 15 | 0.00% 0 | 72 | 6.08 |
| – test all components mentioned above individually and all together | 0.00% 0 | 0.00% 0 | 29.17% 21 | 25.00% 18 | 8.33% 6 | 4.17% 3 | 4.17% 3 | 16.67% 12 | 12.50% 9 | 0.00% 0 | 72 | 5.71 |
| – develop technical drawing reading/writing skills | 0.00% 0 | 4.17% 3 | 0.00% 0 | 16.67% 12 | 41.67% 30 | 4.17% 3 | 8.33% 6 | 20.83% 15 | 4.17% 3 | 0.00% 0 | 72 | 5.29 |
| – learn basic programming of programmable logic PLC controllers | 0.00% 0 | 0.00% 0 | 0.00% 0 | 0.00% 0 | 12.50% 9 | 29.17% 21 | 50.00% 36 | 8.33% 6 | 0.00% 0 | 0.00% 0 | 72 | 4.46 |
| – give additional qualifications e.g. energetic or other specific | 0.00% 0 | 0.00% 0 | 33.33% 24 | 0.00% 0 | 0.00% 0 | 0.00% 0 | 0.00% 0 | 8.33% 6 | 58.33% 42 | 0.00% 0 | 72 | 4.08 |
| – conduct examinations of professional competence/skills by school or entrepreneur | 0.00% 0 | 0.00% 0 | 0.00% 0 | 0.00% 0 | 4.17% 3 | 25.00% 18 | 33.33% 24 | 33.33% 24 | 4.17% 3 | 0.00% 0 | 72 | 3.92 |
| – other than mentioned above | 0.00% 0 | 0.00% 0 | 0.00% 0 | 0.00% 0 | 0.00% 0 | 0.00% 0 | 0.00% 0 | 0.00% 0 | 0.00% 0 | 100.00% 72 | 72 | 1.00 |

As shown above diagnose faults and their removal in the previously assembled mechatronic system is a key issue for entrepreneurs. Despite the fact that exactly 1/3 of other entrepreneurs choose performing installation of mechanical, electrical, electronic, pneumatic and hydraulic components as the most important and other 1/3 performing basic adjustments as a key issue in their companies still diagnostic faults and their removing can be considered as the most important in most of the companies. The reason of that shows that 45 companies choose that issue on a second place in the relevance list and third place with 3 companies marking that is the "worst" place of that answer. That definitely can point that EDUTRONIX module has to obligatory teach how to diagnose faults and their removal in previously assembled mechatronic systems.

Second very important skill to develop via Interactive Education Module for Mechatronics has to be installation of mechanical, electrical, electronic, pneumatic and hydraulic components. 95,77% of the responding companies point lack of those skills and want EDUTRONIX to improve them because they place that in top 4 answers in their surveys, and the rest 4,17%, meaning just 3 of 72 companies has it on 5th place on their list still above an average of 10.

Despite none of the companies choose that as the most important, third aim of EDUTRONIX module which has to be highly considered is to develop group working skills. As mentioned above in the report in Chapter 2 describing companies and sometimes even some additional comments received from them, they complained mostly on a lack of soft skills and competences in this matter at their own employees or work candidates. That close the winning 3.

High score point received also a functionality of the module which will allow to perform some basic adjustments. As pointed at the beginning 1/3 of the companies choose performing basic adjustments as a key issue in their companies but maybe in this case a diversity of respondents make this just above 6/10 points on the score list (6,08).

Testing all components (mechanical, electrical, electronic, pneumatic and hydraulic components) mentioned above individually and all together were pointed as relevant (on 3rd and 4th place) by over 50% of the respondents (54,17%) so it has to be considered in the final version of the module but exactly as it is shown on this survey result somewhere in the middle of the stake. The answer says "components mentioned above" because it was just below the answer with No 2 on the result list, and in the survey results it landed on place No 5, so it need additional explanation.

Really a close call by 45 companies giving the development of technical drawing reading/writing skills a places from 2nd (3 companies), 4th (12 companies) to 5th (30 companies) made it with a quite high score above half – 5,29.

On the 7th place at the relevance list there is an EDUTRONIX ability to learn basic programming of programmable logic PLC controllers. Maybe the reason is because a half of the respondents choose it on exactly 7th place or maybe because it is not so relevant on the market as it might be considered. While discussing these issue the companies' representatives pointed that in this field they need 1 or maximum 2 persons per company and the workforce market is quite full of such specialists.

For some of the respondents (24 companies) giving additional qualifications e.g. energetic or other specific might be very important (3rd place on the relevance list), but for most of them 48 (companies) it has one of the last places on the list. So again if in the EDUTRONIX module we are about to focus on the whole market not on the particular industry we have to skip this functionality in the module, despite the fact it might disappoint quite a large number of potential companies where the participants of the VET education might find an employment. Still it is possible to gain some additional competences via external courses/trainings which can be considered as an addition to the module itself.

Least important functionality that the module should have according to the employers is to make it possible to conduct examinations of professional competence/skills by school or entrepreneur. This might be a part of misunderstanding by the companies that competences examined in school basically covers the mentioned above competences, but might also mean that examination results are not as much important as real skills which pupils/students should gain.

Other than mentioned above were not stated and 72 companies make that a last 10th position.

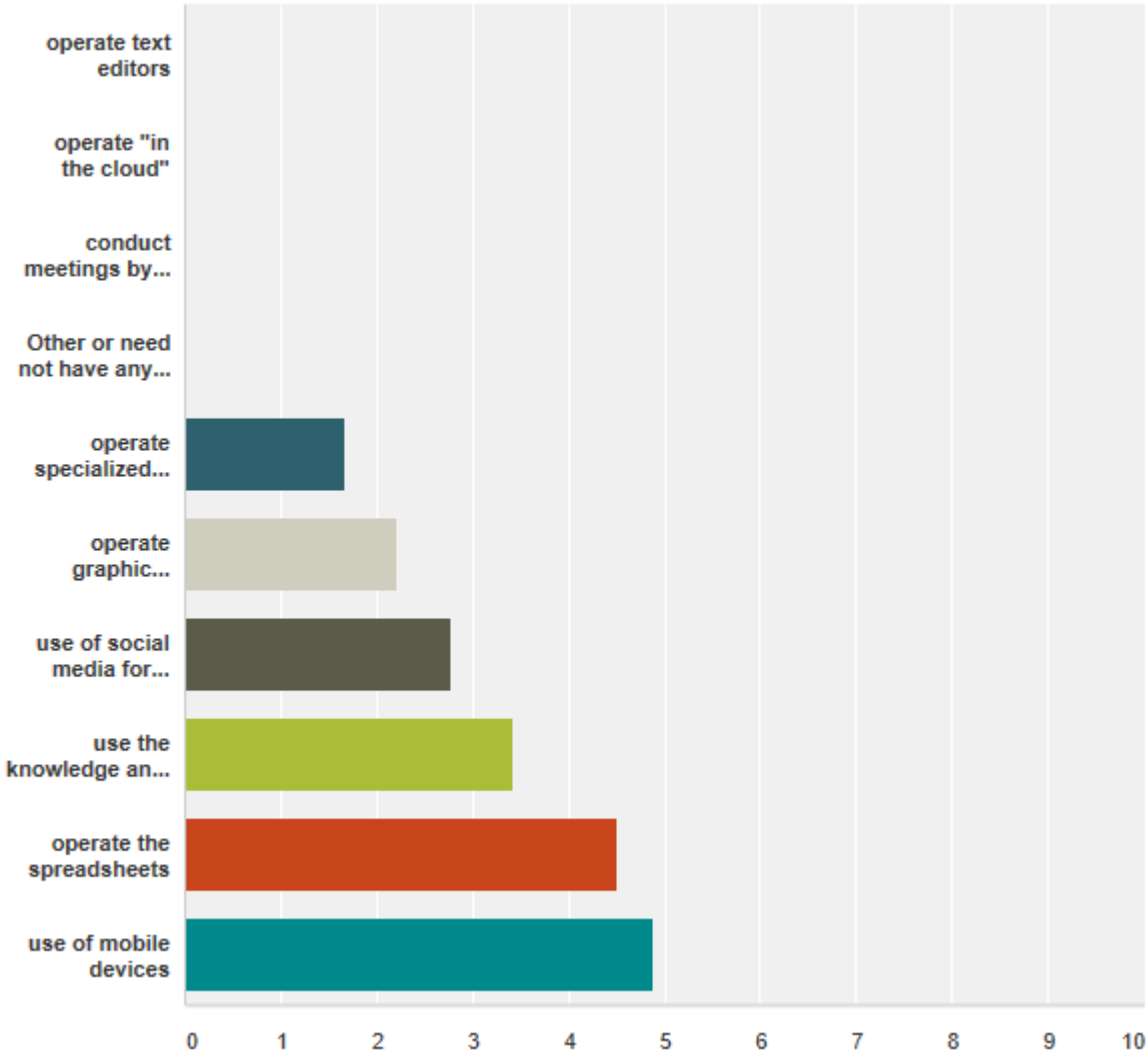
**Question 4 What kind of ICT skills are mostly used by your employees and which are the most important?** (Please select 5 most important and arrange them by priority: 1 - most important, 5 - least important)

Answered: 72 Skipped: 0 – as it was an obligatory to both – firstly choose 5 most important and then arrange only those 5 in order

The answers were possible as choosing 5 out of 10 most important ICT skills mostly used by employees of asked companies and add an importance of every out of this 5 to prioritize them in order instead of just naming them by weighted average score. Also a comments in “Other” field were available to get exact info on some of the answers.

In this question we had to be really careful with the numbers as they were tricky. As 1st on the list of relevance was the most important - 1 point is maximum points to the weight it can get and 5th place on the list is least relevant and receive 5 points as showed below. Just to make it simple the more points the less important it is, but no points at all makes it irrelevant.

The graph showing the results:



| – | Most important – | 2 – | 3 – | 4 – | Least important – | Total – | Weighted Average – |
|---|---|---|---|---|---|---|---|
| – use of mobile devices | 0.00% 0 | 0.00% 0 | 0.00% 0 | 11.11% 3 | 88.89% 24 | 27 | 4.89 |
| – operate the spreadsheets | 0.00% 0 | 0.00% 0 | 0.00% 0 | 50.00% 30 | 50.00% 30 | 60 | 4.50 |
| – use the knowledge and skills of IT for business development | 4.76% 3 | 23.81% 15 | 9.52% 6 | 47.62% 30 | 14.29% 9 | 63 | 3.43 |
| – use of social media for business development | 18.18% 12 | 27.27% 18 | 27.27% 18 | 13.64% 9 | 13.64% 9 | 66 | 2.77 |
| – operate graphic programs | 25.00% 18 | 29.17% 21 | 45.83% 33 | 0.00% 0 | 0.00% 0 | 72 | 2.21 |
| – operate specialized computer programs (please specify in "Other" field) | 54.17% 39 | 25.00% 18 | 20.83% 15 | 0.00% 0 | 0.00% 0 | 72 | 1.67 |
| – operate text editors | 0.00% 0 | 0.00% 0 | 0.00% 0 | 0.00% 0 | 0.00% 0 | 0 | 0.00 |
| – operate "in the cloud" | 0.00% 0 | 0.00% 0 | 0.00% 0 | 0.00% 0 | 0.00% 0 | 0 | 0.00 |
| – conduct meetings by videoconference | 0.00% 0 | 0.00% 0 | 0.00% 0 | 0.00% 0 | 0.00% 0 | 0 | 0.00 |
| – Other or need not have any information on the above subject | 0.00% 0 | 0.00% 0 | 0.00% 0 | 0.00% 0 | 0.00% 0 | 0 | 0.00 |

While getting the feedback we were surprised that so many of companies demand from their employers to operate specialized computer programs. Usually when the question is about filling some additional field it is skipped, but not this time. Over half of the respondents (54,17%) choose that on first, ¼ on second and 20,83% on third most relevant place on the demand list to their actual or future employees. All 72 responders mentioned this point by the way. We were asking also to specify in "Other" field the programs and surprisingly most of them were quite similar (answers were given only by 21 out of 72 companies):

8 x 3D Design Programs

7 x 3D Design + CRM

2 x Corel, Unigraphics

2 x Photoshop, Corel, Unigraphics

1 x CRM

1 x Corel

As it can also be an issue for creating the software for programming team for EDUTRONIX module, they should consider some 3D Design and CRM programs to be a part of on-line training with use of the module.

Second most important ICT skill (also chosen as one of 5 most important by all 72 companies) is to operate graphic programs which is partly already mentioned in the above question, so it might be considered as a basics, meaning 3D Design + CRM + other graphic programs like Corel, Photoshop and Unigraphics.

Quite relevant is everyday use seems to be a fluent use of social media for business development (not for private use) which is becoming more and more popular. That might be an easy task for conducting an education with use of EDUTRONIX module as a part of the training might involve and combine some group working skills (from feedback in Question 3) with use of social media here. Also the use of “any” knowledge and skills of IT for business development is marked as relevant. It points out clearly one thing, that companies while being mostly focused on income, they will appreciate any skill which will bring profits and raise their income by developing and growing their businesses what is understandable but sometimes forgotten by future employees and the schools which are creating the labor force for the market.

Operating the spreadsheets is the next mentioned ICT skill and is not as important in mechatronics industry as it seems to be. Of course some knowledge is needed but focusing too much on this might lead to an unexpected disappointment. Model should definitely teach 3D design instead of operating spreadsheets.

Mobile devices and minimizing everything reached almost every branch including mechatronics. Despite that only 27 out of all respondents pointed it and them put it with 4 or 5 points (most – 88,89%) – meaning still it was firstly chosen out of list of 10 so it is not irrelevant and has to be considered while programming EDUTRONIX model, f.e. to make some of the exercises via mobile platform or to control the module by mobile phone.

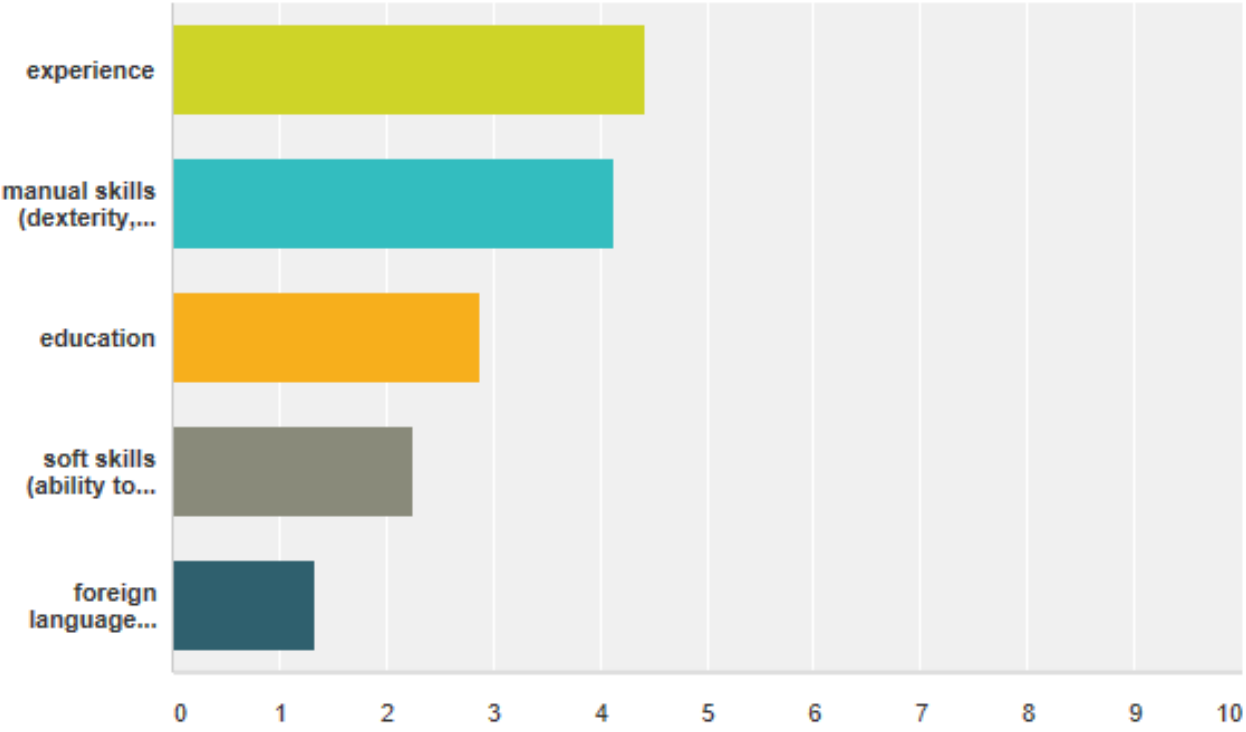
4 out of 10 ICT skills (text editors, operating “in the cloud”, videoconferencing or any other) was not mentioned as relevant.

**Question 5 What aspects are taken into account in the process of finding a candidate for workplace?** (Please arrange them by priority: 1 - most important, 5 - least important)

Answered: 72 Skipped: 0 – as it was an obligatory to arrange all of them in order

The answers were possible as choosing from 1 to 5 most important aspects taken into account in the process of finding a candidate for workplace by a company as an employer.

The graph showing the results:



| – | 1 – | 2 – | 3 – | 4 – | 5 – | Total – | Score – |
|---|---|---|---|---|---|---|---|
| – experience | 66.67% 48 | 8.33% 6 | 25.00% 18 | 0.00% 0 | 0.00% 0 | 72 | 4.42 |
| – manual skills (dexterity, assembling, operating, precision, finishing, modeling, etc.) | 33.33% 24 | 45.83% 33 | 20.83% 15 | 0.00% 0 | 0.00% 0 | 72 | 4.13 |
| – education | 0.00% 0 | 25.00% 18 | 41.67% 30 | 29.17% 21 | 4.17% 3 | 72 | 2.88 |
| – soft skills (ability to work in a team, communication, openness, punctuality, etc.) | 0.00% 0 | 20.83% 15 | 12.50% 9 | 37.50% 27 | 29.17% 21 | 72 | 2.25 |
| – foreign language (technical vocabulary) | 0.00% 0 | 0.00% 0 | 0.00% 0 | 33.33% 24 | 66.67% 48 | 72 | 1.33 |

As there is no surprise the real experience is a key value on the labor market the real question is how to receive it before reaching the real market itself. The answer might be exactly the EDUTRONIX module for teaching mechatronics and giving the real experience before the pupils will reach the company. 48 out of 72 makes a high over 2/3 companies which considers it as a key aspect to decide whether or not to employ a candidate.

Manual skills are really close to the experience as in mechatronics field dexterity, assembling, operating, precision, finishing, modeling, etc. can make a lot of difference in the processes of selection. Please note that all of that skills can be easily taught by EDUTRONIX module in connection with gaining the experience before entering the labor market.

Education is pointed in the middle of the stake but still with high difference in score (2,88 to 4,13 or 4,42) comparing to previous aspects. It shows us that education, diploma or any certificate cannot be exchanged for the real experience and skills but can be better finding a way to give all of those in the processes of education.

Soft skills are just below the average score of 2,5 for this question which makes them important as well. Especially ability to work in a team (previously mentioned in Question 3 in other way) was pointed as having a key role. Good and clear communication with other team members and management was also mentioned quite often as a comment while filling in the surveys during personal meetings with entrepreneurs.

Last mentioned aspect was a foreign language with just as low as 1,33 in a scale of 1-5. It might be irrelevant because of being considered as a standard or because at the professional positions related to mechatronics it is really not as much important. The model itself will anyway be created in English language as a working language because of the Erasmus+ project it is created within and because of possible dissemination of it as a result of the project in many different countries, so still creating it in one of the official languages of the EU other than English is not a case. Nevertheless, according to the survey, EDUTRONIX should not focus on giving language skills, and definitely should not make it more relevant than giving an experience in dexterity, assembling, operating, precision, finishing or modeling skills.

**Question 6 If other aspects are taken into account, please specify:**

Answered: 0 Skipped: 72

The answers were possible as a text field to fill in. It was not an obligatory field. It was a possibility to all of the companies to point out any other aspects taken into account while seeking for candidates to work at their company.

The answers were not given by any of the respondents.

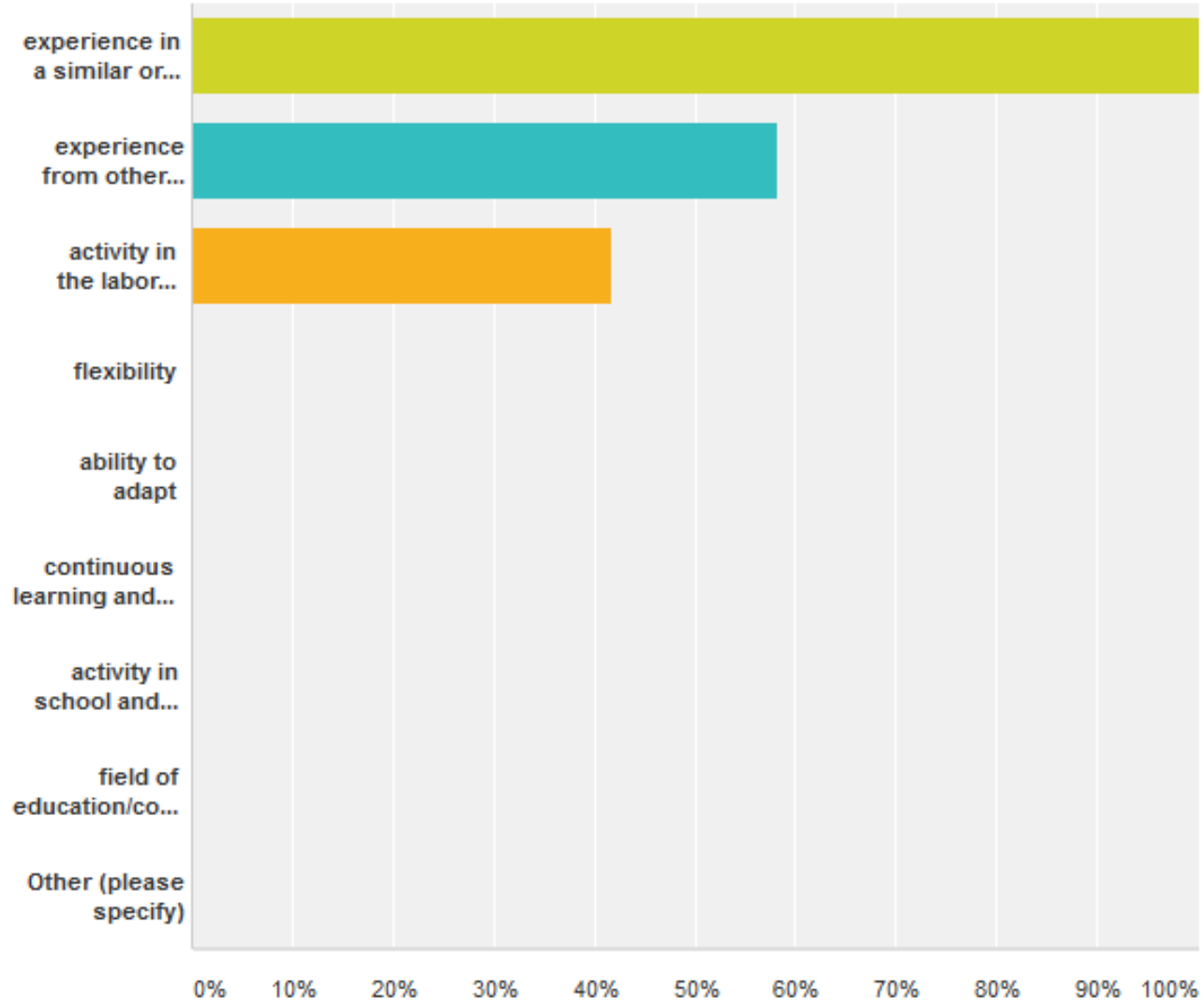
The reason might be both either the respondents were in a hurry or just wish to skip this answers if they are not obliged to write anything or there are just no other aspects taken into account in the recruitment conducted by those employers.

**Question 7 What factors are taken into account in the recruitment process?**

Answered: 72 Skipped: 0 – as it was an obligatory to choose at least one

The answers were possible as choosing from 1 to 9 factors taken into account in the recruitment process by a company as an employer.

The graph showing the results:



| Answer Choices – | Responses – |
|---|---|
| – experience in a similar or the same position and/or industry | 100.00% 72 |
| – experience from other positions /industries | 58.33% 42 |
| – activity in the labor market | 41.67% 30 |
| – flexibility | 0.00% 0 |
| – ability to adapt | 0.00% 0 |
| – continuous learning and improvement | 0.00% 0 |
| – activity in school and school organizations, internships, etc. | 0.00% 0 |
| – field of education/courses/certificates | 0.00% 0 |
| – Responses Other (please specify) | 0.00% 0 |
| Total Respondents: 72 | |

All of the respondents (100%) chose experience in a similar or the same position and/or industry as one of the factors that is taken into account in the recruitment process. More than half of employers, 58,33% exactly, indicated experience form other positions/ industries as an element that is It means that entrepreneurs look for experiences workers that already know how to do things and have all the required skills. 41,67% which is less than half of companies also look at activity in labor market of potential employees.

Again quite similar to answers given in question 5 experience is the key to success and giving the experience on EDUTRONIX module is a key to its success story. Those responses show that all companies seek people that are already active in the labor market, that have done actual work either in the same position/industry or any other position/industry. Other aspects such as: flexibility; ability to adapt; continuous learning and improvement, activity in school, school organizations, internships or filed of education/courses/certificate are not relevant in the process of recruitment.

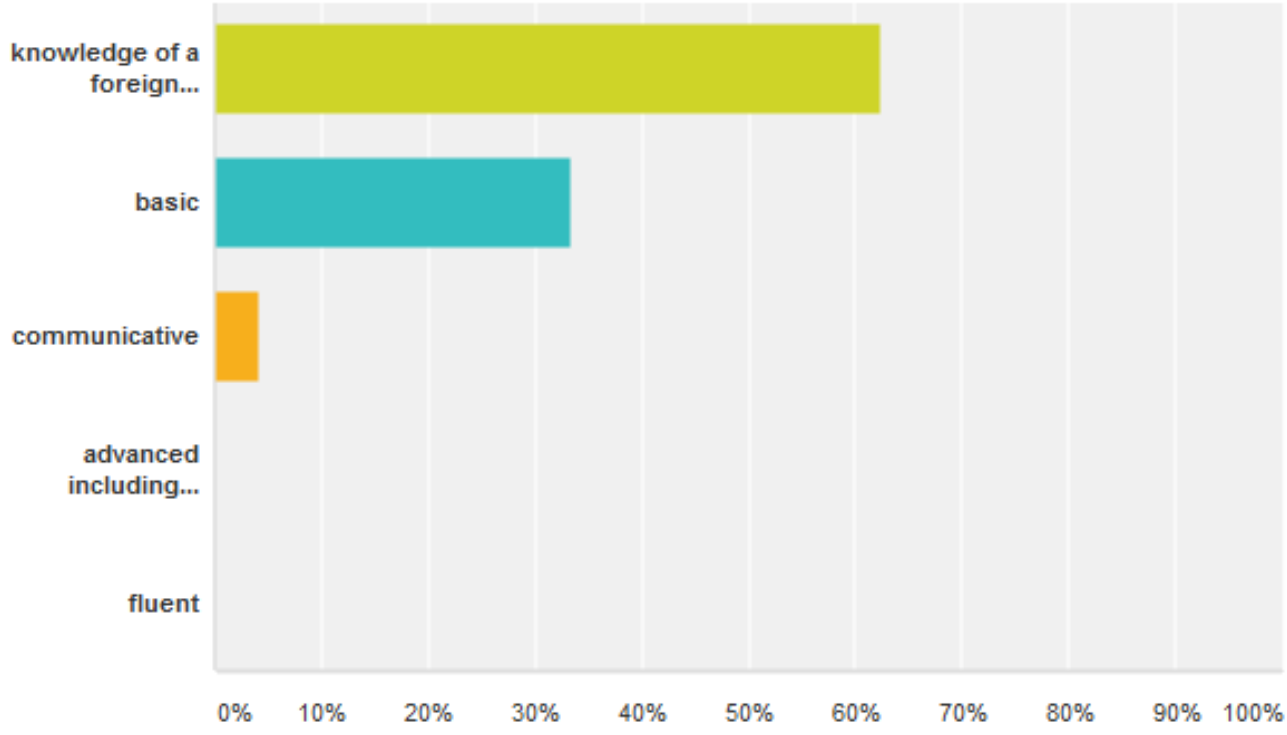
According to those statistics, Edutronix – educational module for teaching mechatronics needs to develop practical skills in mechatronics. Entrepreneurs look for experience and not just theoretical knowledge. Labor market requires real skills.

**Question 8 What are the needs regarding the level of the candidate's knowledge of foreign language?**

Answered: 72 Skipped: 0 – as it was an obligatory to choose at least one

The answers were possible as choosing one of 5 levels of foreign language proficiency taken into account in the recruitment process by a company as an employer.

The graph showing the results:



| Answer Choices – | Responses – |
|---|---|
| – knowledge of a foreign language is irrelevant | 62.50% 45 |
| – basic | 33.33% 24 |
| – communicative | 4.17% 3 |
| – advanced including (technical vocabulary) | 0.00% 0 |
| – fluent | 0.00% 0 |
| Total | 72 |

Most of respondents (62.5%) think that the knowledge of foreign language is not necessary for employees to have. Only 1/3 of companies require basic knowledge of foreign language of their workers. Just little over 4% of entrepreneurs indicate that employers should be at communicative level of knowledge of foreign language. The data shows that employees are not required to know foreign languages in order to work in those companies. People working in mechatronics do not need to speak foreign languages.

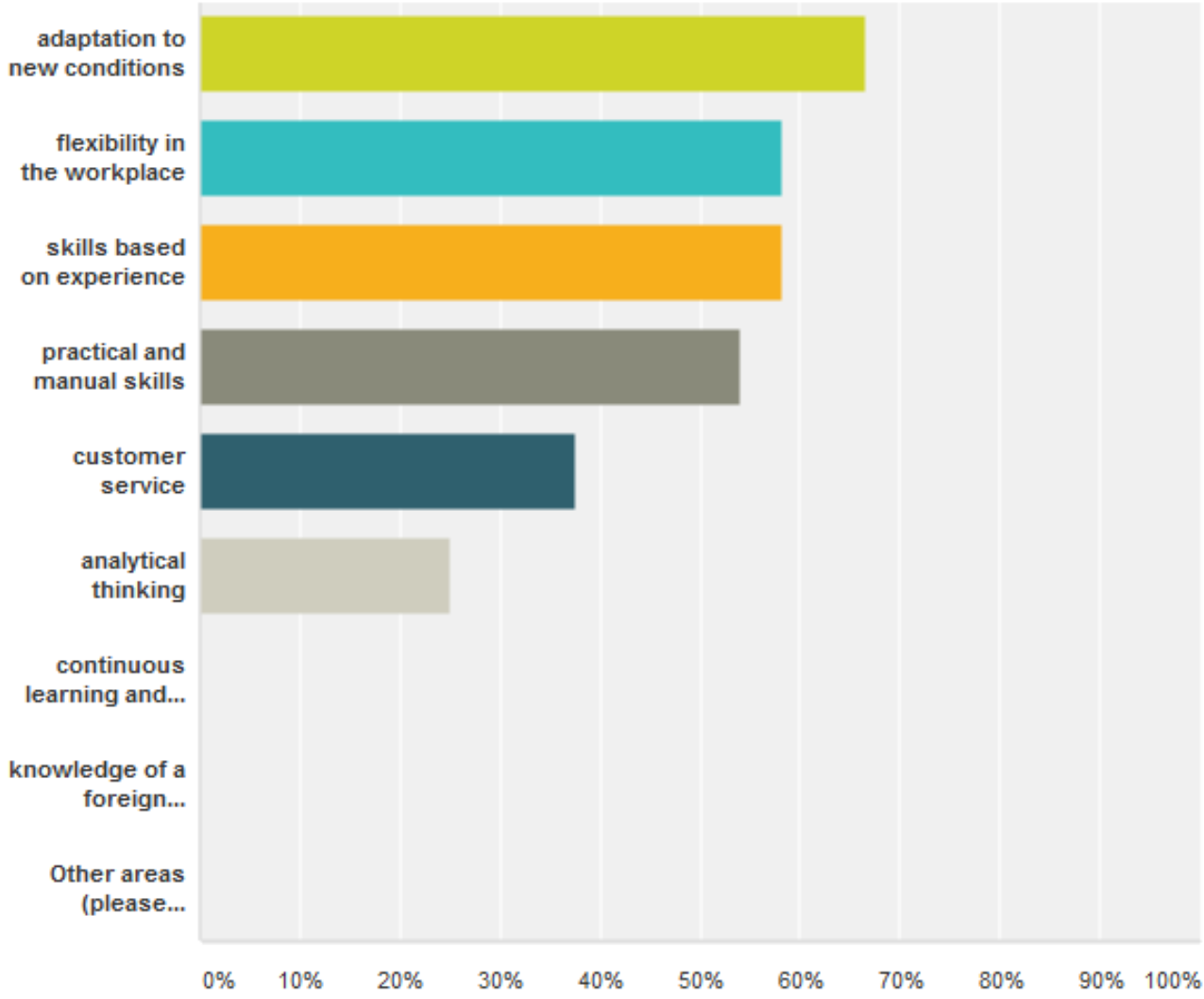
As a result, EDUTRONIX should not focus on teaching foreign languages. Language is not as important for students of mechatronics as practical skills related to mechatronics.

**Question 9 In which areas do you see the biggest competence gaps in the skills of potential employees?** (Please select 3 most important)

Answered: 72 Skipped: 0 – as it was an obligatory to choose all three – without giving any weights to them.

The answers were possible as choosing 3 most important from list of 9 areas (including “Other” field) where the companies saw the biggest competence gaps in the skills of potential employees.

The graph showing the results:



| Answer Choices – | Responses – |
|---|---|
| – adaptation to new conditions | 66.67% 48 |
| – flexibility in the workplace | 58.33% 42 |
| – skills based on experience | 58.33% 42 |
| – practical and manual skills | 54.17% 39 |
| – customer service | 37.50% 27 |
| – analytical thinking | 25.00% 18 |
| – continuous learning and improvement | 0.00% 0 |
| – knowledge of a foreign language (technical vocabulary) | 0.00% 0 |
| – Responses Other areas (please specify) | 0.00% 0 |
| Total Respondents: 72 | |

Choosing 3 most important competence gaps, most of entrepreneurs (66,67%) indicated that they can see competence gaps in adaptation to new conditions. It shows that employers look for people that do not have problems with getting used to new situations.

Then, 58,33% of respondents think that potential employees have difficulty with flexibility in the workplace and they lack skills based on experience. Edutronix should help with gaining experience.

Just a little less, that is 54,17% of companies think that candidates lack practical and manual skills. This also proves that entrepreneurs look for practical skills and not just theoretical knowledge. That is why Edutronix should teach skills that are needed by companies. Through the module students should gain experience.

Companies also see competence gaps in the area of customer service and analytical thinking (respectively 37,5% and 25%). It may signify that customer service is lacking and also fewer and fewer people have ability of analytical thinking. Working with module of Edutronix might help with development of analytical thinking. None of the respondents think that there are any competence gaps in the areas of continuous learning and improvement and also knowledge of a foreign language (technical vocabulary).

Employers have difficulty finding people who easily adapt, are flexible, have practical and manual skill or have experience. Edutronix should take into account those skills as the ones that are sought by employers.

Educational module for teaching mechatronics should focus on developing practical skills and experience that is so needed in the companies. As was mentioned before, Edutronix should not focus on teaching foreign languages.

## ANALYSIS OF THE SURVEYS – SUMMARY IN JUST ONE QUESTION

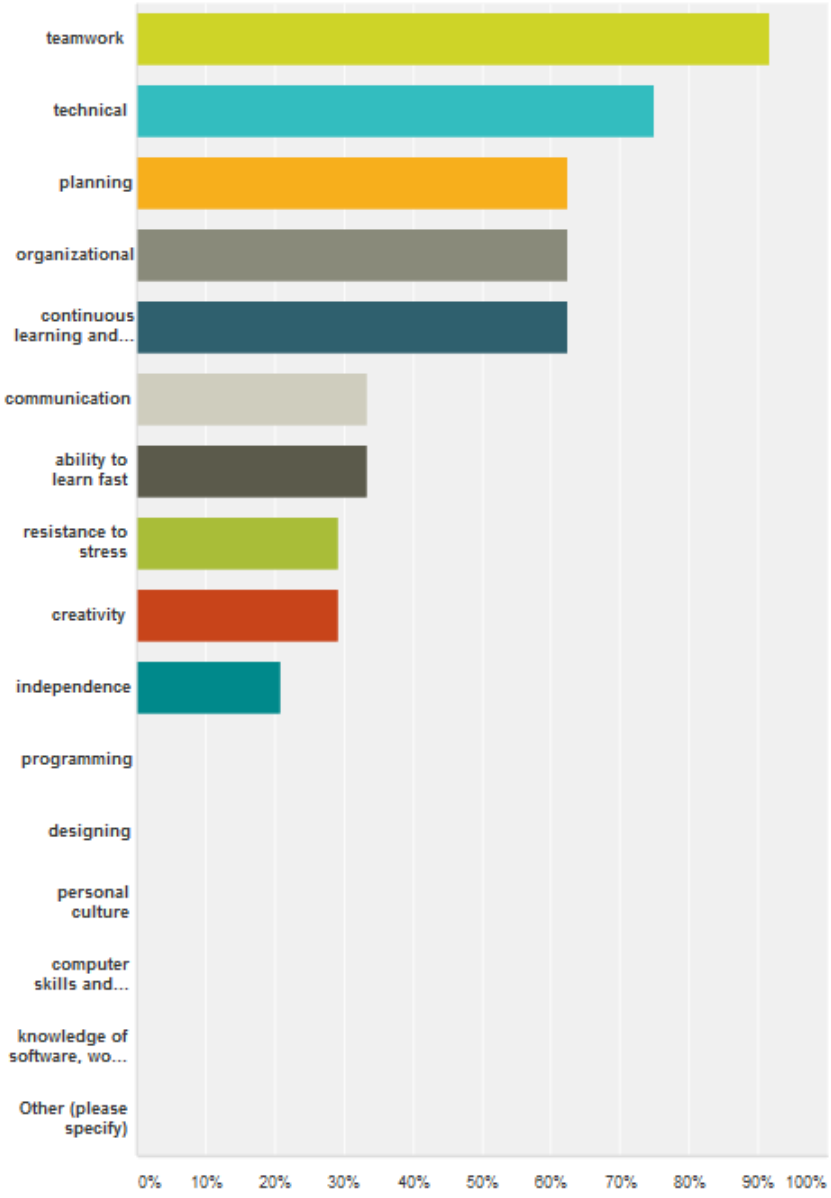
You might ask just one question … why does the question No 10 in the survey is described in different part of the report than the rest 9? That's exactly we want to share with you and please if you reached till that moment and 55th page of the report please do not surrender now and read it till the last page.
So about mysterious question 10 the story goes…

**Question 10 Which skills are most needed?**
(Please select 5 most important)

Answered: 72 Skipped: 0 – as it was an obligatory to choose all five – without giving any weights to them.

The answers were possible as choosing 5 most important from list of 16 skills (including "Other" field) which the companies need the most from existing and potential employees.

The graph showing the results:



| Answer Choices – | Responses – |
|---|---|
| – teamwork | 91.67% 66 |
| – technical | 75.00% 54 |
| – planning | 62.50% 45 |
| – organizational | 62.50% 45 |
| – continuous learning and improvement | 62.50% 45 |
| – communication | 33.33% 24 |
| – ability to learn fast | 33.33% 24 |
| – resistance to stress | 29.17% 21 |
| – creativity | 29.17% 21 |
| – independence | 20.83% 15 |
| – programming | 0.00% 0 |
| – designing | 0.00% 0 |
| – personal culture | 0.00% 0 |
| – computer skills and computer programs | 0.00% 0 |
| – knowledge of software, work tools (Please specify in "Other" field) | 0.00% 0 |
| – Responses Other (please specify) | 0.00% 0 |
| Total Respondents: 72 | |

The last question was not least important. It was the most important one. That was a key to guide the respondent and lure him to analyze himself with all previous 9 questions what are in general his needs and how it is connected with his expectations towards possible use of mechatronics teaching tools we are creating. So the questionnaire was created in a smart way to give the answers for both sides at the same time.

Now this question gives real answers for us about what kind of skills are really needed and expected on the labor market in mechatronics field.

Skills that are most needed, according to the companies, are teamwork, technical, planning, organizational skills, continuous learning and development, ability to learn fast, resistance to stress, creativity, and independence. Creating a teaching module covering all those would be perfect, but is a difficult task. Let's see below what should we focus on.

Most of respondents, which is 91,67% indicate teamwork as one of the most important skills of potential workers. Companies need people who can work effectively with others so Edutronix shall enable students to work together.

75% of entrepreneurs look for technical skills, which can be also developed using Edutronix.

62,5% consider planning skills, organizational skills and continuous learning and improvement as important skills that employees should definitely have. Those skills can also be developed by Edutronix with ease.

Assembling, programming and other activities that are performed as part of the educational module Edutronix require thinking, planning and continuous learning. Which are all the skills that entrepreneurs expect from employees.

1/3 of employers look for communication skills and ability to learn fast. Understanding other people and adjusting to different situations are also characteristics that employees should have.

29,17% of companies claim that they need people who can deal with the stress and who are creative. Module of Edutronix shall enable students to be creative while building or programming what they will be able to do within given limits. They will need to come up with their own designs and not just follow the instruction.

The last skill that employees should have, according to employers, is independence. Edutronix should enable students to work both ways - in teams but also to work independently with individual assessment methods. Every worker is required to do some of his tasks on his own.

Skills such as programming, designing, personal culture, computer skills and operating on specialized computer programs and also knowledge of software and work tools were not included in the 3 most important skills needed but please remember what was the answers given by the same group of companies in this survey in Question 4.

Edutronix should focus on the most important skills so that students can acquire the most useful and expected skills on the market by the companies – what definitely is not an easy task. We hold our fingers crossed and wish all the good luck to project team and all partners inside the consortium of this strategic partnership.

With kind regards, Intellectual Output No 3 Development Team.