



Co-funded by the  
Erasmus+ Programme  
of the European Union

---

# Quality Report on Project Deliverables

Contacts:

**DI Hagen H. Hochrinner** +43 316 5453-69, [hagen.hochrinner@fh-joanneum.at](mailto:hagen.hochrinner@fh-joanneum.at)

**Mag. Maja Dragan** +43 316 5453-6925, [maja.dragan@fh-joanneum.at](mailto:maja.dragan@fh-joanneum.at)



Project acronym:	DIARKAZ
Project full title:	Dual Education for Industrial Automatization and Robotics in Kazakhstan
Project No:	609757-EPP-1-2019-1-RS-EPPKA2-CBHE-JP
Funding scheme:	ERASMUS+
Project start date:	January 15, 2020
Project duration:	36 months

Abstract	This document includes information regarding internal evaluation on deliverables in the project.
----------	--

Title of document:	Report on project Deliverables
Work package:	WP 5: Quality plan
Activity:	5.3 Internal control and monitoring report
Last version date:	
File name:	5.3.2 Quality Report on Project Deliverables
Number of pages:	17
Dissemination level:	Project consortium

#### VERSIONING AND CONTRIBUTION HISTORY

Version	Date	Revision description	Partner responsible
v.01	16 <sup>th</sup> August 2022	Creation of document	FH JOANNEUM
v.02	13 <sup>th</sup> September 2022	Additional comments	UNS
		Final version	FH JOANNEUM

#### DISCLAIMER

The European Commission support for the production of this publication does not constitute an endorsement of the contents which reflects the views only of the authors, and the Commission cannot be held responsible for any use which may be made of the information contained therein.



## Contents

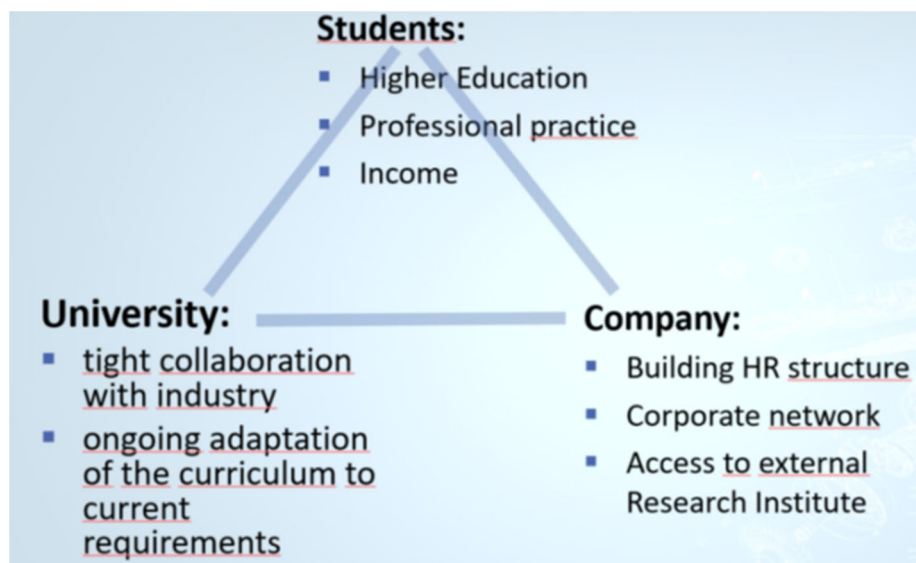
Quality Report on Project Deliverables.....	0
1. Introduction .....	3
2. Realisation and evaluation of planned activities and concrete deliverables in the DIARKAZ project 4	
3. Development and implementation .....	9
4. Development of IAR program and ECTS.....	11
4.1. Calculation of the workload for the students .....	11
4.2. Feedback on the joint curriculum .....	12
4.3. Internal evaluation at Kostanay engineering and economics University named after M. Dulatov, Innovative University of Eurasia Pavlodar, and Zhangir Khan West Kazakhstan agrarian- technology University .....	13

## 1. Introduction

The background of the project is to create more universal educational trajectories (curricula) through dual education, and better connection between HE and companies in Kazakhstan. In the context of Kazakhstan, the project is a bedrock for introducing practice-integrated dual study education as known in EU. Dual HE will enable students to acquire more relevant knowledge and skills by combining formal education with training acquired at the workplace (internships). Consequently, this will provide them with competences that are more in line with needs of companies, and they will get the opportunity to get jobs easier. Additionally, dual education will bring better and more intensive cooperation between industry and higher education, and it will contribute towards increase of innovation capacities. Students on dual education will be the channel for transferring knowledge and ideas from companies to academia and vice versa.

The aim of this project is to develop, implement, test, and validate the undergraduate programme in the field of industry automatization and robotics (IAR), with implemented dual education, at three universities in Kazakhstan: Kostanay engineering and economics University named after M. Dulatov, Innovative University of Eurasia Pavlodar, and Zhangir Khan West Kazakhstan agrarian-technology University.

Goal of the DIARKAZ project is to ensure the highest possible quality of the developed new dual curricula and realization of the dual study programs and cooperation among the strategic triangle.



Picture 1: Hagen Hochrinner, FH JOANNEUM, 20. 6. 2020



## 2. Realisation and evaluation of planned activities and concrete deliverables in the DIARKAZ project

Working packages	Deliverable	Evaluation		
		good	fair	poor
<b>DIARKAZ</b>	<b>Dual Education for Industrial Automatization and Robotics in Kazakhstan</b>			
	<b>609757-EPP-1-2019-1-RS-EPPKA2-CBHE-JP</b>			
<b>1.</b>	<b>Development of dual study program in IAR</b>			
1.1	Analysis of best practise and comparative analysis			
1.1.1	Germany report	x		
1.1.2	Austria report	x		
1.1.3	Serbian report	x		
1.1.4	Survey on Stakeholders in Kazakhstan (report)		x	
1.2	Learning outcomes and competencies	x		
1.2.1	KEEU Meeting with employers report	x		
1.2.2	WKATU Meeting with employers report	x		
1.2.3	INEU Meeting with employers report	x		
1.3	Program, modules, syllabi of all courses and ECTS		x	
1.3.1	JEP Robotic systems 2021-2025		x	
1.3.1	БББ Робототехникалық жүйелер 2021-2025		x	
1.3.1	Робототехнические системы 2021-2025		x	
1.3.2	Joint curriculum in English, Kazakhstani and Russian		x	
1.4	Contractual documents		x	
1.4.1	Dual Education Agreement		x	
1.4.1	Дуальді оқыту туралы келісім-шарт		x	
1.4.1	Договор о дуальном обучении		x	
1.4.2	Договор о дуальном обучении ТОО САП 28.04.2022		x	
<b>2.</b>	<b>Preparations for implementation of new bachelor and LLL programs</b>			
2.1	Purchase of equipment	x		
2.2	Workshop in Kazakhstan concerning teaching methodology	x		
2.3	Guide in dual methodology (English and Russian version)	x		
2.4	Study visits of staff from Kazakhstan to program countries			
2.4.1	Report on study visit to Serbia			
2.4.2	Report on study visit to Austria	x		
2.4.3	Report on study visit to Germany	x		
2.5	Courses and teaching material			
2.5.1	Courses KEEU			
2.6	LLL program			
2.6.1	Plan for LLL program	x		
2.6.2	LLL curriculum	x		
2.7	Improvement of English language skills of teachers			
<b>3.</b>	<b>Implementation of the program</b>			



3.1	Accreditation of new study program			
3.1.1	Registration of study programs			
3.1.2	KEEU Accreditation certificate	x		
3.1.3	WKATU Accreditation certificate	x		
3.2	New study program implemented			
3.3	New LLL program implemented			
3.3.1	KEEU LLL report	x		
3.3.2	KEEU LLL for teachers report			
3.3.3	WKATU LLL report			
3.3.4	INEU LLL report			
3.4	Report on feedback and final analysis			
<b>4.</b>	<b>Dissemination and exploitation of project results</b>			
4.1	Dissemination and exploitation plan	x		
4.1.1	Career guidance plan		x	
4.1.1	Кәсіптік бағдар беру жұмысының жоспары		x	
4.1.1	План профориентационной работы		x	
4.2	Design of project visual identity	x		
4.3	Design and setup of project web site	x		
4.4	Raised awareness for DIARKAZ			
4.4.1	Booklet	x		
4.4.1	Буклет	x		
4.4.2	Roll up banner	x		
4.4.2	Роллап баннер	x		
4.5	Final Conference			
<b>5.</b>	<b>Quality control and monitoring</b>			
5.1	Defining plan for project quality control		x	
5.2	Metrics for DIARKAZ	x		
5.3	Internal project control and monitoring		x	
5.3.1	NEO monitoring visit in Pavlodar 17/11/2021			
5.4	External evaluation			
5.5	Sustainability plan			
<b>6.</b>	<b>Project management</b>			
6.1	Project coordination meetings			
6.1.1	01 SC meeting minutes	x		
6.1.2	02 SC meeting minutes	x		
6.1.3	03 SC meeting minutes	x		
6.1.4	04 SC meeting minutes	x		
6.1.5	05 SC meeting minutes			
6.1.6	06 SC meeting minutes			
6.1.7	07 SC meeting minutes	x		
6.2	Efficient overall project management			
6.3	Efficient local project management			
6.3.1	01 LC Meeting 01.04.2020. Minutes of the meeting	x		
6.3.2	02 LC Meeting 02.04.2020. Minutes of the meeting	x		
6.3.3	03 LC Meeting 16.04.2020. Minutes of the meeting	x		
6.3.4	04 LC Meeting 14.04.2021. Minutes of the meeting	x		



6.3.5	05 LC Meeting 31.5.2022. Minutes of the meeting	x		
6.4	Interim Report (IR) and Final Report (FR)			
Legend:				
	to do			
	project activities			
	project work packages			

Link to deliverables:

<https://drive.google.com/drive/folders/17dGoUDeuqUjCjwXvChuK359AQMZZwgrT?usp=sharing>

Additional data and/or remarks:

1. In the WP1 Development of dual study program in IAR following tasks were completed:  
The three program countries prepared reports on best practice regarding development and implementation of Dual Study programs. After the analysis of the reports the Kazakh partner universities conducted meetings with employers with the purpose of presenting the new program as well as attracting new companies.

Remarks:

2. The Equipment was purchased by all three partner universities.

Remarks:

3. The Workshop in Kazakhstan concerning teaching methodology was held. Representatives from the program partner countries talked about the obstacles and chances in cooperation with companies, Envisaged competences and adapted teaching methodologies, also the quality assurance issues in the dual education were discussed and other interesting and challenging issues with the purpose to broaden the view into dual studies and development of it in Kazakhstan.

Remarks:

4. The Guide in Dual Methodology is published in English, Kazakh and Russian version.  
This guide is a useful tool for introduction of dual education in other study programs in Kazakhstan. It also has the role of a toolkit designed as a resource for academic staff and industrial supervisors in the development, implementation, and evaluation of the dual education components. The toolkit contains guidelines, as well as standardized procedures and forms for the documentation of the communication process as a mean for assessment of students' performance and documentation for the quality assurance. The output will facilitate the synchronisation between university-based and workplace-based study elements.

Remarks:

5. Study visits of staff from Kazakhstan were conducted as follows:  
Serbia: 6<sup>th</sup> December – 7<sup>th</sup> December 2021  
Austria: 11<sup>th</sup> May – 13<sup>th</sup> May 2022  
Germany: 16<sup>th</sup> May – 18<sup>th</sup> May 2022  
Study visits enabled the participants from Kazakh universities the insight into the organisation, procedures, and documentation of dual study programs in EU countries. It was also the opportunity to meet company representatives, dual students and university responsible.

Remarks:

LLL programs were prepared and implemented at the three Kazakh partner universities and include an update of the theoretical and practical knowledge of specialists in connection with the growing requirements for the level of qualifications and the need to master modern methods for solving professional problems in the field of industrial automation and electronics. The teaching programs from all three partner universities were produced in English, Kazakh and Russian language.

- KEnEU training course "Industrial Automation and Electronics"  
In the period 04/04/2022-08/04/2022 on the basis of the Kostanay Engineering and Economics University named after M. Dulatov the LLL program for employees of enterprises of the Kostanay region was organized and conducted at the Basic level in the amount of 36 hours. 10 participants from 6 companies successfully completed the training. Based on the results of the survey after the training, it can be concluded that the LLL program is implemented with high quality, is relevant and in demand by professionals in the field of industrial automation and robotics.
- INEU training course "Technical design of industrial automation and robotics"
- WKATU training course

Remarks:

6. The new study program of "Robotics systems" was successfully accredited by the Kazakh Quality Assurance Agency for the period of 5 years.

Remarks:

7. For the Dissemination and exploitation purposes a plan was prepared. This document contains the dissemination strategy and detailed description of all activities (time frame, responsibilities across project partners, distribution of financial funds, definition of a logo, organization of round tables, conferences, printing of promotion material, etc.).
  - The visual identity for the project was designed, as well as
  - A booklet
  - Roll-up banner
  - Website which is now developed for partners and the general public, designed on the basis of D&E plan with all information about the project and activities of consortium..
  - The project and its progress and results were presented on several occasions inland and at other conferences and international meetings.

Remarks:

8. Plan for project quality control: This plan will include project processes, policies, goals and creation of Management Quality Manual. Manual will define the following: quality of the project implementation, quality of project deliverables, quality of DIARKAZ events, quality of promotional materials, quality of website, quality feedback by the target groups, project risk management, external monitoring, metrics for project goal conversions and its strategy for succession, hierarchy of project responsibility, communication flows and decision making, PR strategy and communication with external environment, and project processes and partners' technical and financial reporting.





9. Metrics for DIARKAZ: The list of measurable indicators about the quality of dual study program in IAR and about the project as a whole. Special set of metrics will be defined through system of learning analytics for measurement of students' performance at study program and courses individually. Workshop will be organized to introduce the institutions organizing study program and LLL courses to set quality metrics.

**TO-DO list till the end of the project:**

Report on external evaluation: Two experts will have two months to evaluate the dual IAR study program and to write the report on external evaluation. The report will be publicly available on the website.

Interim Report (IR) and Final Report (FR): IR will include information on the implemented project activities, achieved planned results, used resources, as well as possible changes to those plans and diversion of resources to the remaining duration of the project. Upon completion of the project, Final Report (FR) will be submitted with the results of the project, information and report on used financial resources and funds spent, the contribution of each participant in the project and suggestions for further development in order to achieve sustainability of the project results.

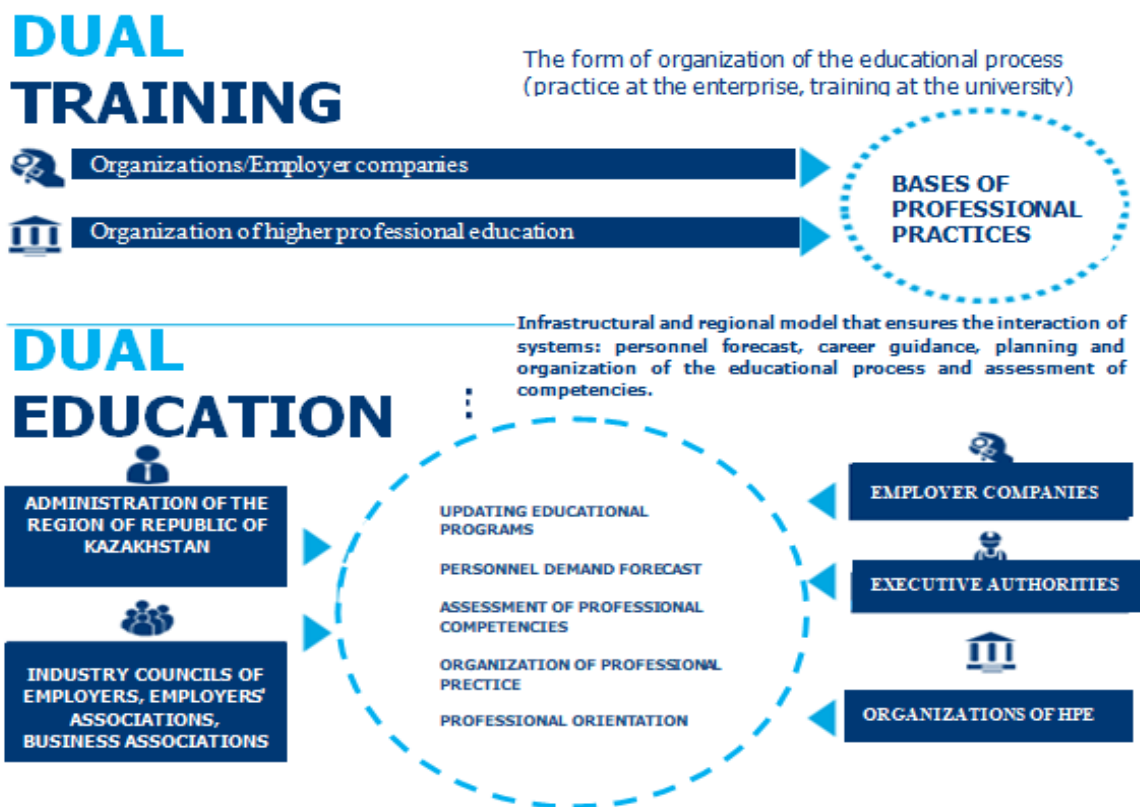
Dissemination and exploitation: In the second phase, the special web page will be developed with detailed description of dual IAR study program

### 3. Development and implementation

The involved universities have taken a holistic approach for the dual curriculum development in IAR Bachelor's degree. In their approach they have done a revision of the regular curriculum and the content design of the practical phases using competence-based principles and formulation of dedicated learning outcomes for the practical training components. The adaptation of the programme has been carried out in Russian and Kazakh language (translated into English).

In the approach of adapting to the dual model proposed for the IAR programme, it was decided, to adapt the syllabuses of some subjects to be closer to the needs of the participating entities.

The following image shows the suggested form of organisation of the educational process within the dual education programs:



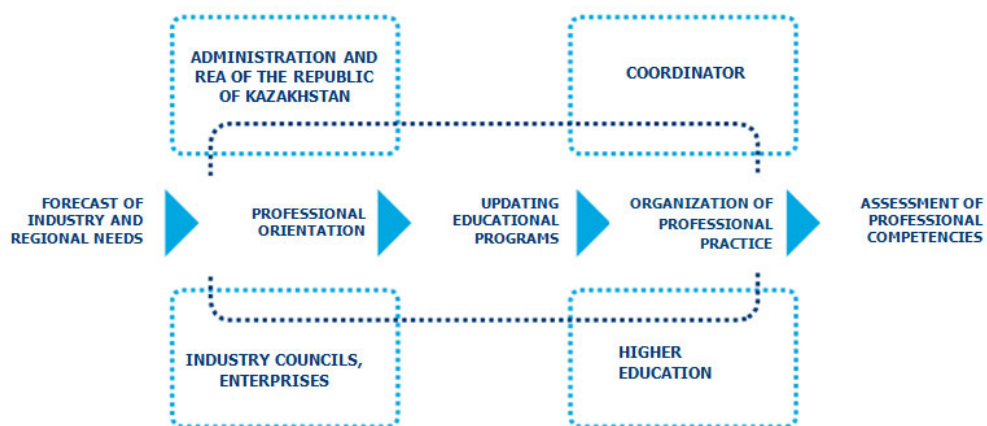
Picture 2: GUIDELINES ON THE METHODOLOGY OF THE DUAL TRAINING SYSTEM in the context of designing educational programs of Higher Education for industrial automation and robotics in the Republic of Kazakhstan 2020 – 2023 (Project DIARKAZ)

General scheme of the implementation of the dual training system



Picture 3: GUIDELINES ON THE METHODOLOGY OF THE DUAL TRAINING SYSTEM in the context of designing educational programs of Higher Education for industrial automation and robotics in the Republic of Kazakhstan 2020 – 2023 (Project DIARKAZ)

Main participants of the project for the implementation of the dual training system



Picture 4: GUIDELINES ON THE METHODOLOGY OF THE DUAL TRAINING SYSTEM in the context of designing educational programs of Higher Education for industrial automation and robotics in the Republic of Kazakhstan 2020 – 2023 (Project DIARKAZ)

## 4. Development of IAR program and ECTS

### 4.1. Calculation of the workload for the students

The calculation is based on an academic year embodied by 1,500 [h] with 60 [min/h].

The curriculum grants 30 ECTS per Semester according to 750 [h] workload including 125 [h] (5 ECTS for the practical training in the company).

In the study program of PTO there is an additional requirement of 299 [h] of practical training in the company. So, the calculated weekly workload is in average about 40 [h].

The balance of the weekly workload in the theoretical and the practical term is calculated by the scheme given below:

	Theorie		Practice	Sum	
	lessons	self-learning			
Duration	15		11	26	[weeks]
ECTS	25		5	30	[ects]
	625		125	750	[h]
	42				[h/week]
actual			38,5		[h/week]
			424	424	[h]
	375				units [#]
	281	344		625	[h]

1 academ. year	1 500 [h]
1 semester	750 [h]
1 semester	30 [ECTS]
1 [ECTS]	25 [h]

1 [h]	60 [min.]
1 Unit	45 [min.]
Unit (=lesson, sem., lab, ...)	

Self-learning units	13,76 [ects]	344 [h]
Teaching units	11,24 [ects]	281 [h]
Practice	5 [ects]	125 [h]
Sum ects granted	30 [ects]	750 [h]
Add. required internship		299 [h]
Sum workload		1 049 [h/sem.]
workload ( 15 + 11 = )	26 [weeks]	40 [h/week]

Scheme of weekly workload calculation



## 4.2. Feedback on the joint curriculum

See attached Report “5.3.3 Check of Curricula”



#### 4.3. Internal evaluation at Kostanay engineering and economics University named after M. Dulatov, Innovative University of Eurasia Pavlodar, and Zhangir Khan West Kazakhstan agrarian-technology University

Compliance with the dual study program curriculum objectives following a five-point scale, (5 – in full compliance, 1 – no compliance).

No.	<i>Qualitative indicators</i>	5	4	3	2	1
1.	The aims of dual education are evident.	x				
2.	The dual curriculum meets project objectives.	x				
3.	The dual curriculum meets the objectives of the academic study program.	x				
4.	The dual curriculum is appropriate for the target group of students (content, workload, schedule).	x				
5.	The dual curriculum is feasible both at university and in enterprises.	x				
6.	The dual curriculum is well structured.	x				
7.	The dual curriculum ensures a good balance between academic studies and internships.	x				
8.	The sequence of subjects is consistent and provides an opportunity for developing knowledge and skills.	x				
9.	The weight of the courses is accordingly distributed within each semester.	x				
10.	The dual curriculum ensures the knowledge and skills matching the current qualification profile in IAR.	x				
11.	The dual curriculum ensures the acquisition of professional skills and key skills for working in a business environment.	x				
12.	The schedule of the dual curriculum enables students to master the courses in terms of their quantity and quality.	x				
13.	The dual curriculum allows students to master the workload both in the university and enterprise.	x				
14.	The dual curriculum provides students with an opportunity to shape their studies according to their interests.	x				
15.	The dual curriculum enables students to actively participate in the learning process.	x				
16.	The dual curriculum allows students to work on multidisciplinary projects in a real-life business setting.	x				
17.	The dual curriculum meets the current skills demands of industry.	x				
18.	The dual curriculum corresponds to current trends in higher engineering education.	x				
19.	The dual curriculum is in conformity with National and European higher education regulations.	x				
20.	The dual curriculum provides an opportunity for faster realization on the labour market and against youth unemployment.	x				



Qualitative indicators – organisation of dual study program

No.	Qualitative indicators	5	4	3	2	1
1.	Repeated succession of theoretical and practical phases and continuous reflection.	x				
2.	The practical phases go beyond the usual scope of a professional internship both in terms of time and in terms of specification of the content.	x				
3.	The acquisition of curricular defined competences takes place at two learning locations and is characterized by the combination of science and implementation orientation.	x				
4.	The company commits to a training obligation and is able to convey the intended course content.	x				
5.	The organization of the theoretical and practical phases provides the framework for a tolerable total workload (h) for students.	x				
6.	The admission procedures for university and company are in the responsibility of the respective partners and are coordinated with each other.	x				
7.	The relationship between the three partners (student, university and company) is subject to binding regulations for quality assurance.	x				
8.	There is a continuous training partnership with appropriate remuneration for internships as part of an employment relationship, which is ideally continued consistently for at least two thirds of the study period.	x				

Quantitative indicators at Kostanay engineering and economics University named after M. Dulatov:

	1 <sup>st</sup> year	2 <sup>nd</sup> year	3 <sup>rd</sup> year
N° of contacts with companies	15	17	16
N° of involved companies	1	2	6
N° of enrolled students	0	6	
N° of graduated students	0	0	0
N° of employed students	0	0	
N° of company mentors	0	2	2
N° of academic mentors	0	3	3
N° of questionnaires for students on Dual Study IAR program	0	0	
N° of questionnaires for companies	0	0	
N° of questionnaires for company mentors	0	0	
N° of questionnaires for academic mentors	0	0	

At KEnEU an internal self-assessment was conducted, and the current statistics is according to the recommendations of the internal evaluation. Since in the first year our students only completed introductory practice at enterprises, a survey based on the results of dual training could not be conducted, this will be possible only at the end of the second year of study. The results of a questionnaire of students and employers after an introductory practice are only in Russian.





#### 4.4. Conclusion

The project activities are developing in accordance with the plan. Due to Covid pandemic some adjustments of the foreseen plan had to be made, but we no influence on the quality of the project activities and work.

With the prolongation the project team has got the opportunity to foster the cooperation and realize all tasks in high quality. Nevertheless, also the study visits to program countries could at last be conducted and the partner universities and companies from Kazakhstan had the possibility to make inquires on sight. Once more it has been proven that personal contacts and meetings/visits/exchange is a valuable and most appreciated part of the projects.

Due to personal engagement of project partners in all circumstances, mutual dialogue and project coordination we strongly believe that we can contribute and support the new developed study programs as well as new established cooperation.