

Support to strengthening the higher education system in Azerbaijan



Twinning project ENI/2018/395-401

Mission Report

Short-Term Mission on Activity 2.4 Improve study programmes in the priority areas in pilot universities to incorporate learning outcomes and inform and raise awareness about these achievements

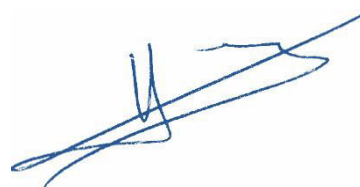
(April 8 – 12, 2019)

1. Name and Function of the Expert:

Full name of expert

Mr. Philippe Turek

Signature



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2. Objective and Tasks of the Mission:

The mission is carried out within the framework of:

COMPONENT 2: PILOT STUDY PROGRAMME IN PRIORITY AREAS ARE IMPROVED TO BE MORE STUDENT-CENTRED

Activity 2.4 Improve study programmes in the priority areas in pilot universities to incorporate learning outcomes and inform and raise awareness about these achievements

Benchmarks for this activity are:

- Minimum 12 study programmes revised and updated to incorporate learning outcomes;
- Adjusted methodological compendium;
- Dissemination events to raise awareness are organised



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3. Time schedule of mission:

Date and Time	Activity
8 April 2019	Deskwork at Ministry of Education. Working on the suggested version of State Standard in Physics.
9 April 2019	Meeting with an employer representative in Ministry of Education. Stakeholders: - Namig Tagiyev, Lead Training Officer at Sumgait Technological Park
10 April 2019	A meeting to identify the list of subjects for the study programme in Physics in Baku State University Stakeholders: - Academic staff from BSU and SSU (See the Annex)
11 April 2019	A meeting to identify competences and learning outcomes for Physics study programme with academic staff from BSU and SSU and employers. Stakeholders: - Academic staff from BSU and SSU - Employer representatives (See the Annex)
12 April 2019	- Attending the Dissemination Day of the Nizami project titled <i>Restructuring and Development of Doctoral Studies in Azerbaijan in line with Requirements of Higher Education Area</i> in Hyatt Regency hotel. - Report writing

4. Relevant Background Information/State of Affairs regarding the mission

The objective of the mission was to improve study programmes in the field of Physics in pilot universities to incorporate learning outcomes and inform and raise awareness about these achievements. Meetings with two local universities offering programmes in Physics took place during the mission: Sumqayit State University (SSU) and Baku State University (BSU). Throughout the previous project missions, a draft of the state standard for higher education (SSHE) for study programme in Physics (Act. 2.2, Act. 1.5.1/2) was prepared. My role was to finalise it (notably regarding the list of learning outcomes and the list of subjects) and discuss with the relevant academic staff (members of the Physics faculty of the two mentioned universities).

5. Achievement of the Expected Results

I have completed the new version of the State Standards with the learning outcomes and suggested a revised syllabus. I also initiated the work on the SSHE of the Master degree in Physics.

Three meeting sessions have been managed with representatives of the labour market and with representatives of SSU and BSU.



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- i) representatives of the labour market: Tuesday, 9 April: Sumqayit Techno Park;
Thursday 11 April: Azergold, BP Azerbaijan, SOCAR, Psychology Center.
- ii) representatives of BSU and SSU on Wednesday 10 and Thursday 11 April.

As regards the **meetings with the academic staff**, the suggested list of competences and learning outcomes did not bring any comments from participants; they reported to agree on it. However, as regards the list of subjects a vivid discussion came up as the academic staff seemed worried about possible changes. An explanation was provided to assure the academic staff that the suggested *changes in national curricula are very minor*. It appeared that for example the chemistry, which is not part of compulsory subjects in the current SSHE, is already taught in both universities; hence introducing it as a compulsory subject in national curricula would not change that much the current practices of universities. It was also recommended to slightly increase the number of credits for IT subjects, as current job places for Physics graduates require a sound mastering of IT skills.

During the meetings with academic staff, important focus was to stress out the **“competence-based approach (CBA)”** and make sure that this new approach gets the necessary appropriation from the academic staff. During my previous mission in Sept. 2018, I noticed that academic staff seem to be willing to work on the CBA. The present mission enabled to stress out again and raise awareness regarding the CBA approach. Many participants reported that the competence-based approach is already used in their study programmes.

As regards the **meetings with stakeholders**, their results appeared to be quite similar to those from my previous mission in September 2018. Employers reported again the *lack of the following skills of graduates: a) soft skills; b) practical or application-oriented knowledge*.

Considering the results of all meetings, the suggestion for modifications in current SSHE in Physics include:

- 1) **more practical work through lab work, projects, internship, etc.;**
- 2) **introducing teaching of soft skills in all study programmes;**
- 3) **broadening of the scope of the physics studies;**
- 4) **improving IT knowledge and use.**

The two last points are linked to the nowadays demand for interdisciplinarity in the technology-based labour market.

6. Unexpected Results

NA

7. Issues Left Open After the Mission

It could be useful to *collect more feedback from the representatives of the labour market* (i.e. performing a survey among employers); results of such surveys could be analysed at the level of each relevant faculty.

More *team work between faculty members* shall be encouraged to enable a stronger analysis on the origin of possible discrepancy between labour market needs and students' expectations.



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8. Recommendations (including recommendation for future missions)

- For point 1) in sect. 5, there is a need to *improve and/or upgrade the labs equipment*.
- For point 2), *soft skills modules shall be introduced as mandatory* throughout the curriculum (i.e. modules on professional environment for Physicists (“what is the company, or what the labour market is made of for physicists”), modules on management, job search, job interview technics, etc.).
- For points 3) and 4), *chemistry shall be introduced as a mandatory subject*. The weight of *computer science applied to physics* has been much improved.

Specialized subjects or what I considered to be so at the BSc level (e.g. radiophysics, molecular physics, semiconductor physics, etc.) has been transferred as *elective courses* with a lower weight. An assort of elective choices is suggested to broaden the scope of studies and to direct students towards subjects which are left in the hands of each university (scientific policy, e.g. excellence research labs, equipment, etc.). It may be as well a good introduction to the forthcoming M. Sc. Level, or to the local industrial network.

There is probably the need to *update the knowledge of older teachers*, not in physics, but in nowadays *measurements methods as performed in research labs and in the industry* (automated data acquisition and treatment).

We had a nice and strong interaction with colleagues, especially regarding the curricula. Although this was not the key purpose of meetings, their involvement was a success as showing their interest. Importantly, they have been told that the present proposal is an open discussion, meaning that nothing is settled yet. Indeed, a way to pursue this effort is obviously to further involve teachers in the elaboration process of the SSHE and continue discussions.

It is worthy to remind again (see previous report from Sept. 2018) that a key issue to improve the employability of the students is to reinforce the connexion between the faculty teachers and the labour market. This should be a win-win cooperation with the idea of return on investment through better prepared students, on one side, and financial support for research for the university, on the other side.

Surprisingly, some teachers seem not being well aware of the student employability. Do they have an exhaustive knowledge of the professional issues for a physicist at different levels? The needs of the labour market with respect to different degrees (B. Sc., M. Sc., PhD levels) should be identified in order to improve the preparation of both teachers and students.

Hence a common analysis of labour market requirements from graduates of physics programmes shall be performed by joint working groups including employers and teachers. It seems that the present way of teaching and learning tends to create a quite tubular way of thinking as for the job opportunities for physicists. There is a need to broaden the scope and to show a wide spectrum of job positions possible for graduates of programmes in Physics. In France, all study programmes need to be registered at the National Directory of Professional Certification (RNCP): <http://www.rncp.cncp.gouv.fr/>, in French language). For this for all higher



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education study programmes shall be specified relevant professional standards and job opportunities of their graduates.

In addition to results of meetings with employers, I would recommend doing a mailing survey among labour market representatives. This survey shall include a questionnaire, asking to list and to rank the most important general and professional competences for a B. Sc. In Physics. I suggest some ideas for conducting this survey:

- Ask to the economic services of the foreign embassies to share contact data for the locally established companies;
- May the Ministry of Labour contribute to this survey upon giving the name of some major companies in the corresponding fields?

9. Acknowledgments (if any)

As a ST expert, I was alone during this week. I have much benefited from the contributions of the resident delegate of the twinning project, Lisa Bydanova, and from the assistance of the local team, Tarlan Arzumanov and Aytaj Atakishiyeva.

Annexes (if any)

I join to this report the various productions presented to the audience and some additional documents.

- Annex 1: Comparison between the current curricula in Physics (SSHE-AZ / 2014) and the new proposal
- Annex 2: Presentation of the “CBA” with learning outcomes and the pie chart comparing current and new SSHE
- Annex 3: The new SSHE including generic and professional competences
- Annex 4. Suggestion for a survey among employers



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