INDEPENDENT KAZAKH AGENCY FOR QUALITY ASSURANCE IN EDUCATION

IQAA

THEMATIC ANALYSIS

Common remarks and recommendations in programme accreditation of the study field of Technical Sciences and Technologies in 2016

Astana, 2017

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I. Introduction

This thematic analysis was aimed at identifying common trends in remarks and recommendations defined by the experts groups in the course of programme accreditation of study programmes within the field "Technical Sciences and Technologies" (as determined by the classifier of specialties by the Ministry of Education and Science of the Republic of Kazakhstan) in 2016 according to the revised IQAA's accreditation standards, approved after adoption of the revised Standards and Guidelines for Quality Assurance in the European Higher Education Area (ESG-2015). The analysis will show what higher education institutions should pay special attention to in the process of preparation to programme accreditation of technical study programmes, as well as will serve as empirical basis for intermediate analysis of the IQAA's activities in this field.

II. Methodology

The material for this thematic analysis was taken from 82 external review reports in three levels of higher and postgraduate education. Among them 42 reports on Bachelor study programmes, 29 reports on Master study programmes, 11 reports on PhD study programmes (see Annex 1. List of the external review reports used for the thematic analysis).

Quantitative and qualitative methods of data collection and analysis were used to produce the thematic analysis. The quantitative method of data collection and analysis was used to define the standards which received the highest and the lowest assessment in the external review. The qualitative research method was used for systematization and analysis of remarks and recommendations of the expert panels. The data processing was done without any special software. All the reports were processed manually by desk research for thorough identification, codification and categorization of data.

III. Analysis of results

3.1 Overview

Analysis of external review reports in the field of Technical Sciences and Technologies showed that in general there is a high level of compliance with the IQAA's standards of programme accreditation. Thus, in seven standards the assessment level of full compliance prevails in five standards.

In particular, it was found that the most positive assessment ("full compliance") of the expert panels in all levels of study programmes was given to Standard 1 "Aims of study programmes and policy in the field of quality assurance", Standard 4 "Admission of students, progression, recognition and certification" and Standard 7 "Public information". Thus, the results of accredited study programmes by these standards mostly comply with the IQAA's standards and criteria of programme accreditation.

The largest number of significant remarks was found for Standard 2 "Development, approval of study programmes and information management" and Standard 6 "Learning resources and student support".

Minor remarks were mostly found in Standard 5 "Teaching staff" and Standard 2 "Development, approval of study programmes and information management".

There were no non-compliance found (see the table below).

Table 1. Trends of positive and negative practice in the external review reports on programme accreditation of Technical Sciences and Technologies

Standard	Mark the level of compliance of the self-assessment report to the factual situation in the study programme by each standard			
	Fully complies	Complies with minor remarks	Complies with remarks	Does not comply
Standard 1 Aims of study programmes and policy in the field of quality assurance	62 (75,6%)	19 (23,2%)	1 (1,2%)	0

Standard 2 Development, approval of study programmes and information management	35 (42,7%)	36 (43,9%)	11 (13,4%)	0
Standard 3 Student-centered learning, teaching and assessment	45 (54,9%)	30 (36,6%)	7 (8,5%)	0
Standard 4 Admission of students, progression, recognition and certification	67 (81,7%)	10 (12,2%)	5 (6,1%)	0
Standard 5 Teaching staff	30 (36,6%)	44 (53,7%)	8 (9,8%)	0
Standard 6 Learning resources and student support	38 (46,3%)	30 (36,6%)	14 (17,1%)	0
Standard 7 Public information	70 (85,4%)	10 (12,2%)	2 (2,4%)	0

3.2 Good practice

Expert panels give positive assessment in the number of criteria that fully comply with the standards of programme accreditation. Thus, under Standard 1 "Aims of study programmes and policy in the field of quality assurance" the thematic analysis shows that universities have formulated their own missions and strategic plans developed their own internal quality assurance systems and pay proper attention to anti-corruption and academic integrity measures.

Under Standard 4 "Admission of students, progression, recognition and certification" it is seen that the universities apply pre-defined and publicly available rules for different stages of a student's lifecycle in line with the Bologna Process requirements. Among them admission criteria, assessment criteria and conditions for transfer from one year of study to another, tools for collection, monitoring and management of information on the progress of students, obtaining documentation on the award of the degree and/or qualification, post diploma guidance, etc.

Under Standard 7 "Public information" external review reports demonstrate that universities have their own websites which provides useful information for different

groups of stakeholders: prospective applicants, students, parents, graduates, employers, and partners. It is well noticed that in line with the multilingual policy of the Republic of Kazakhstan the university websites are mostly available in three languages: Kazakh, Russian and English. Overall, it is seen that the universities develop and improve their public information campaigns.

Further we will look on the trends identified within remarks and recommendations in the most "problematic" standards.

3.3 Common remarks and recommendations on Standard 2

Remarks on **Standard 2 "Development, approval of study programmes and information management"** mostly relate to the following aspects:

Involvement of employers to the development of a study programme

Participation of employers in the development of a study programme, consideration of their needs and desires is the key to obtaining by students of the competencies required for the current labor market in their industry, and hence the success in further employment of graduates in the specialty. Expert groups note that employers are not involved or are not sufficiently involved in the development of study programmes. This is also closely related to comments on the lack of external expertise and review of study programmes, as well as inadequate reflection of professional competencies in the study programme.

Educational path

The results of programme accreditation show that students of technical specialties sometimes do not have a real choice of elective disciplines and, thus, are deprived of the opportunity to form their individual educational path. On the part of universities, this is due to the minimum requirements for the formation of student groups based on economic feasibility, as well as the availability of the teaching staff.

Management and keeping of mandatory documentation for the study programme

Experts note various violations in management and keeping of mandatory documentation (records) on a study programme. So, for example, experts write that "the issuing department does not provide the completeness of the control structure of normative documents and its structuring according to the modules of the study programme". In particular cases, there is found a discrepancy between the individual students' curriculum with the modular study programme or the discrepancy between the modular study programme with the typical (standard) curriculum for the study programme.

Areas for improvement reflect recommendations that the university is advised to fulfill in order to improve the quality of education. Areas for improvement, as a rule, follow from remarks, but in their absence, recommendations for further development of the study programme can also be given. According to the **Standard 2 "Development, approval of study programmes and information management"**, external experts most often recommend:

- To expand the involvement of employers in the design of a study programme;
- To provide students with a choice and formation of an individual educational path (in particular, it concerns the programmes of Master and PhD degrees);
- To carry out constant monitoring of the employment and career growth of graduates;
- To carry out active measures on vocational guidance work;
- To ensure the maximum compliance of places for foreign internships of Master students with the topics of their Master theses;
- For the purpose of internationalization, it is recommended to develop joint study programmes with foreign universities;
- To improve the organization of the study process through distance educational technologies;
- To ensure proper management and keeping of the documentation of the study process for a study programme.

3.4 Common remarks and recommendations on Standard 5

Remarks on *Standard 5 "Teaching staff"* mostly relate to the following aspects:

Academic mobility

Academic mobility is one of the main principles of the Bologna process. It is designed to facilitate the exchange of experience and the formation of competitive specialists, including through their integration into the global educational area. Academic mobility is important not only for professional, but also for personal development of a teacher in the context of cultural enrichment. Expert panels note the absence of external academic mobility of the teaching staff. The thematic analysis of review reports shows that the problems of the implementation of academic mobility in higher education institutions are determined by the lack of or insufficient amount of funding, inadequate degree of development of special mechanisms for academic exchange, the lack of adequate infrastructure that ensures efficient exchange, and a low level of foreign language proficiency on the part of the teaching staff. In particular, the external review reports on postgraduate programmes

point on insufficient number of teachers at general technical and graduating departments capable of conducting classes in English.

Professional development

Within the framework of external reviews, experts identified the problems of professional development of the teaching staff related to the lack of external funding, the lack of funding for upgrading qualifications of the teaching staff at the university's expense in leading universities and scientific centers of the near and far abroad countries, proper planning and implementation of the advanced training programme. Experts note that the staff development of teachers is carried out, mainly, by means of courses for professional development organized within the university.

Research work

Expert panels write on little participation of the teaching staff in funded research projects, in various national and international competitions, as well as insufficient level of foreign language skills for free interaction of the teaching staff within the framework of projects with their foreign partners. In a number of cases, there are remarks about the lack of commercialization of own scientific developments and the lack of research work on contractual topics.

Publications

In remarks for this aspect, expert groups note a low level of publication activities, absence of articles in journals with non-zero impact factor such as Thomson Reuters, Scopus, etc. In several cases, publications of the teaching staff are limited to collection of materials in the framework of research conferences conducted on the basis of their university. Also, experts point out that the teaching staff of study programmes do not participate in the publication of textbooks recommended by the Ministry of Education and Science of the Republic of Kazakhstan, monographs, etc.

As areas for improvement for *Standard 5 "Teaching staff"*, expert groups recommend:
- To regularly analyze the contribution of teachers to the improvement of study programmes, to define educational goals and results, and to improve the effectiveness of training;
- To increase the number of scientific articles of the teaching staff in publications with a high impact factor;
- To increase the quality of methodological developments for conducting laboratory works;

- To conduct training courses on foreign language for teaching staff in order to create an adequate level of language skills for participation in international cooperation programmes and projects;

- In order to internationalize education, it is important to attract into the educational process, including distance education, leading professors from foreign universities to conduct classes on basic and specialized disciplines of the specialty;

- To conduct a regular and systematic analysis of results on the introduction of scientific research into the educational process;

- To intensify the work on attracting practitioners to conduct practical training sessions;

- To conduct work on attracting young scientists to the study process systematically, to use the target training on PhD programmes to form new cohort of teaching staff;

- To strengthen the work on preparing teaching aids, monographs by the staff of the departments;

- To regularly use modern innovative teaching methods;

- To intensify the work on the teaching staff and students' participation in grant projects financed by the Ministry of Education and Science of the Republic of Kazakhstan and international projects;

- To develop a system of informing about academic mobility programmes and improve the mechanisms of organization and normative and methodological support of the teaching staff's academic mobility.

3.5 Common remarks and recommendations on Standard 6

Remarks on *Standard 6 "Learning resources and student support"* are mostly being pointed for the following aspects:

Material and technical base of study programmes

As the main problems, experts note the obsolescence of material and technical base in general, in particular the laboratory base for conducting studies and scientific research by students, the need to expand the auditorium fund and the number of places in the dormitory for students. Modern equipment and laboratory facilities ensure obtaining relevant knowledge in the field of technical programmes. Therefore, it is so important for universities to seek for financial opportunities to maintain them at the up-to-date level. As one of the opportunities for funding, experts indicate the participation of students and teaching staff in programmes on research projects and attraction of the sponsorship from employers.

Library fund

Most of the comments on the library fund are due to the lack of educational and methodological literature in the state language. This remark is relevant in connection with the active implementation of the policy of multilingualism in Kazakhstan and the need to promote the knowledge of Kazakh language among young people.

Experts also note the use of outdated sources of literature in students' works, the lack of periodic publications on the profile of study programmes in the university library, the shortage of educational materials on electronic media, and the lack of educational literature in foreign language in the field (in particular this concerns postgraduate study programmes).

Trends of the most common recommendations for *Standard 6 "Learning resources and student support"* are reflected in the following way:
- To intensify the work of the department on the development of its own educational publications in Kazakh language;
- To increase the volume of educational literature in a foreign language on core disciplines (in particular for postgraduate study programmes);
- To broadly introduce the results of scientific research into the study process and production;
- To regularly update the laboratory facilities in the areas of study programmes;
- To ensure a timely repair of educational buildings;
- To provide students with a more extensive access to modern electronic databases, including foreign databases (Scopus, Thomson Reuters, etc.)

IV. Conclusion

The thematic analysis of the 2016 external review reports within programme accreditation of study programmes in Technical Sciences and Technologies shows that higher education institutions demonstrate good practice on the aspects of developing the aims of the technical study programmes, organization and management of the student's lifecycle procedures, and public information. Study programmes in Technical Sciences field have become popular among applicants due to the State Programme for Industrial and Innovative Development, increase of the number of state grants for technical study programmes and demand of highly-qualified technical specialists from the labour market of the country.

Common remarks concern the state and conditions of the material facilities, research and laboratory equipment, lack of specialized literature in a state and foreign languages, lack of applied research, insufficient participation of employers in the design of study programmes and realization of academic mobility strands.

As for postgraduate study programmes in Technical Sciences and Technologies, expert panels focus attention on the need to continuously develop teaching staff in line with modern technologies, enrich library funds with up-to-date specialized literature and develop students' research work.

List of analyzed external review reports in the study field of Technical Sciences and Technologies, 2016

№	Programme	Code	University
1.	Automatization and Control	6D070200	K.I.Satpayev Kazakh National Research Technical University
2.	Mathematical and Computer Modeling	6M070500	
3.	Mathematical and Computer Modeling	5B070500	
4.	Computing Techniques and Software	6D070400	
5.	Computing Techniques and Software	6M070400	
6.	Computing Techniques and Software	5B070400	
7.	Information Systems	6D070300	
8.	Information Systems	6M070300	
9.	Information Systems	5B070300	
10.	Technical Physics	6D072300	
11.	Technical Physics	6M072300	
12.	Technical Physics	5B072300	
13.	Radio Engineering, Electronics and Telecommunications	6D071900	
14.	Radio Engineering, Electronics and Telecommunications	6M071900	
15.	Radio Engineering, Electronics and Telecommunications	5B071900	
16.	Instrument Engineering	6D071600	

17.	Instrument Engineering	6M071600	
18.	Instrument Engineering	5B071600	
19.	Manufacture of Building Materials, Products and Constructions	6M073000	
20.	Manufacture of Building Materials, Products and Constructions	5B073000	
21.	Construction	6M072900	
22.	Construction	5B072900	
23.	Mining	6D070700	
24.	Enrichment of Minerals	6M073700	
25.	Enrichment of Minerals	5B073700	
26.	Safety of Life and Environmental Protection	6M073100	
27.	Safety of Life and Environmental Protection	5B073100	
28.	Material Engineering and Technology of New Materials	6D071000	
29.	Standardization and Certification	6M073200	
30.	Standardization, Certification and Metrology	5B073200	
31.	Technology of Processing Materials with Pressure	6M073800	
32.	Technology of Processing Materials with Pressure	5B073800	
33.	Printing Industry	6M072200	
34.	Printing Industry	5B072200	
35.	Transport, Transport Techniques and Technologies	6M071300	
36.	Transport, Transport Techniques and Technologies	5B071300	
37.	Petrochemistry	6D073900	
38.	Petrochemistry	6M073900	

39.	Geophysical Methods of Prospecting and Exploring Mineral Deposits	6M074700	
40.	Life Safety and Environmental Protection	5B073100	Zhezkazgan Baikonurov University
41.	Construction	5B072900	
42.	Technological Machines and Equipment	5B072400	
43.	Power engineering	5B071800	
44.	Transport, Transport Technology and Techniques	5B071300	
45.	Metallurgy	5B070900	
46.	Mining	5B070700	
47.	Geology and Exploration of Mineral Deposits	5B070600	
48.	Automation and Management	5B070200	
49.	Power Engineering	6M071800	Kazakh University of Railways
50.	Transport Construction	6M074500	
51.	Transport, Transport Technology and Techniques	6M071300	
52.	Radio Engineering, Electronics and Telecommunications	6M071900	
53.	Automatization and Control	6M070200	
54.	Power Engineering	5B071800	
55.	Transport Construction	5B074500	
56.	Transport, Transport Technology and Techniques	5B071300	
57.	Radio Engineering, Electronics and Telecommunications	5B071900	
58.	Automatization and Control	5B070200	
59.	Standardization, Certification and Metrology	5B073200	M. Tynyshpayev Kazakh Academy of Transport and Communications

No.	Program	Code	University
60.	Power Engineering	5B071800	Academician K. Satpayev Ekibastuz Engineering and Technical Institute
61.	Heat Power Engineering	5B071700	
62.	Transport, Transport Technology and Techniques	5B071300	
63.	Mining	5B070700	
64.	Chemical Technology of Organic Substances	6M072100	Kazakh - British Technical University
65.	Chemical Technology of Organic Substances	5B072100	
66.	Oil and Gas Engineering	6D070800	
67.	Oil and Gas Engineering	6M070800	
68.	Oil and Gas Engineering	5B070800	
69.	Information Systems	6M070300	
70.	Mathematical and Computer Modeling	6D070500	
71.	Machinery Manufacturing	5B071200	Kazakh National Agrarian University
72.	Transport, Transport Technology and Techniques	6M071300	
73.	Transport, Transport Technology and Techniques	5B071300	
74.	Power Engineering	5B071800	
75.	Heat Power Engineering	6M071700	
76.	Heat Power Engineering	5B071700	
77.	Information Systems	6M070300	
78.	Information Systems	5B070300	
79.	Computing Techniques and Software	6M070400	
80.	Computing Techniques and Software	5B070400	
81.	Automatization and Control	6M070200	
82.	Automatization and Control	5B070200	