QUALITY AND EVALUATION OF HIGHER EDUCATION: MODELS OF EVALUATION OF QUALITY AND STUDENTS' FEEDBACK USED AT BRNO UNIVERSITY OF TECHNOLOGY

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Abstract

The aim of the paper is to provide a comprehensive view of the quality assessment of higher education institutions in the Czech Republic. Based on the literature review, the quality of the higher education institutions in the Czech Republic is described together with the tools used for the internal and external evaluation of those institutions. Some of these tools are described in a practical example. The practical example focuses on quality assessment of the Brno University of Technology because quality assurance is an essential part of BUT's mission in terms of education and creative activity. For the purpose of this article, a part of the evaluation of the quality of education is selected, which takes place mainly in the form of feedback. Students feedback from each faculty focusing on the quality of education and teachers is furtherly analysed. Based on this feedback, the rate of return at individual faculties is compared and evaluated, together with suggested recommendations for faculties in order to increase the rate of return, as well as the recommended steps that should be implemented in order to improve evaluation process of education.

Keywords: *quality management, higher education, quality of higher education, students feedback, quality assurance*

1. INTRODUCTION

Over, the years, the need for quality has become more and more important for the institutions of higher education across the globe. Global and national forces are driving change both within and across individual countries and their higher education institutions. Therefore, adoption of a quality excellence framework becomes essential for the higher education institutions (Brookes & Beckett, 2009). Vroeijenstijn (1991) states that it would be a waste of time to come up with one single unified definition for quality, mainly because the quality is 'stakeholder-relative'. For instance, the main focus of attention for students and lecturers might be on the process of education. However, the main focus of employers might be different, for example on the outputs of higher education. Harvey & Green (1993) argue, that every stakeholder adopts different view on the quality of higher education. Synchronously, that is the main reason why it is not possible to formulate only single definition of quality. According to their research, one of the possibilities to formulate the main criteria for assessment of quality in higher education is the understanding of difference in perception of different stakeholders (Harvey & Green, 1993). Although quality posses a transformative component for students, teachers and the culture of the institution as well (Harvey & Knight 1996), what students actually perceive to be a high quality in their education may not be clearly articulated (Hill, Lomas & MacGregor 2003) or matched by academics point of view and what they identify and formulate as valuable or what employers wish to see in graduates and what skills and knowledge they should posses when finishing university. This perception may lead to two possible results - students perceiving themselves as receiving poor quality education may be less likely to engage and fulfil their academic potential, or may even fail to continue their studies. Students may feel dissatisfied with their university education in case that what the university has to offer and deliver does not match students' expectations. Vijaya Sunder (2014) states that for efficient learning and career development of students, imparting application-oriented practical knowledge into students is becoming more essential than the traditional book theory knowledge. Moreover, quality excellence frameworks are essential to define, manage and stabilise the processes involved. With advocates declaring students as customers of the higher education services, critics point out that such customer

concept into higher education might degrades the educator-student relationship (Eagle & Brennan, 2007). However, when it comes to the teaching and learning process students tend to be perceived as actors in the process, mainly due to the fact that the result of it will depend on their willingness to learn.

2. MATERIALS AND METHODS

Literature review on quality and quality evaluation of universities was conducted. Furthermore, law and regulations concerning the quality of universities in the Czech Republic were analyzed. For a practical example of BUT, documentary analysis of internal regulations and reports available on the official notice board of the university and individual faculties was conducted. Furtherly, qualitative research among students of BUT was executed (questions asked directly by students personally and via social networks), focusing on student evaluation of teaching. Moreover, interviews with Professor Rais, Head of BUT Quality Department and Mrs. Doležalová, Head of BUT Strategy Department were held as well.

3. QUALITY OF HIGHER EDUCATION IN THE CZECH REPUBLIC

Harvey & Green (1993) state that quality assurance is about ensuring that there are mechanisms, procedures and processes in place to ensure that the desired quality, that is also defined and measured, is delivered. In their opinion, a high quality institution is one which clearly states its mission and is efficient and effective in meeting set goals. Czech Republic, as a member of European Higher Education Area adheres to the Standards and guidelines for quality assurance in the European Higher Education Area (ESG) declaring that a successfully implemented quality assurance system will provide information to assure the higher education institution and the public of the quality of the higher education institution's activities as well as provide advice and recommendations on how it might improve its actions (ENQA, ESU, EUA et al. 2015). Other regulations governing higher education institutions are bound by Act No. 111/1998 Coll. (amended and consolidated) on Higher Education Institutions and on Amendments and Supplements to Some Other Acts (Higher Education Act), as resulting from later amendments. Each HEI should regularly provide an internal evaluation and publish its results. General obligation is stipulated by the Act, but further details are let to handle by the internal institutional regulation (Beneš & Roskovec, 2008).

In 2016, an amendment to the Higher Education Act was approved, regulating the establishment of the National Accreditation Office. The NAU has the power to make final decision on accreditation of degree programs, institutional accreditation for education and accreditation of habilitation procedure and appointment of professor; activities and related activities of universities. The amendment also introduces so-called Institutional Accreditation, thanks to which the university can accredit study programs in selected areas based on its internal regulations.

If the university successfully completes the evaluation process, it will be accredited for selected areas for the period of 10 years. In connection with the amendment to the Higher Education Act, the Board for Internal Evaluation was established, chaired by the Rector of the University. The Board for Internal Evaluation commits that the degree programs approved by the University itself comply with the Higher Education Act and Government Regulation on standards for accreditation in higher education. In order to obtain institutional accreditation, the University must demonstrate a functioning internal quality assurance system and the proper functioning of the Internal Evaluation Board. The granting of institutional accreditation is conditional on the demonstration of sufficient staffing, cooperation with the relevant industry to develop relevant programs, the existence of quality control mechanisms for teaching, research and financial management. If the university successfully passes the evaluation process, it will be accredited for 10 years (Higher Education Act, 2017; Government Regulation, 2016; National Accreditation Bureau for Higher Education, 2019). The quality of higher education is very discussed topic in last decades in the Czech Republic. For 20 years, there has been held the conference Quality Assessment of Higher Education Institutions (2019), which has been developing current topics related to ensuring and improving the quality of Czech higher education. Partners of this conference are

Masaryk University, Centre for Higher Education Studies, National Accreditation Bureau for Higher Education, Czech rectors conference and Council of Higher Education Institutions.

4. MODELS OF EVALUATION OF QUALITY USED AT BRNO UNIVERSITY OF TECHNOLOGY

The Brno University of Technology (BUT) is the biggest technical university in the Czech Republic that strives to achieve excellence in all areas of its activities - in the areas of education, research, cooperation with practice and the social sphere. It is constantly striving to strengthen the position of an excellent technical school in the Czech Republic and in Europe. The Brno University of Technology has many years of experience in the field of quality management resulting from the solutions of projects focused on quality management, which it gradually introduced and continues to put into practice (Brno University of Technology, 2018). BUT implemented quality management requirements arising from the relevant national accreditation standards. The BUT further confirms that despite the positive results, the university focuses on improvement of the internal quality management system, especially focusing on adherence to quality in degree programs, strengthening the international character of degree programs, implementing quality assessment criteria in educational and creative activities according to international standards imposed on excellent universities.

4.1 Selected External Models of Evaluation of Quality used at Brno University of Technology

When interviewed on June 2019, professor Rais explained that one of the main criteria for assessing school quality at BUT is ranking in international rankings, such as QS World University Ranking or The Times Higher Education World University Rankings. Although, there are still some critics regarding global university rankings, the major criticism is that they primarily focus on research, which is only one of many indicators of high-quality institutions.

Another external quality assessment tool at BUT is the Institutional Evaluation Program from European University Association. This program is registered with the European Quality Assurance Register for Higher Education, is a member of the European Association for Quality Assurance in Higher Education and is an external quality evaluator, supports institutions to further develop their strategic management, internal quality assessment to improve activities and results (IEP, n.d.)

The University was first evaluated in this program in 2005 and then it was re-evaluated in 2011. In 2018 the University was evaluated in the following areas: Governance and institutional decision-making, Quality culture, Teaching and learning, Research, Service to society, Internationalization (Schulz, Jezierski, Koubias et al., 2018). As it was discussed with Mrs. Doležalová on June 2019, one of the reasons BUT decided to undergo an evaluation again was due to the preparation for the institutional accreditation process and the need for an independent external view of achievements and objectives. As she has explained BUT sees this evaluation as a further step towards Czech harmonization of technical education with universities in other EU countries and ensuring the strategic position of BUT among European universities.

In 2018, BUT underwent through the process of obtaining institutional accreditation, received from the National Accreditation Bureau for Higher Education in January in fields Economics, Electrical engineering, Energy, Chemistry, Informatics, Construction, Mechanical engineering, technology and materials (Brno University of Technology, 2019a). Therefore, as an external evaluator, the National Accreditation Bureau for Higher Education evaluates and reviews programs outside the areas that have received institutional accreditation. In compliance with the law, the National Accreditation Bureau for Higher Education also checks compliance with legal obligations in the area of quality assurance, including the requirement to improve the quality assurance system of all activities and fulfill the objectives of the strategic plan. In doing so, the National Accreditation Bureau for Higher Education may impose remedies if it finds weaknesses, but it may also recommend how and what to improve and hence at least to some extent apply quality assessment for improvement (National Accreditation Bureau for Higher Education, 2019).

4.2 Selected Internal Models of Evaluation of Quality used at Brno University of Technology

The guarantor of the quality assurance and evaluation system at Brno University of Technology is the BUT Internal Evaluation Board, which consists of distinguished BUT academics, university quality management experts and one student representative. At the BUT management level, the implementation of the quality rules is ensured by the Vice-Rector for Academic Affairs, who cooperates with other relevant departments of the Rectorate, with the Quality Department, as well as with faculties and other BUT components. The BUT quality assurance and internal quality assessment system is designed cover all BUT activities and consists of all organizational units of the university (Brno University of Technology, 2018).

Within the framework of institutional accreditation in the field or fields of education, the BUT Internal Evaluation Board approves the degree programs and grants that faculty or faculties have the right to undertake the degree programs. The procedure for internal approval of study programs at BUT is described in the Consolidated version of the rules of programs implemented at Brno University of Technology (2019) and Rector's Directive No. 68/2017 - Rules for the discussion of proposals for accreditation and study programs in the BUT Internal Evaluation Board (2019). The BUT Internal Evaluation Board approves the draft rules for quality assurance and internal quality evaluation of educational, creative and related activities of a public higher education institution, which is submitted by the Rector to the BUT Academic Senate. It also manages the internal quality assessment process, elaborates the report on internal quality assessment and makes amendments to this report. The International Evaluation Board also keeps continuous records of internal quality evaluation and performs other activities to the extent set by the statute of the public higher education institution (Brno University of Technology, 2019b).

Quality evaluation in the field of science and research is carried out mainly at the level of faculties and other workplaces and relates to the evaluation of research teams, academic and research workers and students of doctoral study programs. Due to a change in the national methodology for evaluating research, development and innovation, it will be necessary to modify the evaluation system. Evaluation of other related activities, such as university management and administration activities, information systems, information and advisory services, support of project activities, protection and transfer technologies, library services, publishing and editorial services, dormitories and canteens, creation facilities for sports and leisure activities of students and employees are provided at BUT in the form of feedback from relevant users services, or in the form of surveys. The evaluation of these activities is included in the annual reports on BUT activities and economy (Report on quality assurance and internal quality assessment of the Brno University of Technology, 2018). According to the data in the report, it is confirmed that an important part of the evaluation of teaching quality is the students of the relevant study program, who through their statements provide information supporting the development of study programs and educational activities at BUT. Evaluation of quality focused on students' feedback is analysed in the chapter Findings and Discussion.

5. FINDINGS AND DISCUSSION

Students from each faculty have an opportunity to evaluate their subjects and teachers after every term during the academic year. Faculties are obliged to prepare a report on quality assessment by students and propose measures to identify shortcomings. For the purpose of this paper, the most recent reports available from each faculty were taken and analysed. Some faculties had the latest report from the summer semester of the academic year 2018/2019, some had the latest report available from the winter semester of the academic year 2017/2018. The important indicators were chosen from the analyses, based on which the success of the student evaluation can be compared.

Analysed faculties:

Faculty of Mechanical Engineering – FME, Faculty of Civil Engineering – FCE, Faculty of Electrical Engineering and Communication - FEEC, Faculty of Business and Management - FBM, Faculty of

Information Technologies - FIT, Faculty of Chemistry – FCH, Faculty of Architecture - FA, Faculty of Fine Arts – FFA, Institute of Forensic Engineering – IFE

Monitored indicators:

Indicator A: Number of subjects taught in the reference period

Indicator B: Number of evaluated subjects in the reference period

Indicator C: Percentage of students who rated subjects

Indicator D: Percentage of evaluated subjects with minimum required percentage of students

Indicator E: Percentage of evaluated subjects with minimum required participation of students

Faculty	Ind. A	Ind. B	Ind. C	Ind. D	Ind. E
FME	797	430	N/A	47 %	25 %
FCE	359	343	35,2 %	90 %	71 %
FEEC	540	297	18 %	25 %	25 %
FBM	160	N/A	9,1 %	N/A	N/A
FIT	N/A	N/A	34 %	N/A	N/A
FCH	324	N/A	12,2 %	23 %	11 %
FA	150	76	23,29%	N/A	33 %
FFA	167	45	N/A	0,01 %	0,01 %
IFE	43	32	N/A	N/A	N/A

Table 1. Analysis of students' feedback at the faculties of BUT
Source: Created by author based on reports of the faculties, 2019

It was also monitored how many questions are included in the feedback form at each faculty and how many of them are full-text questions to find out whether students have an opportunity to widely express their opinions. All available questions can be seen in Appendix.

Faculty	Number of questions	Choice of answers	Full-text answers
FME	6	4	2
FCE	N/A	N/A	N/A
FEEC	10	7	3
FBM	10	7	3
FIT	13	12	1
FCH	27	21	6
FA	9	5	4
FFA	6	6	6
IFE	9	7	2

Table 2. Analysis of students' feedback at the faculties of BUT – Structure of questions
Source: Created by author based on reports of the faculties, 2019

Faculties do not make evaluation reports after each semester, as written in the internal regulation. For instance, one faculty has the latest report available from the winter semester of the academic year 2017/2018 and only 3 faculties have reports from the summer semester of the academic year 2018 / 2019. The internal regulation governing the drafting of the evaluation report states that each faculty must provide for corrective actions to improve the problems, if any. Despite this regulation, 2 faculties had very weak statements, 1 faculty had no evaluation of verbal comments and no comment on remedial action. Furthermore, there are no precise indicators that each faculty should monitor. As seen in Table 1, only two indicators could be traced to two faculties. The documents also found that the indicator "number of students who rated the report" is calculated differently for different faculties.

Based on findings the qualitative research has been conducted on 60 respondents among faculties based on 2 questions:

1) Why do some students not evaluate the course at the end of the semester?

2) What would make you (or your classmates) get involved in the evaluation?

36 respondents said that they do not believe that their assessment will change anything and therefore do not want to fill it out. For example, they shared their own experience from previous years, writing comments and suggestions for improvement, but the conditions remained the same. 5 students complained about the length of a questionnaire (see Table 2 for comparison - the Faculty of Chemistry has 27 questions while the Faculty of Mechanical Engineering has only 6 questions). 4 students stated that there was a short time to complete the questionnaire (they did not think about it during the exam period and then when they wanted to fill it in, the evaluation was already closed). 6 respondents stated that the questions in the questionnaire were not relevant and could not be applied to each subject. 5 students stated that they do not believe in the anonymity of the questionnaire and are afraid of study conditions if they write a bad assessment, because in smaller courses it is possible to assign a comment to each student. 4 students said they filled in regularly and forgot this year.

Following the questions and previous document analysis it is possible to discuss recommendations leading to improvement of quality evaluation of teaching from students point of view:

- Provide feedback from teachers and regularly report on corrective actions in case of deficiencies
- To find out from students and academics what questions would help them to improve their quality evaluation
- Extend the time to evaluate teaching
- Discuss the relevance of questions at faculties
- Unify the system of assessment of teaching across the university
- Resolve the problem of student fear associated with not guaranteeing anonymity
- Addressing the quality of teaching also during the semester (this will solve the students' unwillingness to fill in something that they themselves do not benefit from in the given semester)
- Discuss the role of the Student Chamber of the Academic Senate at each faculty - whether they are able to solve student problems and assess teaching, or need to provide a student ambassador to collect suggestions from students to maintain their anonymity
- Ensure greater promotion among students - for example by sending a reminder email

6. CONCLUSIONS

For the purpose of this article, a literature review on the quality evaluation of higher education institutions was conducted. With regard to the membership of the Czech Republic in the European Higher Education Area and the laws in force in the Czech Republic, the evaluation of the quality of higher education institutions in the Czech Republic has been analysed. Furthermore, selected tools of

external and internal quality evaluation used at BUT were described. One tool - student assessment of teaching was selected and furtherly analysed in detail based on document analysis and qualitative research among students. Thanks to the research, several remedies have been recommended in order to improve student assessment of teaching quality. Due to the limitation of the scope of this article, not all the tools were discussed in detail, this should be subject to further investigation.

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APPENDIX

Students' feedback form using at each faculty of Brno University of Technology

Faculty of Mechanical Engineering

1. How do you evaluate the pedagogical level (clarity of interpretation, ability to present the subject matter interestingly, readiness of the teacher for teaching).
2. How do you evaluate the attitude to the student (helpfulness, helpfulness, pleasant atmosphere)?
3. Did the teacher follow the predetermined rules?
4. How do you assess the objectivity of the examiner?
5. Here you can comment in more detail about your teacher rating. In the case of negative evaluation in the previous questions, please comment briefly. You can also write everything you want to tell the teacher or his superiors.
6. Here you can write your comments about the subject. You can add what could not affect the previous questions or anything you wish to tell the director of the institute or the dean of the faculty. It is possible to propose improvements or assess compliance with the declared teaching parameters (laboratory teaching, English teaching, size of teaching groups, etc.)

Source: (Faculty of Mechanical Engineering, 2019)

Faculty of Civil Engineering

The faculty has neither published the exact wording nor the number of questions, only the areas on which the questions focus. Following areas are overall impression:

- Overall impression including coordination of different forms of teaching (would you recommend this subject to a friend?)
- Content of the subject - Opinion on the contribution of the subject within the field, discussed topics, etc.
- Any comments - Suggestions for improving teaching etc.
- Number of hours of preparation for lectures (whole semester) (repetition of topics from previous lectures to understand another substance) - Repetition of topics from previous lectures to understand upcoming topics
- Number of hours of preparation for the whole semester (projects, examples, preparation for tests, etc.)
- Number of hours of preparation for credits - How many hours you spent preparing for credits
- Number of hours of exam preparation or graded credit - How many hours did you spend on preparation for exam or graded credit
- Assessment of course completion
- Evaluation of the quality of lecturers' teaching
- Ability to explain the issue - Clarity of interpretation
- Attractiveness of interpretation, interaction with students - Attractiveness, style of teaching and culture of the speech of the teacher
- Preparedness for teaching - Was the presentation prepared, did the lecturer use appropriate means?
- Relationship to students - helpfulness, willingness, possibility of consultation, punctuality of the teacher

- Available materials - Quality and availability of study materials
- My participation in the classroom - How often have you attended this form of lectures
- Evaluation of the quality of teaching instructors
- Ability to explain the issue - Clarity of interpretation
- Attractiveness of interpretation, interaction with students - Attractiveness, style of teaching and culture of the speech of the teacher
- Readiness for instruction - Was the presentation prepared, did the practitioner use appropriate means?
- Relationship to students - helpfulness, willingness, possibility of consultation, punctuality of the teacher
- Available materials - Quality and availability of study materials

Source: (Faculty of Civil Engineering, 2019)

Faculty of Electrical Engineering and Communication

1. To what extent has the subject benefited you? If it was of little benefit, please explain why.
2. To what extent (approximately) did the subject matter repeat from previously completed subjects?
3. What was the availability of quality study materials?
4. What materials do you recommend to future students to prepare for the pointed activities of the course (tests, written papers, exam)?
5. Student comments on the subject.
6. Was the teacher ready to teach?
7. Did the teacher explain the subject matter covered?
8. Was the teacher willing to communicate with students (consultations, answers to questions, explanations of ambiguities in written papers, etc.)?
9. Did the teacher comply with the rules for scoring and the organization of teaching set at the beginning of the semester?
10. Student comments to the teacher.

Source: (Faculty of Electrical Engineering and Communication, 2019)

Faculty of Business and Management

1. To what extent has the subject benefited you? If it was of little benefit, please explain why.
2. To what extent (approximately) did the subject matter repeat from previously completed subjects?
3. What was the availability of quality study materials?
4. What materials do you recommend to future students to prepare for the pointed activities of the course (tests, written papers, exam)?
5. Student comments on the subject.
6. Was the teacher ready to teach?
7. Did the teacher explain the subject matter covered?

8. Was the teacher willing to communicate with students (consultations, answers to questions, explanations of ambiguities in written papers, etc.)?
9. Did the teacher comply with the rules for scoring and the organization of teaching set at the beginning of the semester?
10. Student comments to the teacher.

Source: (Faculty of Business and Management, 2018)

Faculty of Information Technology

1. How do you evaluate the content of lectures (professional level of lectures)?
2. How do you evaluate the way of the lecture (pedagogical level of lectures)?
3. Have you attended lectures?
4. Were the exercises well prepared and performed?
5. Quality of study materials provided for the subject.
6. How do you perceive the difficulty of the subject?
7. Number and time required for projects.
8. Are you interested in the topic as a whole?
9. Was the subject well organized, was it clear what and when the students were supposed to do and what and when would the teachers respect the set conditions?
10. In your opinion, how did the subject meet the objectives declared in the subject card?
11. Indicate by number how many hours per week you spent on the course during the semester (visits, homework, projects).
12. Enter the number of hours spent preparing for the exam (including all dates)
13. You can briefly state what you appreciate about the subject, what should improve, what has been done well, and what has not. You can also refine or expand your rating.

Source: (Faculty of Information Technology, 2018)

Faculty of Chemistry

The faculty has neither published the exact wording nor the number of questions, only the areas on which the questions focus. The number of questions (see Table 2) was communicated by a student representative from the faculty. Following areas are: Professional competence of the teacher, Teaching ability of teacher, Teacher's personality qualities, Requirements of the student's knowledge by the teacher during the exam/credit, Teacher's Approach to Student Performance Assessment in Exam / Credit, Use of consultation, Assessment of the extent to which the study materials provided were sufficient to complete the course, Opinion on the type of teaching, To select sources of information that were of great importance for students to complete the course, Contribution of an e-learning course to the subject, Course difficulty versus the number of credits, Entry knowledge from previous studies, Teaching in the time range according to schedule.

Source: (Faculty of Chemistry, 2018)

Faculty of Architecture

1. How much time did you have to spend on this subject compared to other subjects?

2. Specify the reason of the subject time consuming
3. Adequacy of the time allocation of the subject within the schedule due to its importance
4. Evaluation of subject content in relation to studio education
5. Explain the previous answer.
6. Do you feel that the content of this subject is repeated in other subjects?
7. Please specify in which subjects.
8. To what extent was the subject useful to you? If it was of little use or unnecessary, please explain why.
9. Is there anything else you want to say about this subject? (explanation, teacher, form of teaching, teaching environment, aids, consultations, etc.)

Source: (Faculty of Architecture, 2019)

Faculty of Fine Arts

1. To what extent has the subject benefited you?
2. What was the availability of quality study materials?
3. Was the teacher ready to teach?
4. Did the teacher explain the subject matter covered?
5. Was the teacher willing to communicate with students (consultations, answers to questions, explanations of ambiguities in written papers, etc.)?
6. Did the teacher comply with the rules for scoring and the organization of teaching set at the beginning of the semester?

Source: (Faculty of Fine Arts, 2018)

Institute of Forensic Engineering

1. The usefulness of including the subject in the study plan.
2. Content of the course.
3. Suitability of time placement of the subject in the study plan.
4. Technical support of teaching.
5. Include any comments or suggestions on the subject.
6. Professional level of the teacher.
7. The readiness of teaching by the teacher.
8. Teaching abilities of the teacher.
9. Include any comments or suggestions to the teacher.

Source: (Institute of Forensic Engineering, 2018)