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Self-reflection of University Teachers at the Czech University of Life Sciences Prague

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Abstract: The aim of the paper is to evaluate teachers´ competences and their self-reflection in the teaching process. The topicality of the research presented in the paper is given by the fact that teachers at university level must prove excellent competences regardless external factors which affect the teaching process any time. Competence is the key qualified and professional job performance in any sector. The paper focuses on the competences of university teachers which they acquire and develop throughout their career. Attention is given to professionally and personality cultivating competences, part of which is also self-reflection. Self-reflection refers to a person's ability of introspection and willingness to learn more about own abilities and skills. This will lead to a better ability to identify changes that may be required. The methodology consists in a research based on a questionnaire survey and statistical evaluation of gathered information. The paper gives an outline of the evaluation process at the Czech University of Life Sciences Prague (CZU), during which opinions of students and teachers about instruction were analysed, together with the fulfilment of selected university competences. The main body of the paper is dedicated to the statistical processing of selected data from the evaluation survey conducted by using the SPSS programme. The results indicate that there are significant deviations of teachers´ self-evaluation from the students´ opinion. The Institute of Education and Communication is going to offer courses in advanced competence development using techniques of self-reflection. This has a potential to enhance effectiveness of the teaching process at university level.

Keywords: education, competences, self-reflection, evaluation survey at CZU.

Introduction

In line with the 2016–2020 Strategic Plan of the European Association for Quality Assurance in Higher Education (Standards and Guidelines…, 2020), the E4 group (the European Association for Quality Assurance in Higher Education, the *European University Association*, the European Association of Institutions in Higher Education and the European Students' Union) published a statement on the use of standards and guidelines for quality assurance in the European Education Area (ESG) in the evolving higher-education environment (The ESG in…, 2020). The E4 group highlights that appropriate and flexible use and interpretation of ESG is essential to be able to respond to the evolving higher education environment and support innovation and diversity of higher education and assure its quality.

The key term in the field of education and research activity is competence. Competence refers to an excellent skill or ability. Competence encompasses a complex of knowledge, skills, attitudes and experiences which are target categories for educators under the evolving conditions of the higher education environment. Competence is not limited to cognitive elements (involving the use of theory, concepts or tacit knowledge); it also encompasses functional aspects (including technical skills) as well as interpersonal attributes (e.g., social or organisational skills) and ethical values (Terminology of European…, 2014, 48).

Competences should form a base for a professional standard, which should stimulate key competences for entry into the profession, i.e., competences that are indispensable for a qualified standard performance. A professional standard will meet its purpose provided it is rigorously linked to teacher evaluation and included in the professionalization system for teachers. This should be supported also by universities. This is concluded also by research T. Leibur, K. Saks, I.A. Chounta (2020), or J. Djermanov, N. Grbović and N. Tančić (2020).

A professional standard forms a normative base of the complex of professional competences. Competences are created during a person's career path through both experience and education. On the other hand, a professional standard stipulates basic criteria for quality assessment. Formulation of

a professional standard depends on a strict specification and definition of the individual groups of competences. It is possible and practical to define them using action verbs that describe what the educator has mastered, what they are able to do, can do and know what knowledge they have. In our paper, we use the following classification of competences in seven categories:

- discipline-specific and subject-specific competences;
- didactic and psycho-didactic competences;
- general pedagogical competences;
- diagnostic and intervention competences;
- social, psychosocial and communicative competences;
- managerial and normative competences;
- professionally and personality cultivating competences (Vašutová, 2004, 54).

The concept of teachers' competences at all levels of the educational system and across countries is one of the most common topics in today's educational theory and practice. The process of self-reflection belongs among important questions that have not been sufficiently discussed and studied so far.

Self-reflection comprises mainly professionally and personality cultivating competences. One of the possible ways to define it would be to say it is the ability of self-assessment and assessment of various subjects, and the ability to behave and act based on objective evaluation and assessment.

The notion of self-reflection is fundamental for the development of the quality of education, and educators at any level should be aware of this fact. Educators should make a conscious effort to develop an open, possibly objective and humble relationship to oneself. In case of university teachers, a qualified and well-meaning opinion of students about their work could be a good tool in this process. This is also one of the aims of the process of evaluation.

Self-reflection represents a major component in the professional identity of each profession, in particular so-called helping professions including university teachers. It can be described by the following phrases: I am – I can – I do. The educator's personality (I am) is reflected in their educational activities (I do) in all respects and is part of all their competences (I can) for which they are responsible. It is responsibility that initiates self-reflective behaviour (Smékalová, 2004, 54). In this way, self-reflection is an umbrella under which all educator's competences can be put as it becomes a tool of professional development. Educators should be knowledgeable concerning self-reflective techniques, mental hygiene rules, and be aware of the level of their professional competences. In regard to skills, educators should be able to implement the knowledge into practice and focus on a regular use of introspection and retrospection and their analysis. Motives and attitudes incorporate the understanding of the significance of self-reflection for personal social development in one's job and searching for tools to be used in this development. In other words, there are two aspects of self-reflection competences that are subject to self-reflective activities, always in relation to the educator's personality and experience. This means that self-reflection competences are linked first to the educational environment and its context (i.e., the specific position the educator has in an educational situation) and second to the educational processes (i.e., specific competences of the educator that are indispensable in the educational process).

This is the reason we put special emphasis on the basic condition of self-reflection, which is experience or learning from experience. Recently, the concept of reflective practice has often been mentioned in the context of higher education (Kahn et al., 2008, 161). In case of academic development its advantage is that it can enhance the ability of academicians to act as mentors and develop others (Bell, 2001). Reflective practice thus provides university teachers with the opportunity to perceive the educational reality through supervision (which they provide to their students) and to retrospectively analyse own educational needs. Professional development can be seen as a diverse process in which experience and self-reflection play a significant role for further professional activity (Lice-Zikmane, Grinberga, 2020, 312).

One of the possible ways to perform self-reflection can be shown using three types of self-reflective activities created by J.K. Jay and K.L. Johnson (2002, 77) – i.e., descriptive, comparative and critical reflection. Descriptive reflection involves determining specific aspects that will be in the centre of the educator's reflective attention. During comparative reflection, educators consider the matter from different perspectives and strive to find its meaning. This results in a complex understanding of the teaching context. Critical reflection means the educator assesses different possibilities and alternatives and integrates newly

acquired information with what they already know, which then forms the basis for a formulation of an alternative teaching method. The quality of the teaching process, i.e., the level and application of acquired professional competences, can be perceived using an evaluation questionnaire, see the research data below.

For 14 years now, the Institute of Education and Communication (IEC) has carried out an evaluation research survey in which opinions of students and teachers on the course and conditions of instruction at the CZU are analysed. Authors agree with the opinion of J. Davidova, I. Kokina (2020, 50) that a good university must be aware of its students' expectations to be able to prepare strategic development plans and to create a reasonable and humane system of management of education. The research published by N. Lopez (2019) also examines the role of students as evaluators, among other things, and it also highlights the need to train students in certain skills, including evaluation and reflection. Teachers should show students that they care, they should be creative and help students develop critical thinking. V. Safronova, E. Klyukina (2020) and T. Sinkus (2020) have come to the same conclusions.

The aim of the paper is to evaluate teachers´ competences and their self-reflection in the teaching process selecting appropriate data from the evaluation research survey for the 2018/2019 academic year and using selected statistical tools and methods to evaluate the proposed hypotheses, comment on the results and give suggestions on how to improve the educational process at CZU.

Methodology

A questionnaire survey was used as the main method of data collection. The following types of questionnaires were prepared for the survey:

- a questionnaire for academic workers;
- a questionnaire for students.

The questionnaires included questions on lectures, practical´s and part-time studies and were distributed in Czech and English versions. Only questionnaires concerning lectures were used for the purpose of this paper to ensure data comparability.

A random selection was carried out to evaluate instruction at CZU in the winter and summer semesters of the 2018/2019 academic year. A list of randomly selected teachers was presented to the responsible academic officials at the faculties and the institute for comments. A total of 90 teachers and 1729 students participated in the research survey. Of the total number of questionnaires, 1336 questionnaires concerned the evaluation of lectures; the others concerned practical´s and part-time studies. A total of 40 teachers who give lectures processed the questionnaire for teachers.

A six-level classification scale was chosen to evaluate the submitted items. Level 1 corresponded to the lowest level of evaluation (the lowest satisfaction of the respondent), while level 6 described the highest level of evaluation (the highest satisfaction). In addition, the questionnaires for academicians also included a "no evaluation" option for all items. This option was not included in the statistical calculations. All questionnaires included a section where students and teachers could freely comment on both the evaluated subject and the work of the teacher, the activities of students or the conditions for instruction.

To find out how developed the professionally and personality cultivating competence, which, among other things, underlines the ability of self-reflection based on self-assessment and assessment by different subjects, is in teachers, "pair items" in the students' and teachers' questionnaires were used. Five questions were selected that concerned the following areas:

- question 1: Comprehensibility of teacher's lectures;
- question 2: Teacher's ability to incite interest and motivate students;
- question 3: Teacher's willingness to allow students to express their opinion;
- question 4: Teacher's ability to create a positive and friendly atmosphere;
- question 5: Teacher's ability to connect instruction and practice.

The teacher´s sample was re-coded as "P", the student´s sample was re-coded as "S". In case of teachers' responses, the scale also included the scale value "no evaluation", which was re-coded as -1 for statistical processing so that the programme would treat it as Missing Value and would not assess it. Students were not given this option.

If the value of the difference between the opinion of the student (S) and of the teacher (P) when compared is positive, this means that the students assess the phenomenon more favourably than the teachers, and vice versa. From the educational point of view, if the answers have a deviation of more than −0.50, then this can be seen as significant to risky teacher optimism; if answers have a deviation of +0.50 and higher, then this can be seen as a certain caution or even too much pessimism in the way teachers evaluate themselves.

A two-sample (unpaired) t-test for two samples was used in the statistical processing; this test was performed after an F-test for detecting the agreement of variances in two samples was conducted.

Results and Discussion

The following hypothesis was designed:

- H1 – Teachers assess themselves more positively than they are assessed by students in their answers that concern their lectures. (Teachers believe that the instruction has all attributes as it should, that they use all their competences to a sufficient extent. The reason could be a sufficient level of teacher optimism or uncritical overevaluation of oneself.)

Two-sample (unpaired) t-test

A two-sample (unpaired) t-test was conducted after an F-test for detecting the agreement of variances in two samples was performed. Initial conditions for variances:

- H_0: $\sigma_1 = \sigma_2$ (the two samples have similar variance (equal));
- H_1: $\sigma_1 \neq \sigma_2$ (variances in the two samples differ);
- selected level of significance: $\alpha = 0.05$.

Initial conditions for H1

- H_0: $\mu_1 = \mu_2$ (there is no difference between opinions of teachers and students, teachers did not evaluate themselves better than they were evaluated by students, i.e., the expected values are equal));
- H_1: $\mu_1 \neq \mu_2$ (there is a difference between opinions of teachers and students in the two samples, the expected values are not equal) – a two-sided alternative;
- selected level of significance: $\alpha = 0.05$.

Table 1 shows:

- It is immediately clear that in four questions out of five teachers evaluate themselves better than students evaluate them. This statement must be verified by statistical testing.

Table 1

Comparison of teachers and students' answers

Questions		Item	CZU
Question 1	P	My lectures are comprehensible	5.00
	S	Teacher's lectures are comprehensible	4.84
		Difference in question 1	0.16
Question 2	P	My lectures are inspirational and motivating	4.69
	S	Teacher has the ability to interest and motivate	4.39
		Difference in question 2	0.3
Question 3	P	I create enough space for discussion and for students to express opinions	4.92
	S	Teacher encourages students to express opinions	4.99
		Difference in question 3	-0.07
Question 4	P	I manage to create a positive and friendly atmosphere of cooperation with students	4.89
	S	Teacher is able to create a positive and friendly atmosphere	4.72
		Difference in question 4	0.1
Question 5	P	In this course, I connect instruction and practice	4.85
	S	Connection between instruction and practice	3.79
		Difference in question 5	1.06

Table 2 shows:

- means show us that for questions 1, 2 and 4, a difference exists between teachers' and students' opinions, for question 3 the difference is insignificant and for question 5 the difference is more pronounced in favour of teachers, who evaluate themselves much better;
- standard deviation (Std. Deviation) according to individual questions:
  - in question 1 (Comprehensibility of lectures) 0.484,
  - in question 2 (Interesting lectures and ability to motivate) 0.726,
  - in question 3 (Ability to actively create enough space for discussion) the lowest – 0.042,
  - in question 4 (Ability to create a positive and friendly atmosphere) 0.413
  - in question 5 (Connection between instruction and practice) 0.154.

Table 2

Table of t-test results – overall characteristics of answers to all 5 questions

Questions		N	Mean	Std. Deviation	Std. Error Mean
Question 1	P	37	5.00	0.707	0.116
	S	1311	4.84	1.191	0.033
Question 2	P	36	4.69	0.668	0.111
	S	1328	4.39	1.394	0.038
Question 3	P	39	4.92	1.178	0.189
	S	1329	4.99	1.136	0.031
Question 4	P	38	4.89	0.924	0.150
	S	1329	4.72	1.337	0.037
Question 5	P	40	4.85	1.272	0.201
	S	1328	3.79	1.426	0.039

Further calculations will show whether the differences are statistically significant.

Table 3

Table of results of a two-sample t-test, F-test and a two-sample t-test

Questions	Levene's Test for Equality of Variances		t-test for Equality of Means						
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
								Lower	Upper
Question 1									
Equal variances assumed	14.807	0.000	0.798	1346	0.425	0.157	0.197	-0.229	0.543
Equal variances not assumed			1.301	41.993	.200	0.157	0.121	-0.087	0.401
Question 2									
Equal variances assumed	21.639	0.000	1.293	1362	0.196	0.301	0.233	-0.156	0.759
Equal variances not assumed			2.558	43.724	0.014	0.301	0.118	0.064	0.539
Question 3									
Equal variances assumed	.838	0.360	-0.384	1366	0.701	-0.071	0.185	-0.433	0.292
Equal variances not assumed			-0.371	40.100	0.713	-0.071	0.191	-0.457	0.316
Question 4									
Equal variances assumed	8.399	0.004	0.789	1365	0.430	0.172	0.218	-0.256	0.601
Equal variances not assumed			1.117	41.561	0.270	0.172	0.154	-0.139	0.484
Question 5									
Equal variances assumed	2.460	0.117	4.640	1366	0.000	1.059	0.228	0.611	1.506
Equal variances not assumed			5.167	42.006	0.000	1.059	0.205	0.645	1.472

Table 3 shows:

- for questions 1, 2 and 4, the F-test confirmed sample variance between teachers and students. We reject H_0 that the two samples have the same variance, and we use the data from line 2, where SPSS processed values in a two-sample t-test with different variances.
- for questions 3 and 5, we do not reject the null hypothesis H_0 assuming equal variances using the F-test and continue to work with the first line in the Table.

For individual questions we can say that:

- for question 1, the calculated Significance value is 0.200 > 0.05, no statistically significant difference exists between teachers' and students' opinions, we do not reject H_0 – students and teachers reply in agreement;
- for question 2, the calculated Significance value is 0.014 < 0.05, a statistically significant difference exists between teachers' and students' opinions, we reject H_0 and accept alternative hypothesis H_1 – teachers evaluate themselves better;
- for question 3, the calculated Significance value is 0.701 > 0.05, no statistically significant difference exists between teachers' and students' opinions, we do not reject H_0 – students' and teachers' answers are the same;
- for question 4, the calculated Significance value is 0.270 > 0.05, no statistically significant difference exists between teachers' and students' opinions, we do not reject H_0 – students and teachers reply in agreement;
- for question 5, the calculated Significance value is 0.000 < 0.05, a statistically significant difference exists between teachers' and students' opinions, we reject H_0 and accept alternative hypothesis H_1 – teachers evaluate themselves differently than how they are evaluated by students (better).

Conclusions

When we evaluated differences in four out of five questions teachers evaluated themselves better than how they were evaluated by students. After having verified hypothesis H1 we can say that the hypothesis was not confirmed by the t-test in three out of five questions. For questions 1 (Comprehensibility of lectures), 3 (Ability to actively create enough space for discussion) and 4 (Ability to create a positive and friendly atmosphere), a statistically significant difference at a significance level of $\alpha = 0.05$ was not confirmed and we can say that the answers of teachers and students do not differ. For questions 2 (Interesting lectures and ability to motivate) and 5 (Connection between instruction and practice) the answers of teachers and students are statistically significantly different at a significance level of $\alpha = 0.05$, teachers evaluate themselves better.

Every teacher should make sure on a regular basis that their lectures and practicals are comprehensible, and they should develop their professionally and personality cultivating competences. At the same time, a continuous evaluation of teachers' work should be carried out by students. Regular evaluation of instruction helps maintain the quality of university education. Teachers whose self-evaluation differs significantly from that of their student´s should frequently and regularly use self-reflective techniques so that their self-evaluation matches objective reality.

Students who have participated in the questionnaire survey should be ensured that their opinions are taken seriously by the university and that they are an important initiator of change.

Universities together with the Ministry of Education, Youth and Sports should help and support teachers to understand the requirements set in professional standards.

The development of university teachers' competences must reflect current educational trends, legislative initiatives and legislative regulations. The pressing nature of this issue is enhanced by the growing competition and also by the growing possibilities for educational institutions in the EU to cooperate. The interest in instruction and curriculum, the educational process on the part of both teachers and students will strengthen the teachers' professional identity and will bring them higher occupational prestige. Opinions of students and teachers, their comparison and detected connections between the causes of the established state will facilitate the search for a path leading to a higher efficiency of the educational process (not only) at universities.

Based on the surveys among students and teachers concerning their opinions on the educational process that have been carried out so far, IEC plans to continue to offer evaluation of instruction at CZU, as well as provide courses in competences development to interested teachers.

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