

## Methods to Efficiently Achieve High-Quality Teaching of Accounting at the University – A Teaching Innovation Evaluation

**Ing. Zdeněk Hruška, Ph.D.**

*Department of Finance and Accounting, Faculty of Economics, University of West Bohemia  
hruskaz@kfu.zcu.cz*

### ABSTRACT

Teaching of accounting is specific due to its frequently updated content, because Czech legal regulations significantly change annually, either because of the legislative or harmonization modifications, hence there is a need to constantly seek new ways to ensure a good quality of teaching in the efficient education process. The paper is based on the description of activities carried out within the innovation of accounting courses, it presents the results of the survey examining the views of graduates from the accounting courses on the quality of their teaching and evaluates the efficiency of teaching of accounting courses compared to the original solution. The analytical part of the paper confirms all three defined hypotheses: having implemented the innovation, the authors have found that students evaluated the teaching of accounting as the above-average one; a statistically significant correlation between the evaluation of teaching quality and the evaluation of e-learning materials has been proved, and the vast majority of benefits resulting from the implemented innovation led to an increase in efficiency, whether by saving on time, financial resources or by making the user environment more pleasant.

**Keywords:** innovation, education, accounting, studies, results, project.

### INTRODUCTION

In terms of time and personnel, teaching of financial accounting is a demanding activity since the accelerating pace of changes in legal regulations and internationally accepted standards leads to frequent updates of the content – i.e. teaching materials. The dynamic pace of changes in accounting legislation may also be expected in the future, because the Czech accounting legislation has gradually been converging to the international accounting standards. Individual governments have considerably participated in the dynamics because they carry out those changes in connection with the voters' demands. In this context, it is necessary to identify the link between accounting and tax legislation, which is very strong in the Czech Republic. Changes in the tax legislation are often more intensive and more frequent than in the accounting legislation. For this reason it is necessary to search for suitable teaching methods and means or their combination to ensure efficient teaching of this specific expertise. First and foremost, it is necessary to use teaching methods and materials that may be innovated flexibly according to the current changes in the valid legislation.

In the period from the 1<sup>st</sup> January 2012 to the 31<sup>st</sup> December 2014 the project entitled: A Comprehensive Innovation of Bachelor's Degree Programme Economics and Management – under the acronym of INEM, was solved at the Faculty of Economics of the University of West Bohemia in Plzen. INEM included innovation or creation of 50 university courses in total.

This paper deals with the evaluation of the quality and efficiency of teaching through the implementation of the INEM project in the key courses of business economics, which include the accounting courses (hereinafter referred to as ACC).

In the Czech Republic similar projects to innovate study programmes were dealt with within the Operational Programme called Education for Competitiveness, for example, at the University of Economics, where the project innovated the study programme following the situation in the labour market (Operational Programme called Education for Competitiveness, 2017a). The Technical University in Liberec implemented a project that also addressed innovation of the study programme to respond to the demands of the labour market (Operational Programme called Education for Competitiveness, 2017b). Projects dealing with innovating study programmes of a similar nature were also implemented in the other branches of study. Examples include the Innovation of the study programme at the College of Business and Hotel Management (Operational Programme called Education for Competitiveness, 2017c), innovation of the Risk Engineering study programme and creation of quality management system in education realized at the Brno University of Technology (Operational Programme called

Education for Competitiveness, 2017d), or the project called Innovation of the bachelor's full-time study programme in the field of fishing at the University of South Bohemia in Ceske Budejovice (Operational Programme called Education for Competitiveness, 2017e).

However, after completing projects of this kind, in most cases there is no evaluation of them; thus the efficiency of labour content and the satisfaction of users – i.e. students with created aids and set methods - cannot be evaluated. For these reasons, the authors evaluated the results of the innovation of the bachelor's study programme in financial accounting courses.

## RESEARCH FOCUS

The first step in innovating the analysed courses of financial accounting (ACC) was the selection of suitable study materials. Before the start of the innovation, students were provided with a book leading to practicing their skills and with a college textbook containing theoretical knowledge base, in addition to the contact teaching within individual courses. Both sources were provided in the printed form, and thus it was not possible to annually update them owing to legislative or harmonization changes.

Based on the experience of many authors, for example Michaud, P. A. (2012), Kulier, R., Guelmezoglu, A. M., & Zamora, J. (Eds.). (2012), Al-Juboori, H. M. (2012) or Hourri, D., Watanabe, T., & Hayashi, K. (Eds.). (2012), the e-learning system in LMS Unifor has been chosen to be the primary teaching method. This method has been applied in many institutions (not only at the level of higher education), and is already firmly embedded in study programmes both in the Czech Republic and abroad (Çobanoğlu, İ., Ateş, A., & Yilmaz, E., 2009). Historical roots of this teaching method date back to the 80s of the last century, when Hassanzadeh, A., Kanaani, F., & Elahi, S. (2012) stated that it is a subset of distance education. The boom of this teaching method has been caused by the development of information technologies and their gradual application in education (Jia, H., Wang, M., Ran, W. Jian, S. Liao, J., & Chiu, D., 2011). As reported by Middleton (2010), e-learning represents an alternative teaching method, the efficiency of which is particularly apparent with individual students. There are several approaches to define e-learning. Çobanoğlu, İ., Ateş, A., & Yilmaz, E. (2009) characterize it as a virtual study environment characterized by the students' interactions with study materials according to the electronically given instructions. Welsh, E.T., Wanberg, C.R., Brown, K.G. & Simmering, M.J. (2003) conclude that it is the utilization of a computer network, especially through the Internet, to disseminate information and knowledge to individual users.

The reason why e-learning study materials were the main outcomes of the INEM project in the financial accounting courses was that this teaching method has numerous advantages. The possibility of studying from anywhere and anytime and increasing the variety of teaching/learning, which is confirmed by Cojocariu, V., Lazar, I., Nedeff, V., & Lazar, G. (2014), may be stated as the main benefits. Cojocariu, V., Lazar, I., Nedeff, V., & Lazar, G. (2014) further develop this idea by concluding that e-learning makes teaching and studying more flexible and innovative. Yacob, A. Kadir, A. Zainudin, O. & Zurairah, A. (2012) add that e-learning creates all electronically aided forms of both learning and teaching. In other words, it is a transfer of knowledge via the computer network, where the content may be presented using the Internet, intranet, extranet, and other similar methods (Yacob, A. Kadir, A. Zainudin, O. & Zurairah, A., 2012).

The success rate of e-learning can also be measured. For these purposes Hassanzadeh, A., Kanaani, F. & Elahi, S. (2012) have created a model to measure the success rate of e-learning at universities. The success rate of e-learning are also dealt with by Sun, P., Tsai, R., Glenn, F., Chen, Y. & Yeh, D. (2008), who, at first, summarize 6 basic success factors of this teaching method and subsequently expand them to even 13 factors.

The main aim of applying the e-learning in the accounting teaching was to achieve the following benefits:

1) For students:

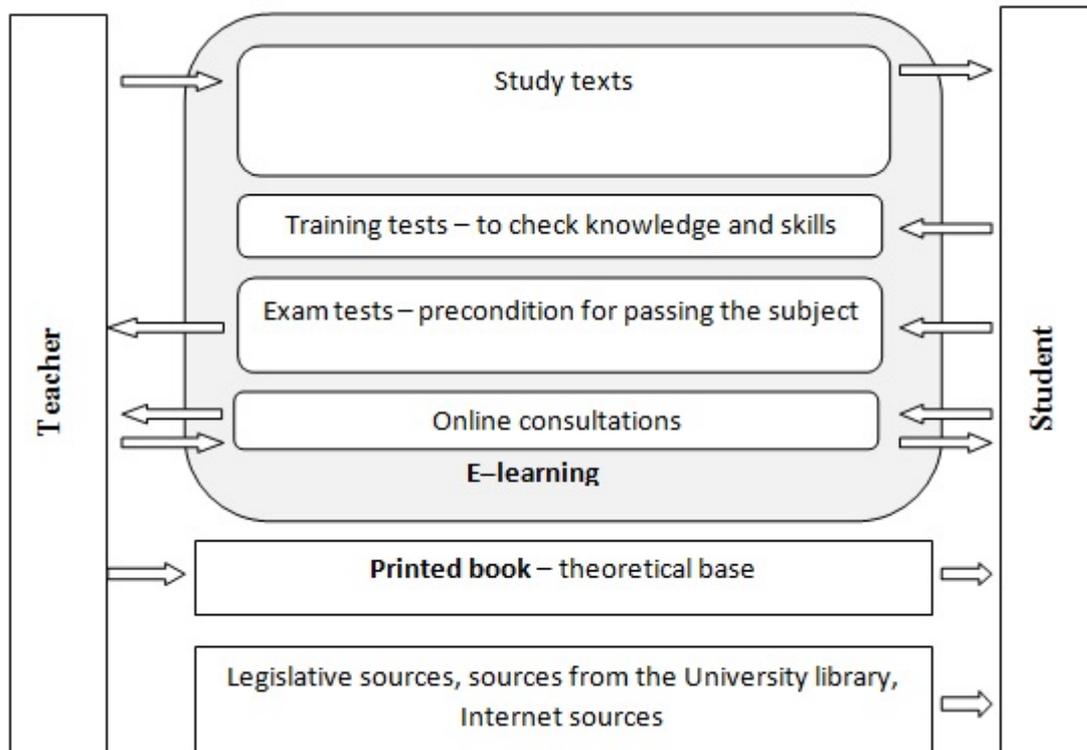
- an access to current and operatively modified materials,
- an access to the study materials free of charge from anywhere and anytime,
- the possibility to check students' knowledge by control tests, and
- the possibility of on-line communication with teachers or lecturers.

2) For teachers:

- efficiency improvement in the administration of fulfilling duties to complete a course (within the division of students into groups according to the teaching time and linking the database of students with the database of accepted seminar works)
- efficiency improvement in checking students' knowledge using the tests, which are generated for each student from the created database of questions and after a lapse of time also automatically corrected,

- the possibility to modify or update study materials flexibly according to changes in the content or individual educational demands,
- the possibility to flexibly upload supplementary study materials (as a response to currently addressed issues or changes), and
- the possibility of online consultations with students from anywhere and anytime.

The e-learning system in the accounting teaching can be described by several elements as follows:



**Figure 1:** E-learning set-up in the system representation.

Creating e-learning materials can be regarded as the main output of the innovation project, because study materials completely cover the theoretical basis dealt with in the financial accounting courses, and thus provide students with the basis for the successful completion of the course, but students can also check their acquired knowledge by control tests. This implies that not only can students gain knowledge, but also have the opportunity to subsequently verify it operatively.

However, printed books, textbooks and study materials are still of irreplaceable importance in teaching, which is confirmed by Liesaputra (2012). Therefore, other outputs of the INEM project also include the creation of printed study materials, for example, a textbook entitled “Financial Accounting” (Červený, 2014). Unlike the contents of the e-learning study texts, this publication presents propositions that under the influence of time are not variable, i.e. framework propositions – long-term principles - have been included in it.

At the end of the innovative teaching process, teachers and students were trained in using the e-learning application. Teachers could also attend professional training sessions to obtain special knowledge relating to the current world development in the accounting field.

According to the authors, after the completion of the innovation project it is necessary to check the quality of the set system of education with users – students - and also the efficiency of this system for teachers.

## RESEARCH METHODOLOGY

Based on the description of innovation activities in teaching of accounting at the university, this paper aims:

- to present the results of the questionnaire survey examining the opinions of graduates from the financial accounting courses on the quality of their teaching and
- to evaluate the efficiency of teaching of financial accounting courses compared to the original solutions.

The analytical part of the paper shall lead to the confirmation or refutation of the following hypotheses:

**Hypothesis 1:** *after the implementation of innovation in accounting teaching, the quality of teaching will be identified as the above-average one based on the questionnaire survey (i.e. the ratings will range below 2.5 on the scale from 1-the best to 5-the worst rating) and positive answers will have the highest frequency.*

**Hypothesis 2:** *A statistically significant correlation between the evaluation of teaching quality and evaluation of e-learning materials will be proved.*

**Hypothesis 3:** *Most teachers will state an increase in efficiency through economies of time, financial resources or other factors.*

### **Research organization, data file**

The research resulting in the evaluation of the teaching quality was conducted among students of financial accounting courses in January 2014, i.e. after the completion and implementation of e-learning and other activities based on the INEM project. Filling in the questionnaire was completely anonymous and voluntary. 500 respondents participated in the research. The questionnaire was standardized for all courses that were included in the INEM project. The identical form of questionnaires to evaluate all courses offers more possibilities to extend the research, especially to compare the INEM success from the students' view across individual courses.

The questionnaire consisted of two parts. The first part dealt with evaluating the quality of teaching of accounting courses. The second part focused on the evaluation of e-learning materials for the course. Each part contained 15 questions. Majority of them were closed and students expressed to what extent they agreed with particular statements. The open-ended questions provided room for students' opinions.

For the purposes of this research and evaluation of innovations, the issues concerning the system itself, LMS Unifor, particularly its technical specifications, have not been taken into consideration.

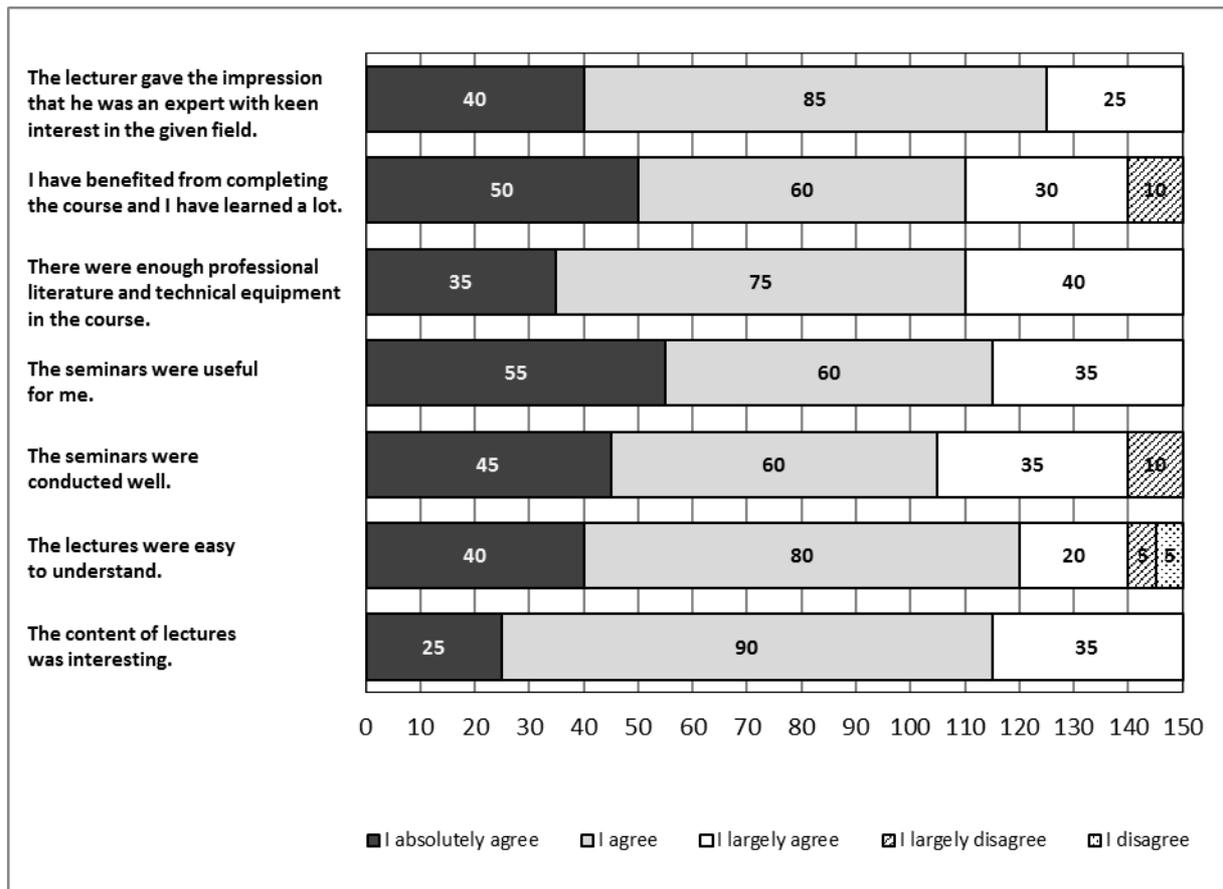
The research resulting in the evaluation of teaching innovation efficiency was conducted among the teachers of accounting in January 2015, with the assumption to evaluate year-long experience with the use of created study materials. The research involved 10 respondents from the ranks of teachers of accounting courses. Majority of the questions were closed again, the open-ended questions provided room for comments.

All calculations, presenting the results of accounting teaching innovation, were made using the Statistica SW. Graphical outputs were created in MS Excel.

### **RESULTS OF RESEARCH**

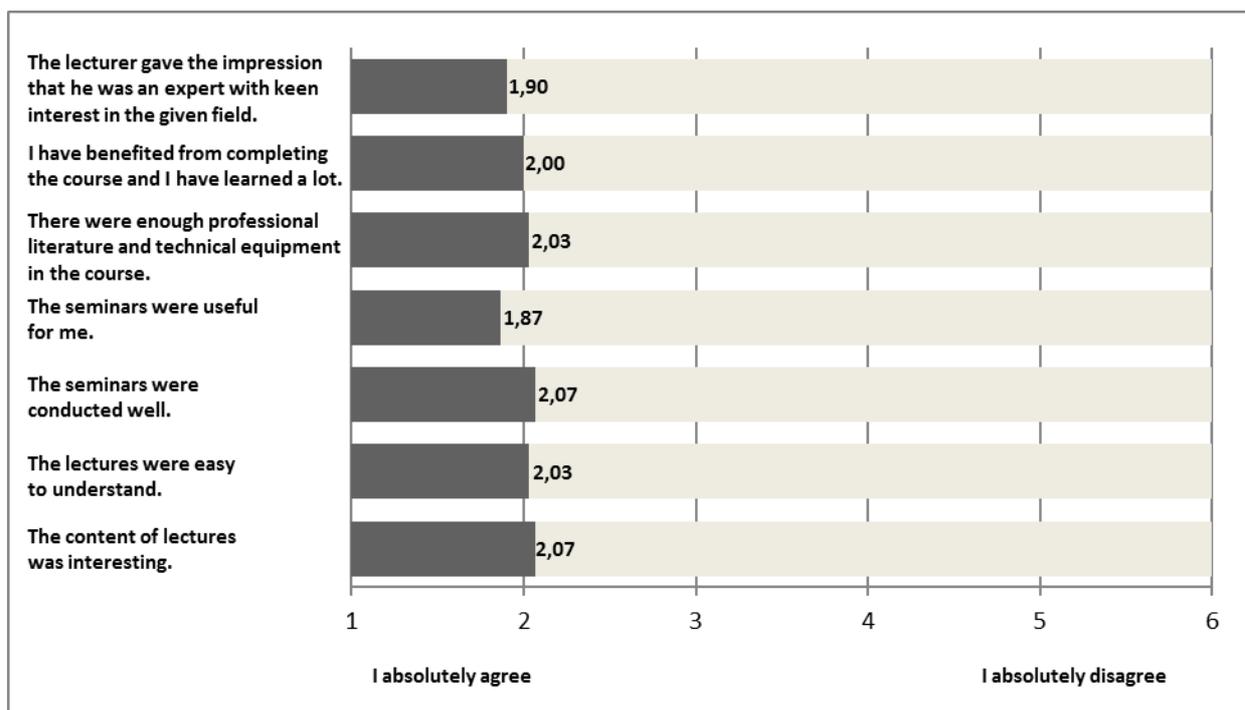
The teaching quality was checked by seven questions, which were designed to evaluate both the quality of content and forms of presenting the content – i.e. the quality of contact teaching. According to the authors, the fundamental finding is provided by the following question: "I have benefited from completing the course and I have learned a lot."

Figure 2 shows the frequency distribution of answers to individual questions in the part focusing on the evaluation of teaching quality.



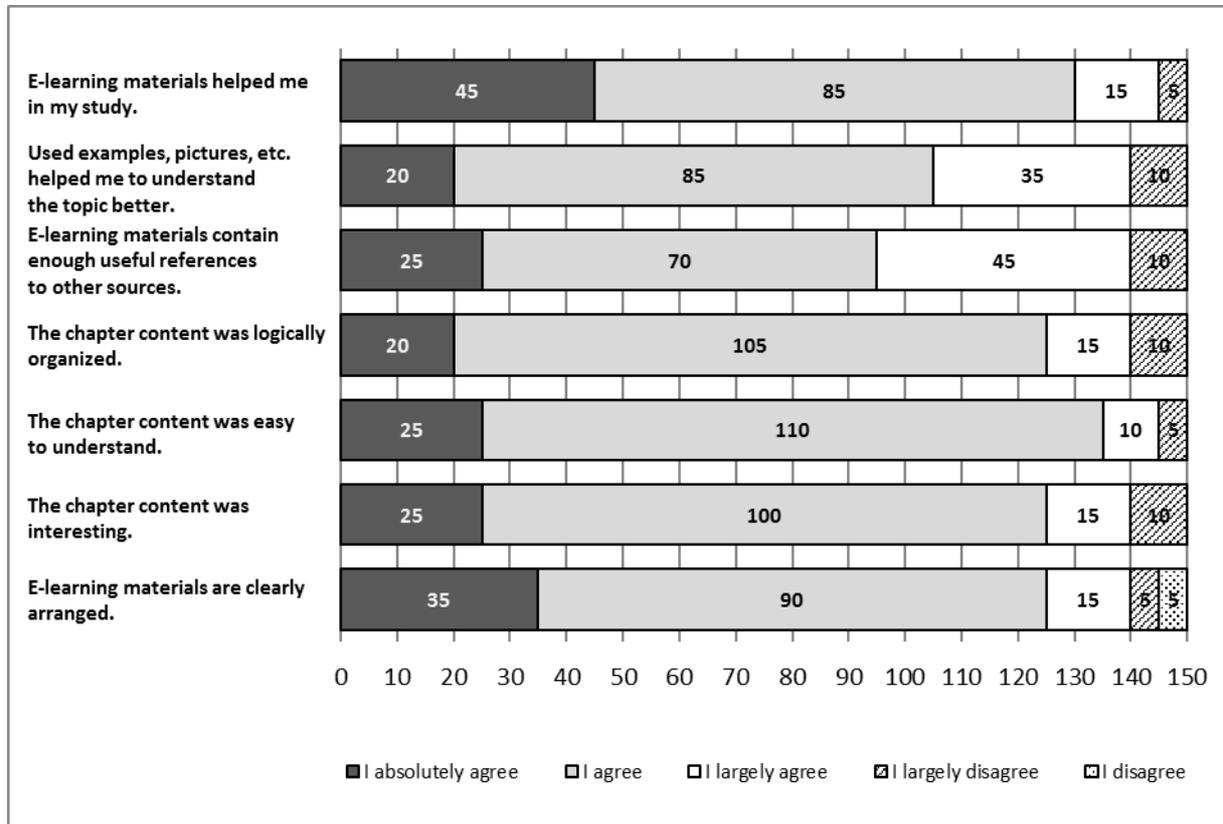
**Figure 2:** Evaluation of teaching quality – frequency distribution of answers.

The figure shows the predominant proportion of positive responses, i.e. the students evaluated the individual aspects of the teaching quality rather positively. This fact is also evident when calculating averages, where the option “I absolutely agree” was rated 1 and, vice versa, “I disagree” was rated 5. However, the latter from the given utmost replies was not recorded.

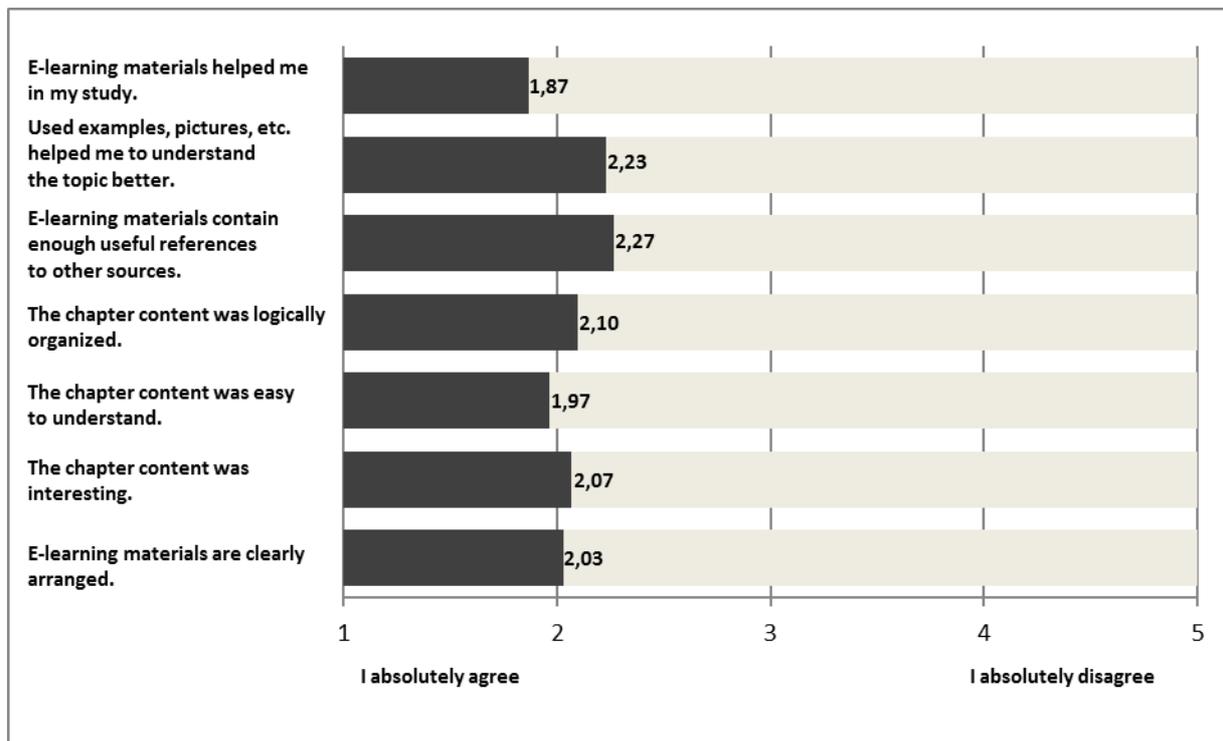


**Figure 3:** Evaluation of teaching quality – average rating.

E-learning materials also show positive evaluation. Figure 4, where the response rate is recorded, and Figure 5, where the average rating is recorded, show the situation in more detail. It is noticeable that respondents did not choose the “I absolutely agree” option as often as when evaluating the teaching quality, where the highest rate of agreement occurred with a higher frequency.



**Figure 4:** E-learning evaluation –frequency distribution of answers.



**Figure 5:** E-learning evaluation – average rating.

Table 1, where the average students’ answers are recorded depending on their evaluation of the course benefit for them, shows an interesting view. The average responses of students who perceive completing the course as a benefit and learned a lot are recorded separately, and then the average responses of students who take the opposite view and do not consider completing the course to be beneficial for them. It is evident from the table that some students do not consider completing the course to be beneficial for them, but they evaluate the e-learning materials created within the INEM project positively and negatively view the organization and management of contact teaching.

**Table 1:** Evaluation of teaching quality and e-learning – average rating.

		Average evaluation of students for them	
		graduating was beneficial	graduating was not beneficial
Evaluation of teaching	The content of lectures was interesting	2.00	3.00
	The lectures were easy to understand	1.93	3.50
	The seminars were conducted well	1.96	3.50
	The seminars were useful for me	1.79	3.00
	There were enough professional literature and technical equipment in the course	1.96	3.00
	The lecturer gave the impression that he was an expert with keen interest in the given field	1.86	2.50
Evaluation of e-learning	E-learning materials are clearly arranged	2.04	2.00
	The chapter content was interesting	2.07	2.00
	The chapter content was easy to understand	2.00	1.50
	The chapter content was logically organized	2.11	2.00
	E-learning materials contain enough useful references to other sources	2.29	2.00
	Used examples, pictures, etc. Helped me to understand the topic better	2.21	2.50
	E-learning materials helped me in my study	1.86	2.00

The mentioned findings can also be supported with calculating correlations between the answers to individual questions. Given the type of data - ordinal data, it is suitable to use the Spearman’s correlation coefficient or Kendall’s Tau coefficient B as the correlation rate. Table 2 shows the values of the Spearman’s correlation coefficient for the relations where a certain degree of correlation was expected.

**Table 2:** Spearman’s correlation coefficient.

	Evaluation of teaching				Evaluation of e-learning			
	The content of lectures was interesting	The seminars were useful for me	There were enough professional literature and technical equipment in the course	I have benefited from completing the course and I have learned a lot	The chapter content was interesting	The chapter content was easy to understand	The chapter content was logically organized	E-learning materials helped me in my study
The content of lectures was interesting	1.000	<b>0.650</b>	<b>0.510</b>	<b>0.584</b>	0.077	<b>0.211</b>	<b>0.265</b>	<b>0.363</b>
The seminars were useful for me	<b>0.650</b>	1.000	<b>0.447</b>	<b>0.660</b>	<b>0.236</b>	<b>0.234</b>	<b>0.240</b>	<b>0.370</b>
There were enough professional literature and technical equipment in the course	<b>0.510</b>	<b>0.447</b>	1.000	<b>0.563</b>	<b>0.217</b>	<b>0.277</b>	<b>0.329</b>	0.097
I have benefited from completing the course and I have learned a lot	<b>0.584</b>	<b>0.660</b>	<b>0.563</b>	1.000	0.117	0.041	0.126	<b>0.317</b>
The chapter content was interesting	0.077	<b>0.236</b>	<b>0.217</b>	0.117	1.000	<b>0.593</b>	<b>0.727</b>	<b>0.461</b>
The chapter content was easy to understand	<b>0.211</b>	<b>0.234</b>	<b>0.277</b>	0.041	<b>0.593</b>	1.000	<b>0.854</b>	<b>0.396</b>
The chapter content was logically organized	<b>0.265</b>	<b>0.240</b>	<b>0.329</b>	0.126	<b>0.727</b>	<b>0.854</b>	1.000	<b>0.507</b>
E-learning materials helped me in my study	<b>0.363</b>	<b>0.370</b>	0.097	<b>0.317</b>	<b>0.461</b>	<b>0.396</b>	<b>0.507</b>	1.000

The given correlations are statistically significant if  $p=0.05$ .

It is evident from Table 2 that low correlations are found between the evaluation of teaching quality and the evaluation of e-learning materials - as already mentioned above. Although the aforementioned correlations are statistically significant, the intensity of correlation can be considered low, and thus an association between the evaluation of e-learning materials and the evaluation of teaching quality cannot be proved. It is appropriate to emphasize again that even the students evaluating the teaching quality negatively consider the e-learning materials to be of a high quality. The students evaluate the benefits of completing the course depending on the organization and management of teaching - see correlations exceeding 0.5.

**Table 3:** Kendall’s Tau coefficient B.

	Evaluation of teaching				Evaluation of e-learning			
	The content of lectures was interesting	The seminars were useful for me	There were enough professional literature and technical equipment in the course	I have benefited from completing the course and I have learned a lot	The chapter content was interesting	The chapter content was easy to understand	The chapter content was logically organized	E-learning materials helped me in my study
The content of lectures was interesting	1.000	<b>0.605</b>	<b>0.467</b>	<b>0.532</b>	0.062	<b>0.195</b>	<b>0.237</b>	<b>0.329</b>
The seminars were useful for me	<b>0.605</b>	1.000	<b>0.415</b>	<b>0.619</b>	<b>0.211</b>	<b>0.219</b>	<b>0.223</b>	<b>0.337</b>
There were enough professional literature and technical equipment in the course	<b>0.467</b>	<b>0.415</b>	1.000	<b>0.534</b>	<b>0.196</b>	<b>0.258</b>	<b>0.293</b>	0.078
I have benefited from completing the course and I have learned a lot	<b>0.532</b>	<b>0.619</b>	<b>0.534</b>	1.000	0.101	0.041	<b>0.109</b>	<b>0.276</b>
The chapter content was interesting	0.062	<b>0.211</b>	<b>0.196</b>	0.101	1.000	<b>0.554</b>	<b>0.696</b>	<b>0.428</b>
The chapter content was easy to understand	<b>0.195</b>	<b>0.219</b>	<b>0.258</b>	0.041	<b>0.554</b>	1.000	<b>0.835</b>	<b>0.371</b>
The chapter content was logically organized	<b>0.237</b>	<b>0.223</b>	<b>0.293</b>	<b>0.109</b>	<b>0.696</b>	<b>0.835</b>	1.000	<b>0.474</b>
E-learning materials helped me in my study	<b>0.329</b>	<b>0.337</b>	0.078	<b>0.276</b>	<b>0.428</b>	<b>0.371</b>	<b>0.474</b>	1.000

The given correlations are statistically significant if p=0.05.

The same conclusions can also be arrived at by using the Kendall’s Tau coefficient B - see Table 3.

The increase in the efficiency of teaching was evaluated by the teachers. Table 4 presents the survey results from the closed questions. Besides the savings of time and financial means, the teachers labelled the element of making the user environment friendlier as efficient.

**Table 4:** Evaluation of efficiency of study materials in accounting teaching.

Aspect/ efficiency element	Time savings	Financial savings	User-friendliness
Administration of fulfilling study duties	Certainly yes (90%) Yes (10%)	Certainly yes (40%) Yes (60%)	Certainly yes (40%) Yes (60%)
Checking knowledge by final tests	Certainly yes (100%)	Certainly yes (100%)	Certainly yes (100%)
Creation of study materials	Certainly yes (70%) Yes (30%)	Certainly yes (70%) Yes (30%)	Certainly yes (60%) Yes (40%)
Online consultations	Rather yes (10%) No (90%)	Rather yes (10%) No (90%)	Cannot be evaluated (10%) No (90%)

It results from the table that administration of fulfilling study duties is less time consuming. Financial savings, however, do not result merely from the time savings of teachers, but also from the material cost savings. All teaching staff agree that checking the students’ knowledge by final tests, which are generated individually for each student from the database of embedded series of test questions, is highly effective because it examines the students’ knowledge and skills and after the end of the time limit the test is automatically corrected. Creation of study materials in e-learning has also been identified as efficient by all staff. On the contrary, the situation in online consultations via e-learning is different. This possibility of communication is used by students minimally, because they prefer either e-mail communication or a personal interview with the teacher.

Steps to increase the efficiency are evoked by the pressure from employees themselves, or more precisely teachers. The table below analyses the number of teachers of the accounting courses over the time - due to the implemented innovation the academic year prior to the project innovation (2010/2011) as well as one academic year during the innovation implementation (2013/2014) were analysed and also the present academic year (2016/2017).

**Table 5:** Analysis of staffing to teach accounting courses.

Indicator/Academic year	2010/2011	2013/2014	2016/2017
Number of teachers of accounting courses *	6.3	5.2	4.5
Number of students enrolled in accounting courses	1 239	987	924
Number of students per teacher	196.67	189.81	205.33

\* Average converted number of teachers of accounting courses

The above mentioned table implies that despite the constantly declining number of teachers, who are represented by the average converted number of employees in the analysis, the indicator of the number of students per teacher has not considerably increased. This fact results from the decreasing number of students enrolled in accounting courses included in the research, which is a consequence of the course of the demographic curve (or the decline of the baby boom generations). The absolute value of students per teacher may seem high, but it is necessary to realize that this is the number of students for two semesters of the given academic year, so the real workload of the teacher is roughly half at uniform distribution of students. Thus, the presented analysis does not give good reasons for the necessity to make teaching more efficient. This necessity results from the constantly increasing demands on publication activities of staff and increased demands on project activities. The results of creative activity concerning publication activities of teachers of accounting courses as well as the results of project activities cannot, however, be included in the analysis. The reason for non-inclusion is, on the one hand, the existence of a time lag between the increase in demands on this activity and specific publication or project outputs and, on the other hand, the fact that quantifiable publication or project outputs may not correspond to the employee’s activity expended on them (publication outputs may not be accepted for publishing, prepared project proposals may not be financed). The increasing demands on publication and project activities are directly proportional to the growing demands of authorities granting the accreditation authorization to the institution, and to the declining financial means that universities derive from their educational activities.

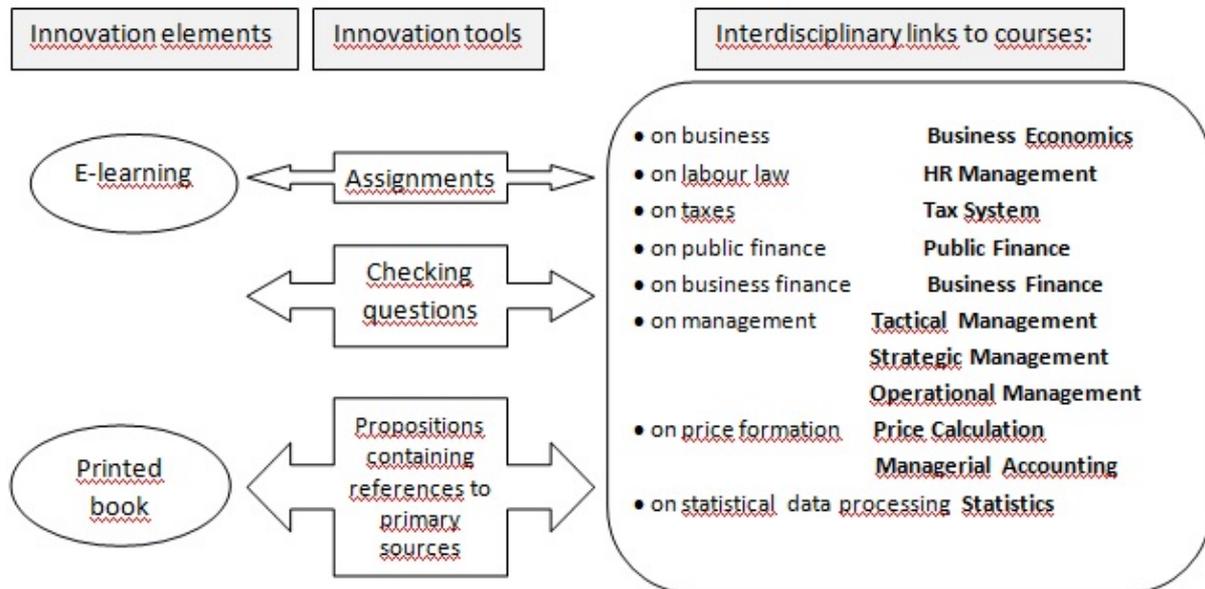
## DISCUSSION

In the context of the given topic it would be interesting to evaluate the effect of accounting teaching innovation on the employability of students in practice. However, since the accounting courses form an integral part of study plans of individual programmes, fields of study or other related courses, such as Managerial Accounting, Controlling, Software for Financial Data Processing and others, the direct impact of innovation cannot be quantified.

The authors have also examined whether the students’ school results have improved after the course innovation compared to their results prior to the project implementation, because there is a real assumption that students can achieve better study results with high-quality study materials and constant study requirements on them. This assumption, however, was not statistically confirmed.

The aforementioned research has confirmed all three hypotheses. The questionnaire survey has identified 1.99 as an average rating of all criteria, which is considerably better value than the authors expected. Based on the research, the statistically significant correlation between the evaluation of teaching quality and the evaluation of e-learning has been proved. Although the aforementioned correlations are statistically significant, the intensity of relation can be considered low, and thus the association between the evaluation of e-learning and the evaluation of teaching quality cannot be proved. The third hypothesis has been confirmed by the finding that the vast majority of benefits of the implemented innovation have led to the increase in efficiency, whether by savings in time, financial resources or making the user environment friendlier. However, it is possible to identify

links of introduced innovation elements in the accounting courses to the courses directly related or subsequent to the accounting issues - see the following diagram, which summarizes the interdisciplinary links of the introduced innovation elements in the accounting courses.



**Figure 6:** Interdisciplinary links of the introduced innovation elements in the accounting courses.

The Figure 6 clearly shows that the introduction of e-learning and innovation of the printed publication have had a direct impact on the quality of more than ten courses, which are taught in the bachelor’s study programme called Economics and Management, within which the project was implemented. This fact indicates the existence of a synergistic effect, the intensity of which cannot be quantified, but the existence of which is obvious: if the innovation was also carried out in these courses, the improvement in teaching quality of any course is multiplied by improving the teaching quality of the other courses included in the innovation project.

**CONCLUSIONS**

Teaching of accounting is specific due to its frequently updated content, because Czech legal regulations significantly change annually, either because of the legislative or harmonization modifications. Hence, there is a need to constantly seek new ways to ensure a good quality of teaching in the efficient education process. In the case of innovative activities performed within the INEM project this objective has been achieved. The research performed after the completion of the project has proved the positive evaluation of the implemented innovation by the users – students - and also the benefit of the innovation for the efficient provision of teaching by the teachers. Considering the dynamics of changes in the accounting legislation, e-learning seems to be a suitable study material, since the electronic study materials may be flexibly updated. By contrast, printed publications should play a rather complementary role in teaching of financial accounting due to the lengthy process of their preparing, updating and publishing. In this case, e-learning study materials can replace printed publications. Following the e-learning evaluation research among students, it can be concluded that students would be positive about adopting this change.

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