COMPETENCES DEVELOPMENT PROCESS RECORDING FOR MULTI-COMPETENCE E-COURSE

Competenču attīstības procesa dinamika multikompetenču e-kursā

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Abstract. *Understanding of students' current level of competencies might be tailored with a finding of the challenging learning approaches to strengthen and enhance their own competencies, and obtain the new ones. Learning paths, which are usually offered by educational organizations to students, as often as not prescribe monotonous acquiring of knowledge. Making a study course more interactive, there are appearing additional features like working in ePortfolio environment which noticeably influence competences level. This paper provides an overview of research results in competences development process recording for multi-competence e-course, assessing competences level of students, both at initial and on-going stages, and analysis of competences interrelation within particular subject domain, e.g. basic business course, as well as an impact of the study themes on different competencies.*
Keywords: *assessment, competence, competence development spectrum, ePortfolio, evaluation, lifelong learning, learning path, self-assessment.*

Introduction

To satisfy lifelong learning demands, educational specialists worldwide constantly endeavour improving learning process by innovating approaches, introducing new educational methods and learners' friendly e-environments. For teaching staff it is tempting to have a shy at such innovative approaches, sometimes on an optional basis, now and then get caught up in new methods and technologies that come along in course of studies.

Assessment, and particularly peer and self-assessment procedures, may provide very useful information for tutors, but what is more important – facilitate students' competences development. Rewording the statement of the University of Exeter it could be marked out that the use of peer and self-assessment should be recognised as competence development in itself [1]. Self-assessment starts by the individual assessing themselves against the competency standard [2]. Critical thinking notes, response on peers remarks, and feedback regarding assessment procedures are crucial.

Before competence assessment procedures are starting, evaluators first of all should state demanded criteria for performance, i.e. required learning outcome, collect evidences of outcomes and achievements, and match them, make

judgements regarding achievement of all asked learning outcome, and other necessary preparations [3]. Competence assessment is always tailored with competence development activities, thus leaving out the possibility of learners having their competencies assessed without entering competence development activities [4]. During and after assessments tutors ought to monitor the process, lend assistance to learners, analyse, work on amendments, and develop learning outcomes' improvement program.

Raven and Stephenson encapsulate three very important components defining the practice of competence-based assessment [5]:

„- The emphasis on outcomes; specifically, multiple outcomes, each distinctive and separately considered.

- The belief that these outcomes can and should be specified to the point where they are clear and "transparent". Assessors, assessees, and "third parties" should be able to understand what is being assessed and what should be achieved.

- The decoupling of assessment from particular institutions or learning programmes."

Competence development starts with determination of learning goals, e.g. competences which will be developed [6]. Depending on learning goals students' learning paths may vary. Learning paths, in their turn, are linked with expected learning outcome. Students may acquire from just one competence to a set of competencies, which forms "competence profile" [7]. We assume that usually in practice students are faced with a necessity to acquire more than one competence equally, even if their goal consists of just one competence because of very thin line between some competencies; besides, mastering of one competence often has an impact on others. Due to that students usually have to follow so called „extended learning path" [6], which covers this set of competencies.

In following chapters we will share experience about lessons identified and analysis of self-assessment process in practice, as well discuss which measures ought to be taken to improve learning process.

Tools and Methods

Competences development process recording was organized and conducted for „Business Planning for Open Markets" (further – BPOM) course bachelor study programme students by the Distance Education Study Centre, Riga Technical University, in the autumn semester of study year 2011/2012, from 5 September 2011 to 27 January 2012.

To ensure competences development process recording, existing student's educational web portal, named ORTUS, which is built on the open source Moodle software, was used and eight self-assessment survey lists were created. Students had an access to the self-assessments through the links inside BPOM course (look at the Figure 1 – the link „BPOM kompetenču pašnovērtējums – 1").

We assume that set of seven competencies related to learning objectives could be obtained, strengthened or improved within BPOM e-course. The list of these competences is as follows:

1) The competence to estimate a viability of business idea.

2) The competence to find the ways of company's ability to carry out business idea.

3) The marketing competence.

4) The competence to be aware of competition factors.

5) The competence to estimate financial resources.

6) The competence to assess and develop company's ability to carry out business idea.

7) The competence to identify possible risks.

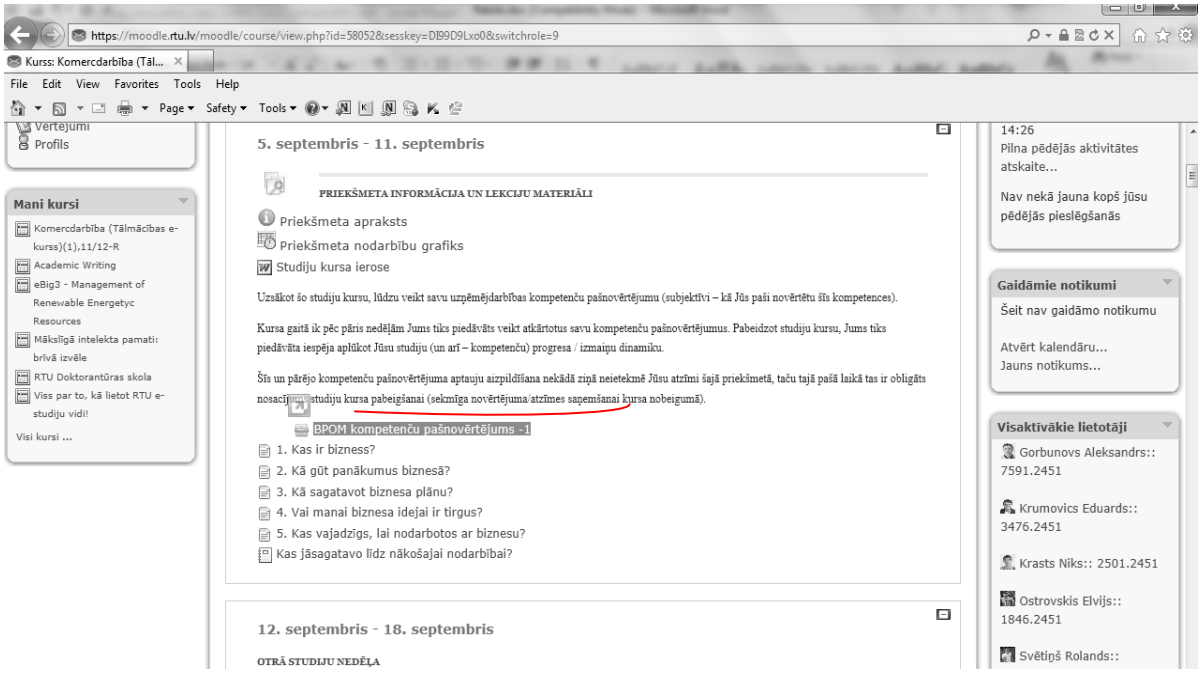

Figure 1. **The link to BPOM competences self-assessment**

Further in this paper we will refer to abovementioned competences in correspondence with numbering given here, e.g. „the competence to estimate a viability of business idea", which is listed the first one, will be recognized as „the competence No.1" or „the first competence"; „the competence to find the ways of company's ability to carry out business idea", which is listed the second one, will be recognized as „the competence No.2" or „the second competence"; and so on.

In the light of it, appropriate self-assessment questionnaire form, which covers seven BPOM competences, was worked out (look at the Figure 2). Students were asked to fill in the questionnaires by ticking the most suitable competence level in each BPOM competence field in assessing scale from 1 to 10, where 1 was seen as the worst level of the competence and 10 – as the utmost.

Eight self-assessment links were offered to students within the BPOM course. Students had to fill in their first self-assessment form in the semester's first study week, which set initial possible levels of BPOM competencies. We wittingly point out words '*possible levels*' because of subjectivism risk in students' self-

assessments – some of them undervalued themselves, others – overleap themselves, and only limited number of respondents had precise rating of own competencies. Facts, numbers and reasoning of such dispersion will be discussed in next paragraph.

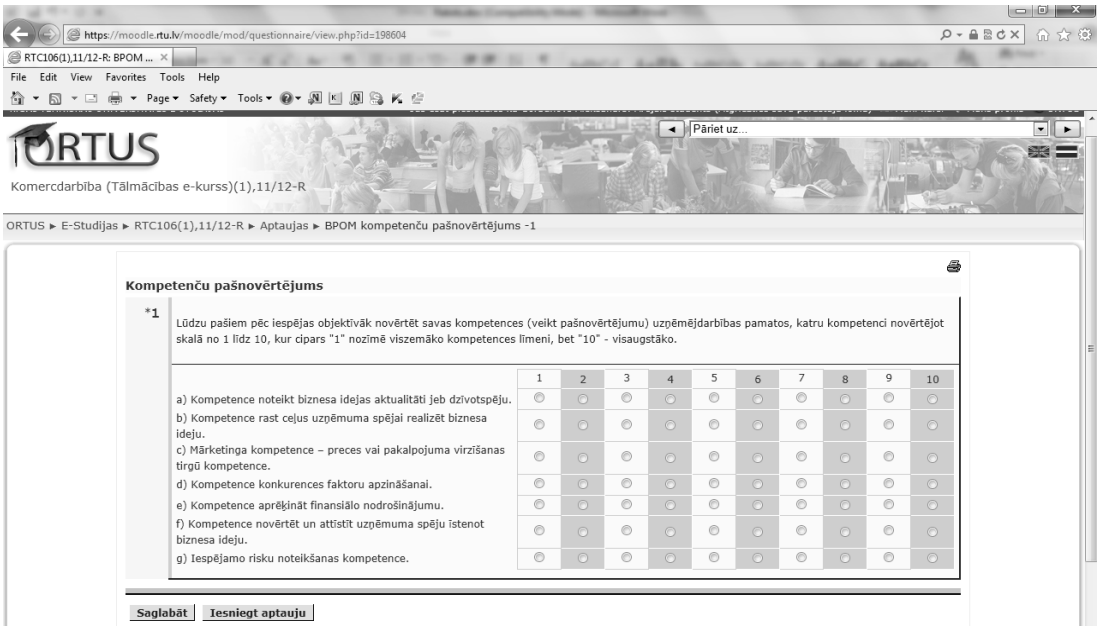

Figure 2. **Self-assessment questionnaire form**

After completion of initial self-assessment students have had to fill in the questionnaire repeatedly every fortnight until the end of the course. Two weeks frame was chosen due to time period when the new themes were introduced into the course in a stated sequence. Moreover, this approach allowed teaching staff to monitor and analyse competences' change dynamics, as well as, based on these observations, make conclusions about significance level of each course theme and its impact on competences development within BPOM.

197 first year bachelor study programme students completed initial self-assessment, 159 students submitted the eighth, final self-assessment questionnaire form. Unfortunately, some of them did not take part in all eight surveys or the forms were submitted too late. These two factors staggered the validity of the collected data. This being the case, we consider to analyse only valid self-assessment questionnaires which were done by 145 students.

Competence Development Spectrum

It is crystal-clear that there are no individuals who have absolutely the same set of competences, especially when we consider competence levels. For its part, almost each competence might be represented as a cluster of other competencies with their particular number of knowledge, skills and proficiency [8]. During the

course students acquire new themes, work in teams in ePortfolio system, collaborate, think critically, improve their business plans. Some of students are able to learn and work unaided. Others, on the contrary, need assistance. It could be made in the form of teaching staff's or tutors' attention, or their peers encouragement and useful suggestions, or even constructive criticism. Course themes also take turns. Competencies may stop their progress, but on a fine moment a student has a jump of his competencies. Questions about the cause, for example, why they were improved or were not in progress, which course themes had impact on corresponding competencies, attract attention to make the course better. Therefore, the analysis of each BPOM competence development and change dynamics has got additional importance in our research.

For each of seven BPOM competences we have arranged data depending on initial self-assessment mark (for instance, Figure 3 – Figure 9). Besides, to point and make competence change dynamics more understandable, we merged initial self-assessment marks in five groups:

1) Initial marks "1", "2" and "3";
2) Initial marks "4" and "5";
3) Initial mark "6";
4) Initial marks "7" and "8";
5) Initial marks "9" and "10".

Mark group No.1 consists of students' responses who were not confident about their competence level or thought themselves completely incompetent in particular issue. Mark group No.2 links up individuals, who were not enough confident about their competence level or felt their competences were not good enough. Mark group No.3 fits with average results. Mark group No.4 embraces confident learners. Mark group No.5 merges those students' responses who consider themselves proficient in asked competence.

Figures 3–9 are composed of two parts. Left part characterizes competence development for each initial self-assessment mark group along the course, and for each BPOM competence, starting from the first competence in Figure 3, and finishing with the seventh competence in Figure 9. Vertical axle determines self-assessment marks in the scale from 1 to 10, and horizontal axle – numbers of BPOM competences' self-assessments in scale from 1 to 8, starting from the first self-assessment (BPOM-1) and finishing with the eighth self-assessment (BPOM-8).

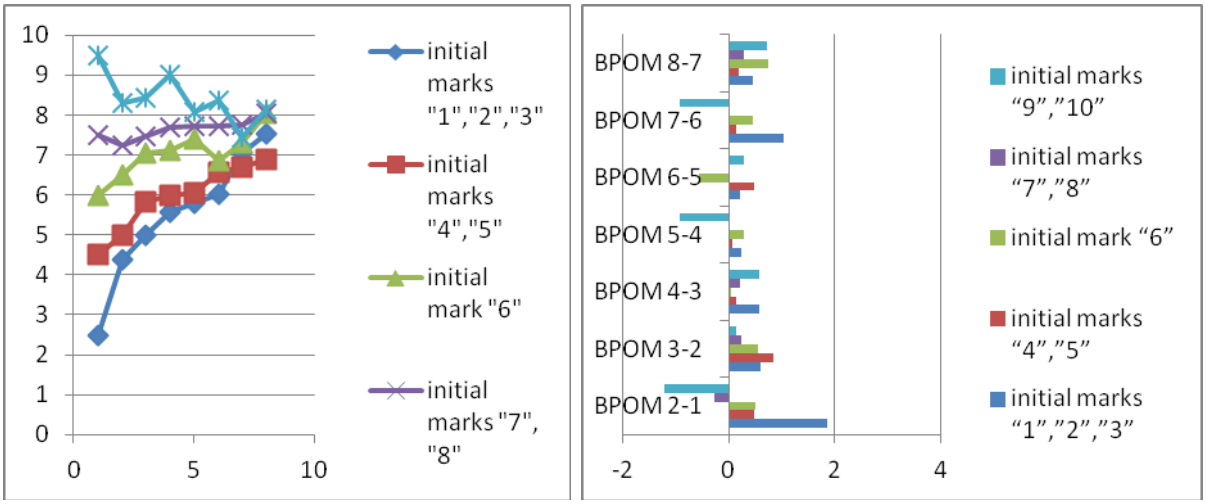

Figure 3. **First competence development depending on initial self-assessment mark**

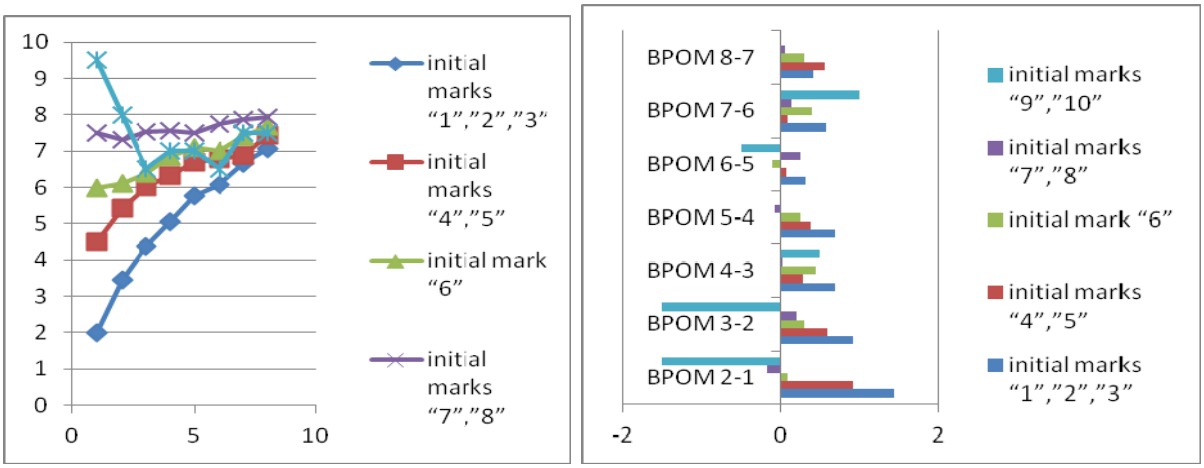

Figure 4. **Second competence development depending on initial self-assessment mark**

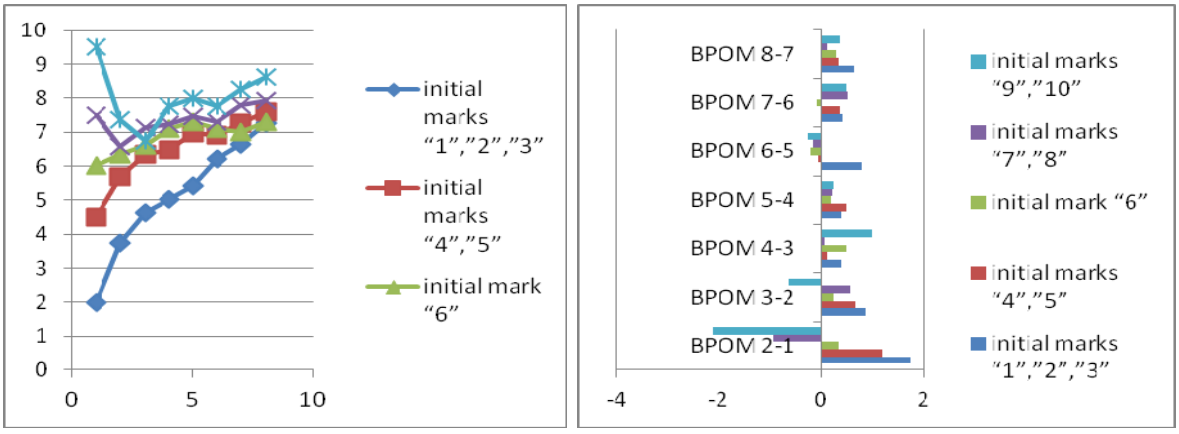

Figure 5. **Third competence development depending on initial self-assessment mark**

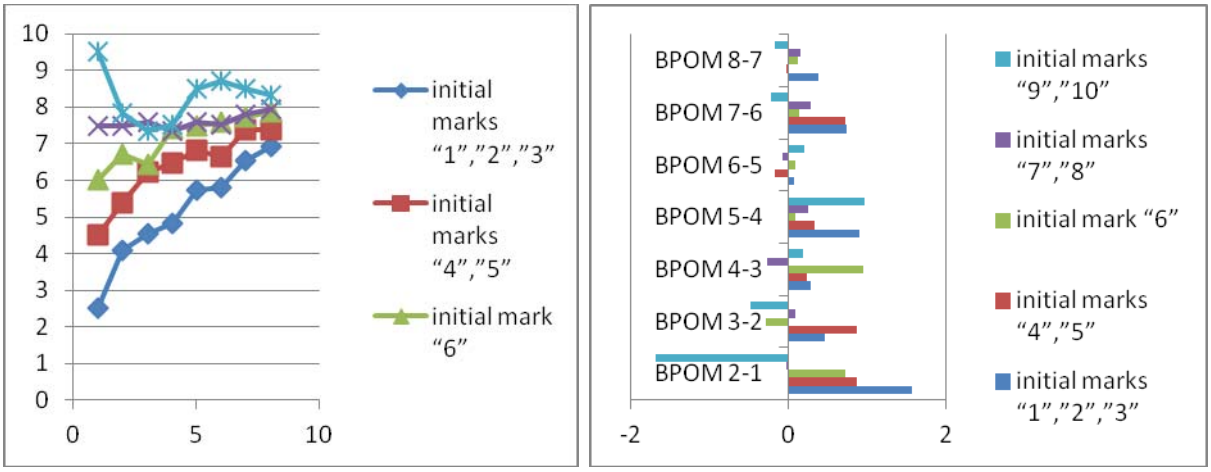

Figure 6. **Fourth competence development depending on initial self-assessment mark**

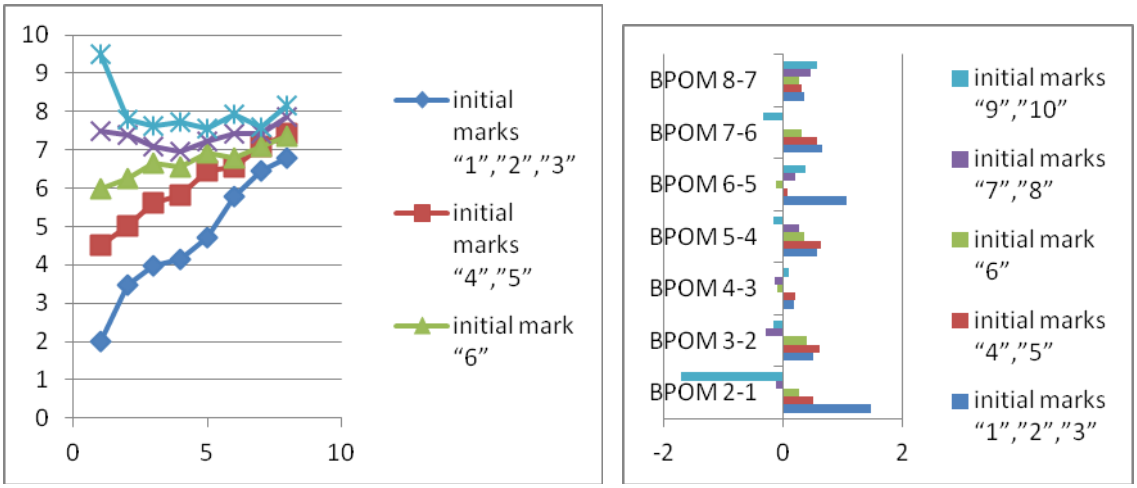

Figure 7. **Fifth competence development depending on initial self-assessment mark**

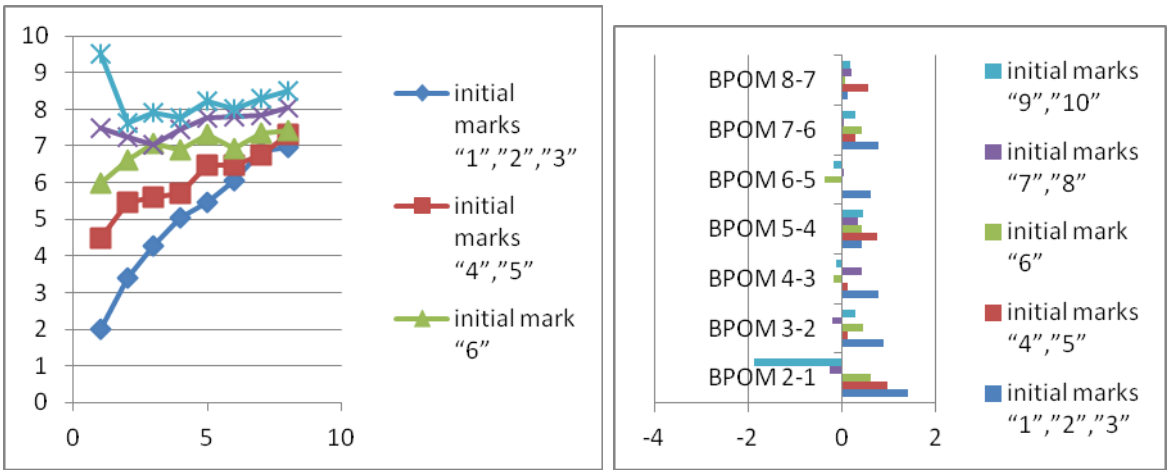

Figure 8. **Sixth competence development depending on initial self-assessment mark**

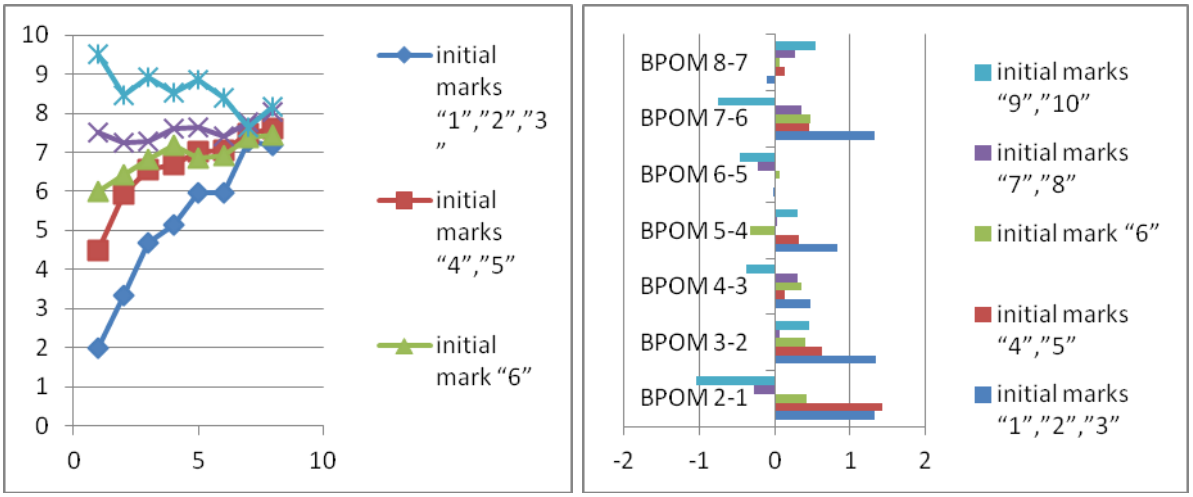

Figure 9. **Seventh competence development depending on initial self-assessment mark**

Right part of Figures 3 – 9 compares respondents' competences change dynamics. Similarly to the left part of figures it is done for each initial self-assessment mark group along the whole course. Vertical axle screens seven blocks of comparisons, where we can keep track of students BPOM competence changes, starting from the block "BPOM-2 versus BPOM-1" (for instance, in Figures 3–9 this block is shown as "BPOM 2-1") and ending with the block "BPOM-8 versus BPOM-7" (in Figures 3–9 this block is shown as "BPOM 8-7"). Horizontal axle shows students' BPOM competences change dynamics – positive or negative changes in comparison with previous survey.

Self-assessment outcomes give colour to students' progress and chosen educational methods and tools. Despite common good results there are also some issues need to be solved.

We have a notable gap in competences' self-assessments between the first and the second survey. It could be assumed that neither weakly self-assessed students sharply increased their competencies in two weeks, nor high-ranking individuals all at once lose own BPOM competencies. Simply, students have got impression about the course and their opinions about themselves took more or less correct form.

A positive feature is that first four marking groups (no.1 – no.4) at the end of the course have improved their results in comparison to the initial learning stage. In contradistinction to them, the fifth marking group has lost some points. In both cases we can conclude that generally there were three students groups: those individuals who have overleapt themselves, those learners who have understated themselves and those students whose self-assessment accorded to reality.

Almost all groups had some relative stoppage in development of competences at the course stages from the fourth to the sixth self-assessment phase. This might be explained by a fact that at noted stage course participants have faced a problem of dealing with financial calculations to develop their business plan. Activities within ePortfolio system, e.g. working in teams of four people in each

group, receiving remarks from colleagues, and refining own business ideas, allowed students force the pace and make necessary improvements in stages from the sixth to the eighth of self-assessment phase.

Evaluating BPOM average competence development depending on initial self-assessment mark, we observe, that all learners achieve results, which are much higher than initial BPOM average competence level (for instance, Figure 10). Certainly, the highest initial self-assessment mark owners do not record so excellent marks at the end of the course as at the beginning of the course. On the other hand, the majority of students have got considerable achievements. Overall, all learners, with different initial self-assessment marks, come to narrow spectrum of results. It could be declared that we have got competences development spectrum, which characterizes changes in competences development during certain period.

This also applies on analysis of each competence development (for instance, left side parts of Figures 3–9). Competence development spectrum might be used further to figure out the impact of particular theme on particular competence and other competencies. Such calculation might be realized by allotting competence correlation coefficient to each theme. We plan to go through these benchmarks in further research.

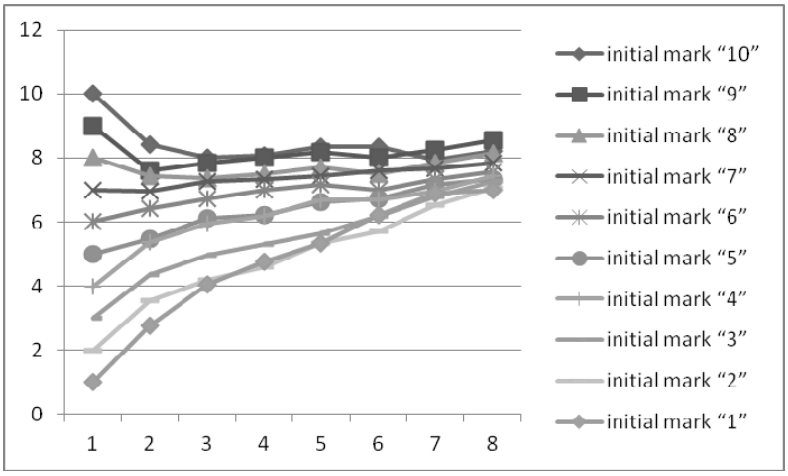

Figure 10. **Average competence development depending on initial self-assessment mark**

Besides, we have found that the course themes influenced also other BPOM competencies, which were not the main objective of definite theme. Thus, we observed improvement of all seven BPOM competencies apart from the target competence, which has improved well as anticipated. Introduction of additional new educational methods implemented during the course, noticeably improved competencies: both the theme's involving and related ones. Working in teams within ePortfolio framework aided students to achieve crucially another level of learning. Critical thinking abilities, tutors' and peers' support, peers reviewed tasks' accomplishment, and further improvement of own business ideas – all this

stimulated the increase of BPOM competences. These considerations also ought to be taken into account in abovementioned calculation.

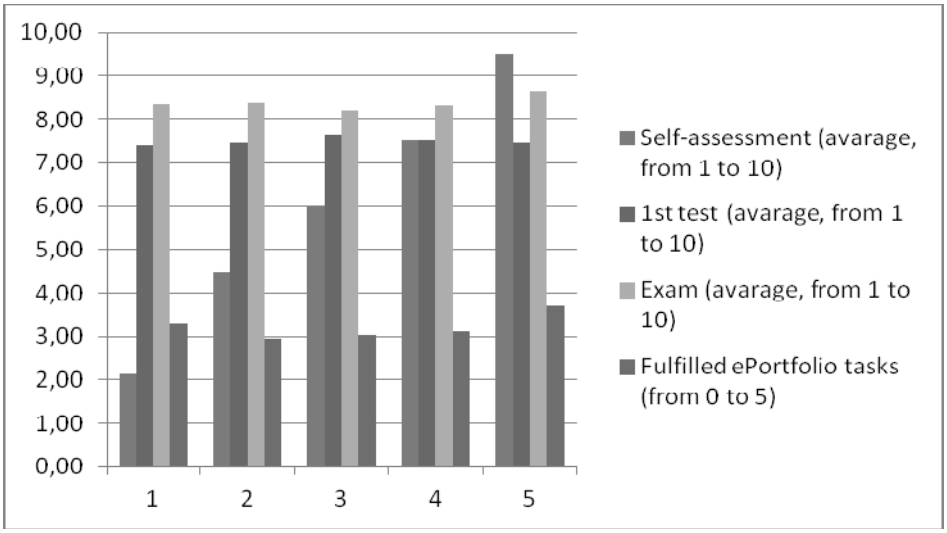

Figure 11. **BPOM course average competence correlation with course activities depending on initial self-assessment mark**

Overall, our expectations regarding the correlation between self-assessments and test results did not come true. It is also difficult to find direct correlations between self-assessments and final exam results. Here we have some considerations, which will be discussed in this paper later on.

Majority of students had lack of confidence, and, as a result, their initial self-assessment marks were far from real competences levels. It took time to get some confidence. Hardworking students enabled steady progress, which allowed them to acquire required competences and achieve remarkable final exam results. In many cases these results were even higher than in other groups.

Some students were too presumptuous evaluating own competencies at initial phase of the course. However, they were capable to buck up and gave a good account of themselves. Extra learning environments, enforced new educational methods and challenging learning paths in form of additional assessments, group-works, practical exercises and activities in the ePortfolio system empowered students aspire after knowledge and succeed in passing the examination.

In that way we have to admit that the correlation between students' test marks, final exam results and achieved competencies, on one hand, and their activities in ePortfolio system, on the other hand, exists (for instance, Figure 11, where vertical axle determines self-assessment (in blue colour), test (in red colour) and exam (in green colour) marks in the scale from 1 to 10, and numbers of fulfilled ePortfolio tasks in the scale from 0 to 5, but horizontal axle – students group numbers depending on initial self-assessment marks). Individuals with low BPOM competences initial level succeed in final results, which are comparative to groups with middle initial self-assessment marks. Higher level of activities in ePortfolio system, working in teams, assessing of group members and themselves,

allowed them to improve their business plans and pass final exam with excellent betterment percentage rating. Equally, learners with the highest BPOM competences initial level achieved the highest results in the final examination due to their great activities and well done job in ePortfolio system; thus, we can say that ePortfolio activities not to let them digress.

Conclusions

BPOM course's extended learning path, which covers set of competencies, characterizes this course. These competencies are inwrought with each other – learning one theme has an impact on others.

There is no correlation between self-assessments and test results. Test results do not depend on self-assessments. However, the correlation between students' test marks, exam results, and achieved competencies, on the one hand, and their activities in ePortfolio system, on the other hand, exists.

Initially high ranking self-assessments drop down in the next self-assessment phase; contrariwise, low raking self-assessments grow. New study themes and methods influence competences' change dynamics. Thus, meeting with difficulties in calculation of financial statement, BPOM competences' development stop for a while, but, gaining support and constructive suggestions within ePortfolio groups, competences' development continue.

At the end of the course all students achieved acceptable similar rather high competences levels. This was the goal of the course. It could be said that during the course specific competence development spectrum is being formed.

There is a necessity of further research and data analysis on certain themes effect on competences changes as well as definition of a conformable correlation ratio.

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