

# Qualitative assessment in higher education

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*Abstract:* The transition from an industrial society to a knowledge society and knowledge-based economy creates qualitative changes in labour market demand. Not only professions are changing, but also the content of professions. Most employers are looking for university graduates with widely applicable skills, such as oral and written communication, the ability to think critically, solve complex problems, take responsibility and innovate, integrity, as well as people who are able to judge ethically. This demand creates changes in higher education, where the main focus is no longer a degree, but the acquisition of certain skills, including personal skills. How to assess whether the higher education program provides these skills? The study aims to provide a conceptual model of skills assessment based on Vidzeme University of Applied Sciences (ViA) example.

Data triangulation method was used in the realization of the study using primary data acquisition methods - surveys and interviews with employers, foreign and local experts, teachers, alumni and students, statistical data comparative evaluation.

*Key-Words:* skills, qualitative assessment, higher education, study methods

## 1 Introduction

Oxford University Report "The Future of Employment: How susceptible are Jobs to Computerisation?" says that nearly 47 per cent of US jobs are at risk from technological progress [1]. The technological progress influences also the process of learning. The printed textbook market in the world is decreasing, as students increasingly rely on the Internet search engines and online lectures. More and more universities establish massive open online courses offering their best professors to the public through a global online platform completely free of charge. There are losses of digitization in the learning process. The students lose their ability to listen for a long time, to acquire complicated arguments and to summarize, analyse and evaluate what they hear and how they hear it.

How many graduates are able to understand the reasoning and focus on its importance, build their assertions and think critically? Analytical mind is a fundamental attribute of a graduate in any field. Too many of our students are now showing competence of surfing in the saturated sea of information, but are unable to guide themselves in the wider ocean in search of a deep understanding [2].

Northeastern University (Massachusetts) study of 26 colleges and 27 universities finds that most employers are looking for college graduates with

widely applicable skills, such as oral and written communication, the ability to think critically, solve complex problems, take responsibility and innovate, people with integrity, as well as people who can judge ethically. According to this study, a specific industry experience ranks in a much lower category [3]. Educational institutions at the primary, secondary, and post-secondary levels are largely the products of technology infrastructure and social circumstances of the past. The landscape has changed and educational institutions should consider how to adapt quickly in response. Some directions of change might include: Placing additional emphasis on developing skills such as critical thinking, insight, and analysis capabilities, integrating new-media literacy into education programs, including experiential learning that gives prominence to soft skills—such as the ability to collaborate, work in groups, read social cues, and respond adaptively, integrating interdisciplinary training that allows students to develop skills and knowledge in a range of subjects [4].

Faced with the challenges of the future labour market and technologies, also Stanford University, while creating their vision for the future, plans to change the approach to training. Today the knowledge of a particular discipline is a key criterion for the award of a degree, but skills development is of secondary importance. In the future, the

development of skills is to become the foundation. Today education is organized within the study disciplinary topics, but in the future it will mainly consist of skills acquisition modules [5].

Javier Bilbao at al. has focused on the research of the Computational Thinking. Computational thinking can provide some abilities that are not exclusive of people who will work in jobs related to Computer Science, but for any type of Economics and Education job, even for any type of person: worker, student, unemployed, retired... Computational thinking is strategically important for dealing with many kinds of problems, and can be especially useful in the STEM subjects (science, technology, engineering and mathematics), where models, simulation, experiments are primary learning asset. But the abilities that computational thinking provides are not just for use in these scientific-technological subjects but in anyone, such as music, languages, politics, etc [6].

The following questions become topical: how should universities be assessed, what is the right balance between technology and human contact in the study process? The aim of the study is to create a model that would allow evaluating qualitatively the relevance of the study content to the acquisition of pre-defined skills, based on the example of Vidzeme University of Applied Sciences (Latvia). The study is based on the research carried out in 2015 on the compliance of the education offered in the city of Valmiera and Vidzeme region with the demand of entrepreneurs and the employment prospects [7]. In the research 147 entrepreneurs of Vidzeme named the most necessary skills in the labour market occupations [8]. In order to make sure that these skills are included in the course descriptions, all course descriptions of 2 master's programs were analysed. For the assessment of skills of students and graduates, data triangulation method was used, applying the primary data acquisition methods – surveys of employers (n=14), foreign experts (n=52), and local experts (n=84), teaching staff (n=61), alumni (n=257) and students (n=210), 33 interviews with ViA management, administration and teaching staff, and the comparative evaluation of these data. Students, graduates and the teaching staff were asked the same question, analysing the differences in responses. As a result of the study, a conceptual model is offered for the qualitative assessment of the study content in terms of skills acquisition.

## 2 Problem Formulation

For the quality assessment of higher education institutions, a variety of rankings are used. The most popular are QS World University Rankings®, Times Higher Education World University, The Ranking Web or Webometrics, rankings developed by Melbourne Institute in Australia, Maclean's in Canada, CHE/DAAD developed university comparison in Germany, the newspapers The Times and Guardian in the UK, US News and World Report rankings in the USA, and university rankings of Shanghai University (Jiao Tong University Academic Ranking of World Universities). There is no link between different world rankings; each of them considers different aspects as significant, applying different weights to each aspect. The indicators used for the performance assessment of universities can be divided into a number of groups, such as those describing the university resources, study environment (number of students, academic staff, the available study resources), describing the study process (student satisfaction indicators), and the indicators characterizing the outcome (employer satisfaction, scientific achievements, number of publications). In many cases, the result is reduced to a single quantitative assessment. However, it is not correct to perform the transformation of qualitative and quantitative indicators into one figure - in such cases a multi-dimensional division method should be used which takes into account both quantitative and qualitative assessments. There is no uniform definition of quality since in different countries there are different higher education policy objectives and, consequently, the purpose of universities and their role in the society. Quality is a broad concept, and in order to assess it, the criteria important to stakeholders must be defined. In 2006 an international group of experts, in collaboration with UNESCO-European Centre for Higher Education (also known as the UNESCO-CEPS), the Institute for Higher Education Policy in Washington, as well as the Centre for Higher Education Development (Germany) agreed on the principles that should be taken into account in the development of university rankings. Although the work on the promotion and implementation of the principles as a general practice continues, the Berlin principles of ranking of higher education institutions based on examples of good practice remind the real purpose of creating rankings. In the development of university quality criteria there should be cooperation between educational institutions, students, alumni and employers. The Berlin principles of ranking of higher education institutions envisages that the diversity of institutions, their missions and objectives should be taken into account, and reliable data should be used

in creating rankings, and the results should be assessed.

### 3 Problem Solution

The solution can be developing open databases in which information users have access to the data that everyone can individually select and compare. Therefore, the researchers offer to carry out a systematic assessment of skills in four steps, based on the skills required in the labour market - first, to define the necessary skills; second, to make sure that the acquisition of these skills is included in the study process; third, to find out whether the applied study methods allow acquiring these skills; fourth, to find out whether these skills are actually acquired (see Fig.1).

The definition of skills is based on the study carried out in 2015 on the relevance of the education offered in the city of Valmiera and Vidzeme region to the entrepreneurs' demand and the employment prospects.

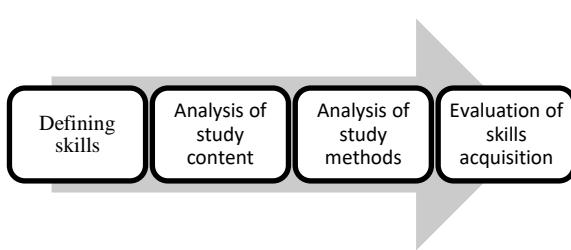


Fig.1 Conceptual model of skills assessment

#### 3.1 Defining skills

In the study 147 entrepreneurs named the most necessary skills in the professions that require higher education:

- solving complex problems,
- decision-making skills,
- ability to work in a team,
- learning skills,
- initiative,
- precision,
- critical thinking,
- stress management,
- people management,
- focusing on customer service,
- empathy,
- emotional intelligence,
- languages,
- technological know-how,
- creativity [8].

#### 3.2 Analysis of study content

In the next step the comparison of the course descriptions of two master study programs was carried out to determine whether the acquisition of personality skills is foreseen in the course descriptions.

Table 1 Skills included in the study course descriptions (Source: ViA study course descriptions)

Program A	Program B
To acquire, select, structure and analyse information; analytical and conceptual thinking; to critically evaluate, to think critically; conflict and stress management; leadership; make decisions; plan; work in a team; independence; focus on results; create.	Describe, analyse, compare; demonstrate a detailed understanding; qualitative and quantitative methods of comparison.

Table 1 shows that in the study course descriptions of the program A there are relatively more skills included. Although the content of a course does not always provide the acquisition of skills in reality, however, it would be necessary to review the course descriptions and pay attention to the inclusion of personal skills in the course descriptions that would make teachers to reconsider the course content. Besides the skills outlined above, the most recent sources of literature draw the attention of the academic environment to such skills as design thinking, adaptive thinking, virtual collaboration etc.[4].

As shown in Figure 2, the most common assessment in the program A is higher than the student assessment in the program B for the following skills: ability to work in a team, learning skills, creativity, self-control and discipline, complex problem solving, decision-making. The students of both study fields have assessed the possibility to acquire the following skills with the score 3 or less: stress management, critical thinking, emotional intelligence, empathy, people management, languages. The technological know-how was given score 4 by the students of both study fields. There is a close correlation between the skills included in the course descriptions and the student assessment.

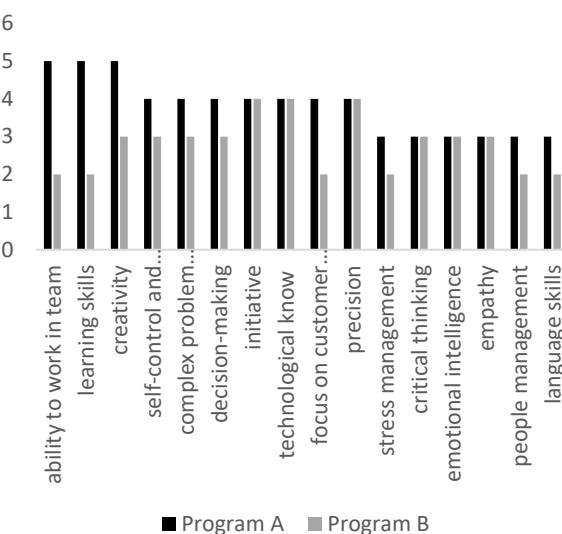


Fig.2 Comparison of the skills in the program A and program B (Source: author's calculations based on Student survey (n=210), 2016)

### 3.3 Analysis of study methods

In the third step, by conducting teacher and student survey, the study methods used in the study process were identified, and the analysis was carried out to see whether they make it possible to learn the skills defined.

The study of UK newspaper "Times Higher Education" [2] has highlighted the problem that was also recognized by the teaching staff of Vidzeme University of Applied Sciences during the interviews:

... students lose the ability to listen to for a long time, to master complex arguments, and to collect, analyse and evaluate what they hear and how they hear it ....

... how many graduates are able to understand the reasoning and focus on its importance, build their assertions and think critically? Analytical mind is a fundamental attribute of a graduate in any field...

Seeing a solution:

... to balance every recorded lecture, online course with an academically-led face to face dialogue, where students' abilities are methodologically developed.

The same study emphasizes the importance of interdisciplinarity: universities should support interdisciplinary efforts needed to create innovative solutions to the major challenges of the society.

Also ViA teaching staff have recognized in the interviews that student groups combining students of different study fields are able to work more creatively and find new solutions, and the learning process becomes more interesting and more fulfilling. In the

survey, the teachers were asked a question: What forms of study are you using? There were a number of possible answers. The responses received are shown in Figure 3, and it shows that the teachers use different forms of classes that allow students to develop personal skills. Besides the most common lectures, also group work, discussions, case studies, role plays, outdoor classes are used. Such methods help to master team work, critical thinking, creativity, complex problem solving, decision-making and other skills.

Among other, such study forms were mentioned as preparing a video, work with texts, seminars, business simulation games, course paper, research that closely matches a real project, film analysis, excursions, modelling, graphical modelling, applied research, practical work, computer modelling, computer simulation programs, group work outside the classroom and its presentation, modelling sessions, students evaluating each other's work, a student suggests improvements for another student's work, public performance.

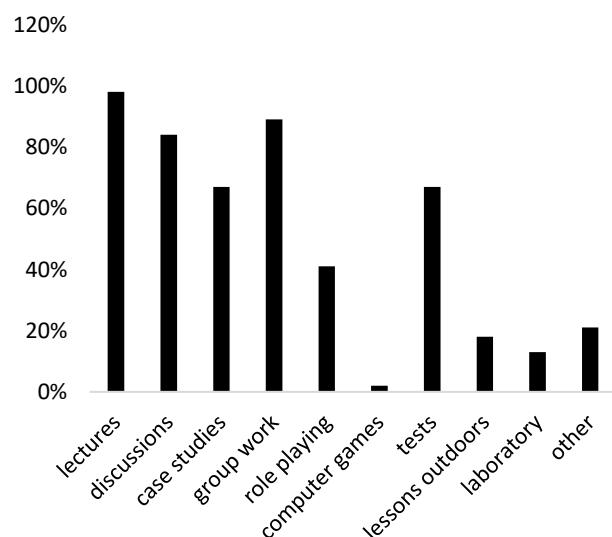


Fig.3 Study forms used in teaching (Source: author's calculations based on Lectures survey (n=61), 2016 )

The study methods used by the teachers are diverse and suitable for acquisition of skills (see Table 2). Skills acquisition requires more situation analysis methods rather than test evaluation.

For mastering precision a useful method is the requirement to submit the study assignments on time, which is taken into account in the evaluation of the results. In order to encourage students not to miss the beginning of a lecture, teachers present the most important and interesting information at the beginning of lectures.

For the development of creativity students are given a task to improve another student's or student group's work, to find a solution in the situation of limited resources.

Complex problem solving skill is practiced by solving interdisciplinary global problems such as the depletion of non-renewable resources together with students of different study fields and foreign students. Decision-making is developed by giving a task to make a decision from a variety of alternatives.

Student interviews revealed an opinion that skills acquisition would in the future require introduction of sports activities to help to learn endurance, perseverance, willpower, stress management.

Greater attention should be given to the inclusion of skills in course descriptions, also including such modern skills as design thinking, adaptive thinking, and virtual collaboration.

**Table 2 Study forms corresponding to acquisition of skills (Source: Lectures survey (n=61), 2016)**

<b>Skills</b>	<b>Study forms</b>
ability to work in group work team	
learning skills	work with texts, lectures
creativity	role plays, computer games, discussions, suggestions for improvement of another student's work
self-control and discipline	observing deadlines in the accomplishment of assignments, group work, evaluating other student's work
complex problem solving	discussions, film analysis, work with texts, applied research
decision-making	group work, research that closely matches a real project
initiative	classes outside university, group work, discussions, excursions
technological know-how	computer modelling, computer simulation programs, analyzing and logically organizing data, data modeling, data abstractions and simulations, formulating problems such that computers may

assist.

focus on customer service	applied research
precision	observing deadlines in the accomplishment of assignments, formatting of course papers
stress management	discussions, presentations, public performance
critical thinking	discussions, work with texts
emotional intelligence	group work, presentations
empathy	group work, classes together with students from other study fields, including foreign students, classes outside the university
people management	group work, applied research, team assignments
language skills	classes in English, classes together with foreign students, literature in a foreign language

### 3.4 Evaluation of skills acquisition

In order to find out the significance of personality skills in profession, the researchers asked ViA graduates in the survey: Please rate the importance of the skills listed below in your current professional activity! Skills were assessed on a scale from 1 to 5, where 5 means fully acquired, 1 – not acquired. The list of skills can be seen in Table 2. The obtained data were statistically processed by calculating the arithmetic mean of the assessment and the most frequent assessment-mode.

Figure 4 shows that, overall, the graduates have assessed the acquired skills lower than their role in profession. The most acquired skills are the ability to work in a team (4:18), learning skills (4:08), initiative (3.92), precision (3.86), critical thinking (3.82), but relatively less acquired skills are stress management (3:07), people management (3.1), focus on customer service (3:27), empathy (3:35), emotional intelligence (3:38).

Figure 4 shows the comparison of the preferred and the acquired/ learned skills. The biggest differences between the assessment of the preferred and the acquired skills are the following: stress management, complex problem solving, critical

thinking, self-control and discipline, decision-making, emotional intelligence.

In the view of alumni, the smallest difference in the preferred and acquired skills assessment is for: learning skills, creativity, ability to work in a team while maintaining a productive relationship and achieving results, initiative, empathy, language skills.

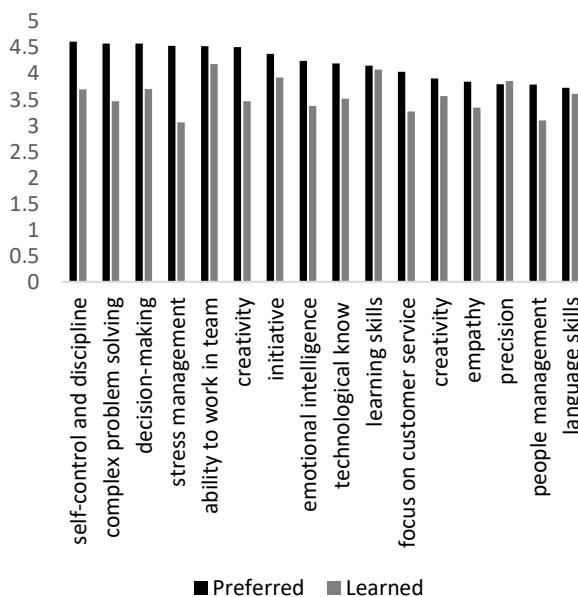


Fig.4 The comparison of the preferred and the learned skills of alumni (the average score on a scale from 1 to 5), (Source: Author's calculations based on Alumni survey n=257, 2016 )

In order to find out the students' self-assessment of the skills acquired, the researchers asked students to answer the question: In your opinion, to what extent do you acquire the following skills in the study process? (1 – not acquired and 5 – fully acquired).

The figure shows that students, similar to graduates, acquire the following skills the most: team work (4.19), decision-making (3.85), initiative (3.7), learning skills (3.7), and precision (3.6). Like graduates, students also acquire the following skills the least: stress management (2.89), focus on customer service (3.08), empathy (3.11), emotional intelligence (3.29), people management (3.3).

In order to find out the teachers' opinion on the skills acquired by students, the researchers asked them the question in the survey: In your opinion, to what extent do students acquire the following skills during the study process? (1 – not acquired and 5 – fully acquired). Figure 6 shows that in teachers' opinion master students have best acquired critical thinking (4.38), ability to work in a team while maintaining a productive relationship and achieving results (4.25), initiative (4.13), complex problem solving (4.13),

decision-making (4), while the least mastered are empathy (3.38), stress management skills (3.58), emotional intelligence (3.58), precision (3.67), technological know-how (3.67). The overall training for the profession is assessed with 4.21 points.

Figure 6 shows that in teachers' opinion bachelor students have best mastered the ability to work in a team while maintaining a productive relationship and achieving results (4.20), creativity (3.96), language skills (3.93), decision-making (3.76), learning skills (3.76), while the least mastered are empathy (3.15), people management (3.28), stress management skills (3.33), self-monitoring and discipline (3.43), precision (3.67). The biggest difference in the students' and teachers' assessment is foreign language knowledge, focus on customer service and creativity where teachers' evaluation is higher than students' (see Fig. 5).

Comparing the teachers' view on the skills acquired in bachelor and master programs, it can be seen that the greatest differences are critical thinking, people management, complex problem solving and initiative, where master student skills were assessed higher than bachelor student skills (see Fig.6).

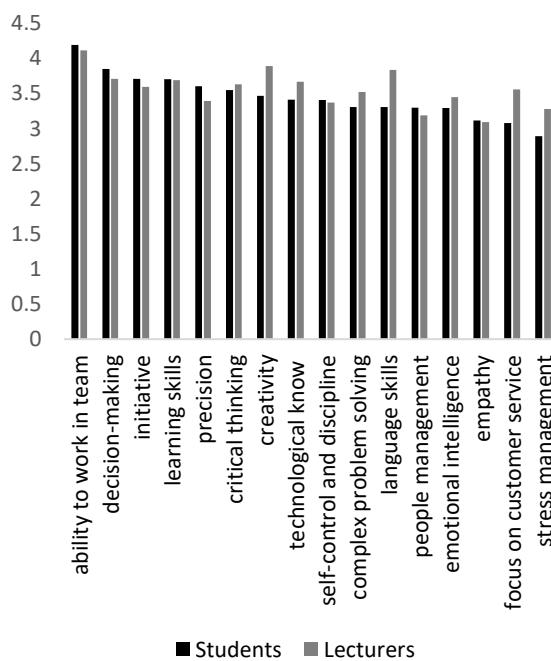


Fig.5 The skills acquired during the study process according to students' and teachers' assessment (average score on a scale 1-5) Source: (Source: author's calculations based on Lectures survey (n=61), Student survey n=210, teacher survey n=61, 2016.)

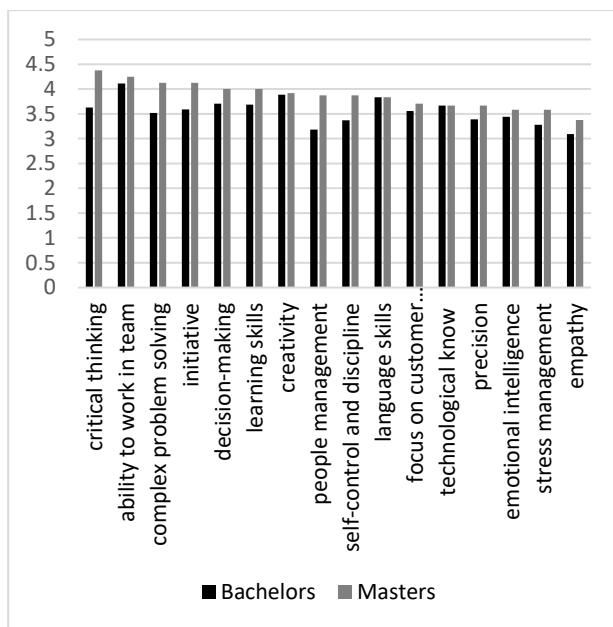


Fig.6 The skills acquired during the study process according to teachers' assessment (Source: author's calculations based on Lectures survey (n=61), 2016)

## 4 Conclusion

1. The quality of studies is a broad concept, and in order to assess it, the criteria should be defined that are important for the stakeholders – students, graduates, employers.
2. The conceptual model of skills assessment offers to carry out a systematic assessment of skills in four steps- first, to define the necessary skills; second, to make sure that the acquisition of these skills is included in the study process; third, to find out whether the applied study methods allow acquiring these skills; fourth, to find out whether these skills are actually acquired.
3. The solution can be developing open databases in which information users have access to the data that everyone can individually select and compare.
4. The model input data sources can be student, alumni, teacher, employer surveys and the information included in the study program course descriptions.
5. It is recommended to use data triangulation method for data evaluation to ensure data reliability.
6. For data processing and analysis, statistical data processing techniques are to be used assessing the arithmetical average and most frequent responses (mode).
7. The verification of model on the basis of Vidzeme University of Applied Sciences data shows that the results obtained allow finding correlations between the information contained in course descriptions and the respondents' replies, thus not only assessing the

quality of study content, but also providing clear improvements.

8. The selected study forms are closely related to the degree of skills acquisition. Skills acquisition requires more situation analysis methods rather than test evaluation.

## 5 Acknowledgments

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