

Soft skills perception among students: importance and performance

Maja Stracenski Kalauz

Institute for development and management of design and intellectual property - IDEA+
Kaptol 24, 10000 Zagreb, Croatia
stracenski.kalauz@gmail.com

Goran Hudec

Faculty of Textile Technology
University of Zagreb
Prilaz baruna Filipovića 28a,
10000 Zagreb, Croatia
goran.hudec@ttf.hr

Valentina Kirinić

Faculty of Organization and Informatics
University of Zagreb
Pavlinka 2, 42000 Varaždin,
Croatia
valentina.kirinic@foi.hr

Abstract. „Soft skills“ are based on combination of cognitive and meta-cognitive skills, interpersonal, intellectual and practical values, abilities and skills of a person. They are usually combined together with numerous experiential skills adding extra value to the person's competitiveness by enriching synergic value combined with person's „hard skills“(knowledge).

In this paper empirical research by semi-structured questionnaire with 21 variables (soft skills), on engineering students population at Faculty of Textile Technology of University of Zagreb (N=112), are presented. The main results include demographic characteristics together with student's perception of soft skills importance for their future professional careers as well as their own soft skills capabilities assessment.

Keywords. Soft skills, importance, performance, students

1 Introduction

During the last 25 years importance of soft skills has been underlined, started in US with studies of the American Society for Training and Development-ASTD [2] and the Secretary's Commission on Achieving Necessary Skills-SCANS (1991) [15]. In EU the projects like EUCA and its partner MODEs [13], E-QUA [4], DAISS [3], MASS [6], NESSIE [14], Soft Skills with monitoring and coaching [16] and recently GRASS [8] were performed or are underway. Soft skills have found place in EU policy documents like in strategic framework for European cooperation "Education and training 2020" ("ET 2020") [7]. Here soft skills are analyzed for different populations, like students, participants of VET or employed / unemployed individuals.

As with many new scientific fields, there is still no consensus about definition of the term „soft skills“, but most of the individual/single factors/skills are well defined with established research methods and

measurements. Usually education fields' methods and measurement are applied in soft skills research.

„Soft skills“ are discussed as a term in contrast to „hard skills“ and in academic papers called „cognitive skills“ - as knowledge about facts, technical, objective knowledge and skills [11]. In the contrast, “non-cognitive” skills or personality traits i.e. „soft skills“ are usually combined of numerous experiential abilities and skills including motivation, social skills and work habits.

In education, term „soft skills“ is often used interchangeably with transversal (cross-curricular) competencies, i.e. those that are cross-disciplinary and not subject-specific.

The European Commission (EC) in their reports [5], [6] identifies a number of soft skills, such as: problem solving, social and civic competences, initiative taking and entrepreneurship, cultural awareness and expression, learning to learn, creativity, innovation, critical thinking, decision making, communication, collaboration, research and enquiry, flexibility and adaptability, initiative and self-direction, productivity, leadership and responsibility, integrity, empathy and sociability. At work, soft skills also include strong work ethic, positive attitude, time management abilities, teamwork skills, self-confidence, ability to accept and learn from criticism, working well under pressure. A related term is „critical skills“. These often refer to particular capabilities needed within an occupation, for example, general management skills, communication and customer handling skills, teamwork skills and recognition as an "expert" sought by peers.

In the ATC21S project report Binkley et al. state: „Soft skills“ are closely related to the so-called 21st century skills – a broad set of knowledge, skills, work habits, and personal traits that are considered highly important for success in today's world, especially in modern workplace settings. Examples of such skills include collaboration, knowledge construction, self-regulation, real-world problem solving, use of ICT for

learning and innovation, and skilled communication [1].

In this paper the attitude and perception of undergraduate students of textile technology engineering studying (B.Sc.) at University of Zagreb (Croatia, EU) about general (further in text marked "G") importance of soft skills for their career and their perception of own abilities (further in text marked "A") of those soft skills, i.e. self assessment of their soft skills were examined.

2 Research methodology and methods

This study is part of a larger research project Grading Soft Skills (GRASS) focusing on representing soft skills of learners in a quantitative, measurable way.

The empirical research was designed (under GRASS project) based on 30-minute survey, consisted of a semi-structured, self-administered questionnaire.

For the methodological base for this research the ModEs-project [13] was used. On ModEs project worked different partner organizations: IAT-Andalusian Institute of Technology (Spain), CEFRIEL: Politecnico di Milano (Italy), SBAT: School of business Administration Turība (Latvia), ITS Institute for Tourism Studies (Malta) and GEA College of Entrepreneurship (Slovenia).

In ModEs project, a list of soft skills and their definitions based on a literature review and professional experience [10, 73] was developed. The ModEs list and definitions of the soft skills have been subject to an internal assessment that provides:

- Validity: refers to whether the meaning of the skill is in line with the reality to be defined.
- Importance: the relevance of the skills in the business environment.
- Proposals inclusion: both observations and modifications to the soft skills included in the preliminary list, as well as the possibility to add, delete or merge skills [10, 73-74].

This list has been validated and reviewed within the project consortium, prior to validation by business [10, 73].

In this study 21 variables were used, based and defined in ModEs-project [10, 75-76]. ModEs-project list of soft skills have been translated on Croatian language and implemented in this research.

Soft skill included in the list are; Communication, Customer/User orientation, Teamwork, Learning skills, Creativity/Innovation, Effective decision making skills, Analysis and synthesis skills, Management skills, Adaptability to changes, Leadership, Commitment to work/organization, Results orientation, Continuous improvement, Discussion/Negotiation ability, Professional ethics, Tolerance to stress, Self-awareness, Life-balance/self-control, Conflict solving management ability, Socio-

cultural adaptability and Social/Contact networking [10, 75-76].

Over 2 closed questions 5 point Likert scale was used to measure, first one the G (general) importance that each skill have in success for future labor market. Likert scale was graded from 1-unimportant to 5-very important.

In second question students are asked to self assess their own abilities (A) in particular soft skill, here 1 represents lack of skill/unskilled to the 5-excellent skill/skilled.

Other questions were open-ended asking respondents if there were perhaps other skills that they might find G important or they A possessed them and were not included in offered 21 soft skills questionnaire.

Last two questions asked respondents to choose among previously offered 21 skill and to write (just) one most important and one most unimportant soft skill for their future carrier.

Statistical data analyses were conducted using the methods of descriptive statistics and measures testing validity and reliability of criterial questions, performed in SPSS 17.0 software.

3 Results

3.1 Sample statistics: demographic

The researched sample was convenient, consisted of undergraduate students of textile technology engineering studying (B.Sc.) N=112, studying their second semester in academic year 2013/2014, at University of Zagreb, Faculty of Textile Technology. Demographic characteristic of respondents and general data were analyzed.

Among respondents, there were 77.7% (87) females and 22.3% (25) males. The minimum expected cell frequency is 56, so the residuals were ± 31 . The Chi-Square tested value were 34.321 and booth asymptotic and Monte Carlo Sig. was 0.000 using 95% Confidence Interval, proving that there exists statistically significant difference regarding gender.

Mean value of respondents' age was 19.54 years and they were between 18-27 years old.

According to school that respondents completed before the enrolment at University, 50.0% of respondents finished vocational (high) school, than 42.0% finished gymnasium and 8.0% of students finished arts high school.

The respondents were undergraduate students (i.e. B.Sc.) of two Textile Technology Engineering modules at Faculty of Textile Technology: Industrial Design of Textiles & Clothing (IDTC) module and Textile Technology Engineering (TTE) module.

From IDTC module in this study participated 21 respondents or 18.8%, out of which 20 (95.2%) were females and just one (4.8%) student (male) and from

TTE module 91 (81.2%) respondents, out of which 67 (73.6%) were females and 24 (26.4%) students were males.

Work experience had 53.6% of respondents, during the time when the survey was carried on 6.3% were employed and further 29.5% of respondents had part-time job.

57.1% of the respondents had hobby(s) – mostly, different types of sports and dance, art and designing, or reading, writing and film or/and video games.

All respondents speak at least one foreign language; out of that, 55.4% speaks English as single foreign language and just one speaks German. The combination of English and German speak 22.3% and in combination with other languages 8.1% more, that in cumulative make 30.4% of respondents, or further cumulatively 44.6% of respondents speaks three and more foreign languages.

Driving license possess 28.6% of respondents.

During their education years, 31.3% respondents gained some kind of awards or were rewarded for achievement in sports, music and knowledge.

3.2 Sample statistics: soft skills importance and students self assessment

Descriptive statistics of respondent's answers – in G (general) list each of 21 soft skill were graded using 5 point Likert scale (from 1-unimportant to 5-very important). Here are answers to the question how important is each soft skill for success for future labor market.

The average mean value of all respondents answers on all 21 posed skills (as a part shown at Fig.1), i.e. graded general importance (of all 21 skills) for future labor was marked with 4.22.

The respondents answers on all 21 skill as follows: 46.6 % got grade 5, 33.6 % got grade 4 and 19.8 % got lower grades, i.e. 16.0 %-grade 3, 3.1%- grade 2 and 0.7 % got grade 1.

As a most important for their future labor market students ranked Results orientation ability G, Communication G, Commitment to work/organization G and Continuous improvement G. The lowest mean value got the skill: Leadership G.

Also, Leadership G had the highest standard deviation of (1.071), i.e. grades (1-5) vary more widely around mean value of its grades (3.47).

Cronbach's alpha, as the most common measure of internal consistency ("reliability") was used to determine if the scale is reliable on 21 item/variables/skills forming multiple Likert questions tested on 93 (83.00%) cases/respondents, while 11 (17.00%) were excluded/missing .

The Cronbach's alpha coefficient for the 21 items is 0.834, which indicates that the items have good/relatively high level of internal consistency.¹

On the open-ended question posed to respondents to write down if there were some other generally, (G) important soft skill(s) that was not among the list of 21 variables (ModEs), already mentioned in prior question, 16 (14.3%) respondents stated following (17) skills:

- adaptability, clear and understandable communication skills (technical and art problem description of an ideas), collegiality, compassion with customers, understanding, pleasant communication and kindness at any time, confidence and collegiality (mutual help), good will and dedication, honesty, intelligence, knowledge, liability, patience, persistence, resourcefulness and creativity in the fashion world, resourcefulness and persistence, respect and courtesy and tolerance.

Descriptive statistics of the question about respondent's self-assessment, i.e. A (own current (cap) abilities) of 21 soft skills grading it using 5 point Likert scale from 1-uncapable to 5-very capable/skilled.

The averages mean value of respondents self-assessment of all 21 soft skills/abilities was 3.87.

Distribution of answers was 38.8 % for grade 5, than 26.2% for grade 4, 24.2 % for grade 3. Finally, by choosing grades 1 and 2, 8.8 % of respondents saw themselves as unskilled or poorly skilled in soft skills.

In self-assessment of soft skills A respondents highest ranked are Socio-cultural adaptability A (4.32); than Results orientation A (4.31), Teamwork A (4.23), Continuous improvement A (4.18) and Social/Contact networking ability A (4.14). It is interesting that none of the posed A skills did reach the mean value of highest grade (5). The highest dispersion of grades, i.e. standard deviation of 1.111 had Tolerance to stress A.

Three lowest mean values were: Analysis and synthesis skills A (3.30), Leadership A (3.25) and Management skills A (3.03) opening the wide space for improvement in the future. Mean values (where missing values are replaced with the variable mean) and standard deviations of answers on respondents self assessment (A) of soft skills were shown in comparison together with question – general importance of soft skills (G) at Fig. 1.

¹ A common used threshold value for acceptable reliability is .70, although this is not an absolute standard, and values below .70 have been deemed acceptable if the research is exploratory in nature [9, 641]. Cronbach's alpha coefficient .70 (or higher) is considered "acceptable" in most social science research situations.

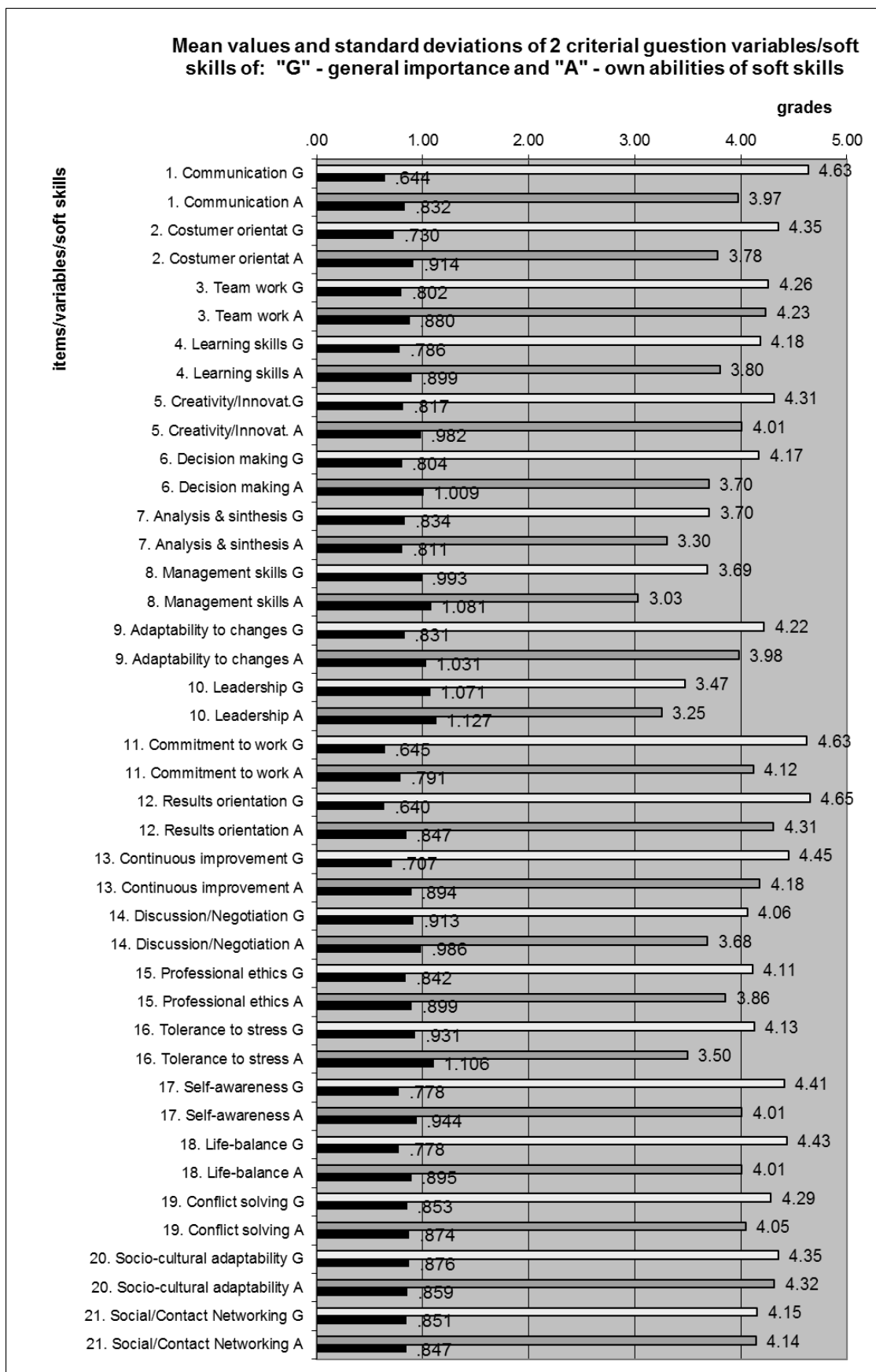


Figure 1. Mean values and standard deviations of 2 questions with 21 criterial variables/soft skills

Reliability tested with Cronbach's alpha is 0.917, which indicates excellent internal consistency for our 5-point Likert scale on 21 items/skills that 101 (90.02%) of respondents answered about their current levels of soft skills.

Beside the list of 21 variables (ModEs), in open-end question, 12 students added (8) new, different soft skills G important for success in future labor market.

Among them four respondents stated: their (1) Persistence and dedication to work, than students mentioned (2) Honesty and kindness, (3) Resourcefulness and (4) Interest for work/fashion and industry. Other skills mentioned once were: (5) Collegiality, (6) Integrity, (7) Tolerance and flexibility with hard/complicated people and (8) Understanding and well-intentional service at any time.

On question asking (to choose among 21 skills and) to write down just one the most important soft skill respondents gave 18 diverse answers, i.e. 17 different skills plus one unexpected answer (all skills). The respondents stated that the most important soft skill is Creativity/Innovation (18.3%), than Communication (17.1%) followed by Learning skills (14.6%). These three skills cumulatively represent 50.0%. Further, Commitment to work/ organization, Effective decision-making skills and Tolerance to stress, each was chosen by six respondents (7.3%).

On the question about their perception of the least important soft skill for their future career (to choose among 21 and write down just one) 37.2% of respondents have not answered. Among 70 respondents who answered the question, the dispersion of specific answers (skills) was even bigger than comparing the answers on the most important skill. 11 respondents (15.7% of valid answers) found Tolerance to stress the least important for the work in their future careers. Another 6 respondents (8.6%) found Leadership skills as the least important soft skill, following by Creativity/Innovation, Learning skills and Social/Contact Networking ability - each skill chosen by 5 respondents (7.1%). Those five skills cumulatively make 45.7% of all 21 skills named as the least important skill.

4 Discussion

As results of this research have shown, students generally perceive importance of soft skills for their future work engagements, based on cumulative score 80.02% of skills graded with highest grades 4 and 5 (on 5 point Likert scale). This is indicating student's awareness of importance for future portfolio of soft skills beside hard skills/knowledge for their concurrency on labor market.

Most important soft skills for respondents in general were: Results orientation G, followed by Communication G, Commitment to work G and Life balance G. In ModEs research the highest values

received Communication, Customer/user orientation, Teamwork, Leadership and Negotiation.

It is interesting that Communication soft skill is found between top soft skills on ModEs and in our research. On the other hand, the lowest mean value of general importance of soft skill get Leadership G, (one of best ranked in ModEs research) while at ModEs it was Culture adaptability.

Among highest mean values according to self-assessment of soft skills (A) are: Socio-cultural adaptability A, than Results orientation A, followed by Team work A and Continuous improvement A. Indicating the difference/variety depending on students perception about different soft skill as importance of skill and their self assessment actual ability regarding different soft skills.

On the other hand, among five lowest mean values of grades describing respondent's self-assessment A are Management skills, Leadership, Analysis and synthesis, Tolerance to stress and Discussion/negotiation skills. Those results indicate not only that those soft skills respondent think less important, but also they self-asses that they perform them less successfully.

Students were asked to propose some other important soft skill beside 21 in questionnaire used and answered by long list. Soft skills important for future work are Adaptability, Clear and understandable communication skills (technical and art problem description of an ideas), Collegiality, Compassion with customers, Understanding, Pleasant communication and kindness at any time, Confidence and collegiality (mutual help), Good will and dedication, Honesty, Intelligence, Liability, Patience, Persistence, Resourcefulness and creativity in the fashion world and Respect and courtesy and tolerance.

As least important skill students pointed out was Tolerance to stress as the most frequent answer, followed by Leadership skills, Creativity/innovation, Learning skills and Social/contact networking ability.

When comparing answers on two open ended questions about the most and the least important skills there is an overlap of same skills (Creativity/innovation and Learning skills) indicating that there was large perception differences between respondents about same skills and their importance.

Comparing cumulative average means of all 21 skills, respondents graded the G importance of those soft skills (4.22) higher than their A self-assessment of soft skills (3.87). The indicator of cumulative score for skills graded with highest grades 4 and 5 (on 5 point Likert scale), that was 65.0% grading their self A assessment of soft skills and 80.02% for G importance of soft skills, indicating the considerable space for improvement by raising respondents' soft skills abilities and self-confidence. That is also supported by the result of respondents' A self-assessment of soft skills. The respondents self-asses themselves best performing in: Socio-cultural

adaptability, Results orientation, Teamwork, Continuous improvement and Social/contact networking. The improvements in respondents' own soft skills abilities are possible in skills in which respondents found themselves weaker: Management skills, Leadership, Analysis and synthesis skills, Tolerance to stress and Discussion/negotiation ability.

5 Conclusions

Students generally perceive importance of soft skills for their future work engagements, based on cumulative indicating students awareness of importance for future portfolio of soft skills beside hard skills/knowledge for their concurrency on labor market.

According to the survey results, most important soft skills (G) for respondents are Results orientation, followed by Communication, Commitment to work and Life balance. Among highest mean values of grades for self-assessment of their soft skills, abilities (A) got Socio-cultural adaptability, than Results orientation, followed by Teamwork and Continuous improvement. It indicates the difference between student's perception about general importance of different soft skill and their self-assessment of soft skills performance.

On the other hand, among lowest mean values of grades describing general importance of soft skill (G), as well as for respondents' self-assessment of soft skills ability (A), respondents chose: Management skills, Leadership, Analysis and synthesis, Tolerance to stress and Discussion/negotiation skills. Those results indicate not only that those soft skills respondents see as the less important, but also they self assess that they perform them less successfully.

There is a significant difference between student's view of general importance of soft skills (4.22) and self-assessment (3.87). This clearly shows that students are filling necessary improvement in a soft skills field.

In the survey the responders were first year students of technical orientation. Significant difference could be expected with senior students and especially with students' from humanities orientation studies.

The obtained results could serve as one of the first steps in exploring soft skills among future workers/student. They indicate contemporary part of person's concurrent abilities for world of work. The results of this research could be used for further research of potential changes in perception and performance of soft skills. Results could be also compared with the employers' perception (as different research group) about of importance of soft skills and they could serve as the base for future modifications and improvement in (under)graduate curriculum.

6 Acknowledgments

This paper has been supported by project Grading soft skills: GRASS Project No. 543029-LLP-1-RS-KA3-KA3MP. This communication reflects the views only of the authors, and the commission cannot be held responsible for any use, which may be made of the information contained therein.

References

- [1] Binkley, M.; Erstad, O.; Herman, J.; Raizen, S.; Ripley, M.; Miller-Ricci, M.; Rumble M. Defining 21st Century Skills. In Griffin, P.; McGaw, B.; Care, E., (Eds.), *Assessment and Teaching of 21st Century Skills*, Springer, Dordrecht, Netherlands, 2012.
- [2] Carnevale, A. P.; Gainer, L. J.; Meltzer, A. S. *Workplace basics: the essential skills employers want*. Jossey-Bass, San Francisco, USA, 1990.
- [3] DAISS – Job Matching Diagnostics for Assessing Soft Skills and Work Role Preferences), <http://daiss-project.eu/progress>, downloaded: January 28th 2014.
- [4] E-QUA Project – Erasmus Quality Hosting Framework (LLP), <http://www.equa-project.eu/en/index.aspx>, downloaded: February 4th 2014.
- [5] European Commission. Key Data on Learning and Innovation through ICT at School in Europe, The Education, Audiovisual and Culture Executive Agency (EACEA P9 Eurydice, 2011), EU. ISBN 978-92-9201-184-0, http://eacea.ec.europa.eu/education/eurydice/documents/key_data_series/129EN.pdf, downloaded: May 30th 2014.
- [6] European Commission. Report to the European Commission on Improving the quality of teaching and learning in Europe's higher education institutions, High Level Group on the Modernisation of Higher Education: McAleese M. (Chair) at al., June 2013, Publications Office of the European Union, Luxembourg, EU. ISBN 978-92-79-30360-9, http://ec.europa.eu/education/library/reports/modernisation_en.pdf, downloaded: May 30th 2014.
- [7] European Council (2009). Education and Training 2020 ("ET 2020"), Official Journal C 119 of 28.5.2009., http://europa.eu/legislation_summaries/education_training_youth/general_framework/ef0016_en.htm, downloaded: January 28th 2014.

- [8] GRASS – Grading soft skills, <https://sites.google.com/site/llpgrassproject/>, downloaded: January 12th 2014.
- [9] Hair, J. F., Jr.; Anderson, R. E.; Tatham, R. L.; Black, W. C. *Multivariate data analysis-with readings*, Prentice Hall, Englewood Cliffs, New Jersey, USA, 1995.
- [10] Haselberger, D; Oberhuemer, P.; Perez, E.; Cincque, M.; Capasso, F. *Mediating Soft Skills at Higher Education Institutions - Guidelines for the design of learning situations supporting soft skills achievement*, Version 1.0, Education and Culture DG Lifelong Learning Programme, European Union, <http://www.euca.eu/en/prs/modes-handbook.aspx>, downloaded: January 28th 2014.
- [11] Laskey, M. L.; Hetzel, C. J. Self-regulated Learning, Metacognition, and Soft Skills: The 21st Century Learner. *Metacognition and Soft Skills*, <http://files.eric.ed.gov/fulltext/ED511589.pdf>, downloaded: May 30th 2014.
- [12] MASS – Measuring and Assessing Soft Skills Project, http://www.mass-project.org/attachments/396_MASS%20wp4%20final%20report%20part-1.pdf, downloaded: January 25th 2014.
- [13] ModES – MODernising higher Education through Soft skills accreditation, <http://www.modproject.eu/>, downloaded: January 25th 2014.
- [14] NESSIE – NETwork for Soft Skills Innovation for Employment, http://www.adam-europe.eu/prj/9722/project_9722_en.pdf, downloaded: February 25th 2014.
- [15] O'Neil, H. F., Jr.; Allred, K.; Baker, E. L. Review of Workforce Readiness: Theoretical Frameworks. In *Workforce readiness: Competences and Assessment*, O'Neil, H. F., Jr. (ed.) Lawrence Erlbaum Associates, Mahwah, New Jersey, USA, 1997.
- [16] Soft Skills with monitoring and coaching. <http://www.gainingsoftskills.eu/Index.aspx>, downloaded: November 12th 2014.