

EXPERT EVALUATION OF FORMATION AND DEVELOPMENT OF COMPETENCE IN LABOUR AND CIVIL PROTECTION STUDIES

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Abstract. *Labour protection specialists need to improve and develop their competence in order to ensure a safe, healthy and sustainable working environment in the relevant economic sector. Competence and its components, as well as the criteria and parameters are very important factors in the formation and development of competence in adult education. The aim of the study was to carry out expert evaluation of the developed competence components' model in labour and civil protection as well as the criteria and parameters, basing on the analysis of theoretical knowledge. The methodological basis included studies, analyses and evaluation of the relevant publications in the context of the competence - components of competence their criteria and carrying out an expert evaluation of the component model, its parameters and criteria. The expert evaluation found that it is necessary to replace the communication component in the model of competence components with the component of intelligibility. The evaluation of intuition, skills, attitude and professional ethics are those where in most cases consensus was reached, thus being unanimously evaluated. Unanimous were also the evaluations of knowledge, creativity, emotional intelligence and reflection. A relatively low level of consensus was reached in the evaluation of communication. Attitude as a component of competence was unanimously ranked first in terms of significance.*

Keywords: *competence, competence components, expert evaluation.*

Introduction

The competence components have a significant role in the formation and development of labour and civil protection competence in the adult study process and work environment.

Basing on the theoretical knowledge (Brizga, 2018) attitude, knowledge, skills, creativity, professional ethics, communication, emotional intelligence, intuition and reflection have been analysed.

In the 21st century the competence approach in education is based on the principal assumption: to emphasize an individual's ability to reflect, to use his/her metacognitive skills, to be creative, independent in thinking and critically evaluate his/her actions and take responsibility for these actions (Catlaks, 2015). European Qualifications Framework for Lifelong learning [EQFfLL], (2009) describes knowledge as theoretic or factual. Knowledge is the result of information assimilation acquired during the study process, the aggregate of facts, principles, theories and experiences related to work or the study field.

EQFfLL, (2009) indicates that skills are the abilities to adapt knowledge and use these skills to carry out practical or theoretical tasks.

Creativity should not be considered as the entirety of inborn characteristics, but as an attitude towards life - as an entirety of skills and abilities and also innovation, that develop during the process of problem solving and decision making (Sternberg, 2012).

Professional ethics deals with the aspects of ethics in relation with the relevant field of professional activities. The most significant values of pedagogical ethics are humanism, honesty, fairness and freedom (Tirri, 2010; Tirri, Nokelainen, & Komulainen, 2013).

Communication skill training for adult learners should incorporate six key components:

1. assessment – includes the analysis of the initial skills and outcomes which are desirable to achieve while implementing the educational programme.
2. orientation – adults have to understand why they need to acquire communication skills
3. instruction – in adult education there should be information about the skills to be acquired. Instructions and training should be combined with oral presentations.
4. practice – it is important that the learner is able to assess his/her action during the practice period. Practical studies have to be varied, so that they are not boring and could arise interest in acquiring skills.
5. feedback – in the course of carrying out a skill, learners need feedback about their performance. Feedback can be corrective with an aim to identify the mistakes as well as motivating to improve one's skills.
6. assessment – after acquiring the study programme the assessment is carried out finding out whether learners are using the acquired knowledge outside the learning environment (Greene, 2016).

Articulation means that knowledge elements are clearly expressed, and they are interconnected (Holodnaja, 2002).

In the context of labour protection specialists' competence, articulation means qualitatively developed, clearly understood instructions and job descriptions as well as an instructing procedure.

Emotional intelligence has been studied by many scientists (Mayer, Salovey, Caruso, & Sitarenios, 2001; Mayer, Roberts, & Barsade, 2008a; Mayer, Salovey, & Caruso, 2008b; Goleman, 2000; Boyatzis, Goleman, & Rhee, 1999; Bar-On, 2007; Zeidner, Matthews, & Roberts, 2009) analysing it as an ability to lead/manage, control, use the feelings and knowledge on emotions, assimilate them in the process of thinking in order to improve thinking and the ability to use emotions to achieve the aim.

The psychologist Sergey Kluchnikov (2012) points out that “an individual's intuitive abilities develop only in the event that his/her will becomes stronger and at the same time, the person's moral and spiritual facets are perfected, activity and inner strength increase”. It is a skill, which is based on one's experience, but not facts.

“In the reflection process returning to the experience we have had and the awareness of the feelings, which can be used in the future, are of great importance” (Šteinberga, 2013, 75). A specialist who acquires work and civil protection needs reflection on improving his/her professional and social competences.

A model of competence components has been developed based on theoretical knowledge (Table 1).

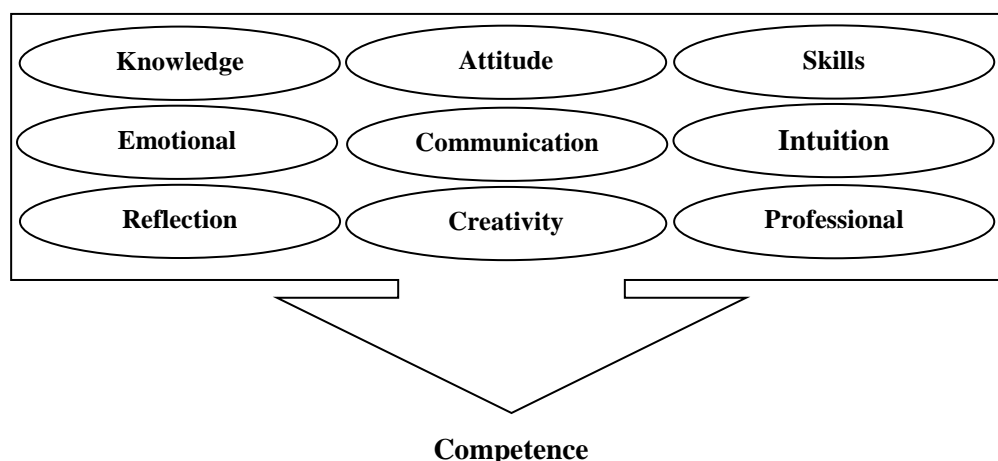


Figure 1 Model of competence components in labour and civil protection

Based on the findings of the theoretical studies, the expert evaluation was carried out for the components of the developed Model of competence

components in labour and civil protection to determine the most significant competence components to be included in the competence formation and development model for labour protection specialists.

Methodology

The aim of the study was to carry out an expert evaluation of the criteria and parameter of the developed Model of competence components in labour and civil protection based on the analysis of theoretical knowledge.

The methodological basis of the study included studies, analyses and evaluation of the relevant publications in the context of the competence, competence components and criteria and performing the expert evaluation of the component model, its indicators and criteria.

Criterion – competence in the field of labour protection and/or education parameters. Experts mainly with the experience in the field of education (A, C and D) and an expert with the prevailing experience gained while working in the field of labour protection (B) were chosen. Two experts (C and E) have the experience in both fields (Table 1). Four experts take part in the implementation of the programmes.

Table 1 List of experts

Experts	Experience			Scientific and academic degree
	Position	Work experience	Scope of activity	
A	Associate professor	17	Higher education	Dr. silv.
B	Labour protection specialist in a manufacturing enterprise	19	Labour protection	Mg. psych. Professional Mg. in labour protection.
C	Labour protection specialist in a joint-stock company, Lecturer	8 4	Labour protection. Higher education	Mg. biol. 2nd level. Professional higher LP
D	Assistant profesor. Leading researcher	10	Higher education	Dr. sc. ing., Mg. paed.
E	Visiting lecturer at LU and LLU. Labour protection expert	9 11	Higher education. Labour protection	Professional Mg. Labour protection

The experts' different experience contributed to the comprehensive evaluation of the specialist's competence development model.

The data processing and assessment of the experts' evaluations have been structured in 11 stages (Orlov, 2002). For the processing of data, an on-line software programme was used (Preacher, 2001).

Results and Discussion

In order to find out which competence components, their parameters and criteria are most significant for the improvement of labour protection specialists' competence model. Labour protection specialists' competence model (Brizga, 2018), an expert evaluation was carried out for the competence components, parameters and criteria, which were obtained by analysing the theoretical findings from publications. Basing on the analysis of the theoretical knowledge obtained and expert recommendations, the model was improved. The experts expressed the following opinions:

Expert A.

The model is based on the formation of labour protection specialists' competence. It is difficult to understand the development of competence in the work environment. It is recommended that relatively most significant components should be included in the competence component model.

Expert B.

The employees of the company have a high self-esteem, however, they do not read instructions and they do not use personal protective equipment and violate other labour protection requirements. Obviously, attitude is the most significant component of competence. There is a probability that the stressor is outside one's work, at home, in the family, etc., however, the employer, in co-operation with the labour protection specialist, can find ways to motivate employees, and get them interested in these work related issues, to promote the existence of informal attitudes.

All the instructing procedures, training and certifications are actually carried out, only the employee who has been working for the company for 10 years, believes that he already knows better than the instructor does.

In large companies, the labour protection specialist needs to review the amount of instructions required per worker, shorten the scope of instructions, simplify the text (make it easier to perceive), provide visual instructions, films, presentations, practical training, involve the staff in creating instructions, since in this way it is easier to perceive the essence of the instruction, and it stays in the memory longer, makes one think and apply it to oneself.

Expert C.

It is recommended that the improvement of the competence should be based on the competence components in the labour protection specialists'

competence formation and development model. The most significant components should be included in the competence component model.

Expert D.

All these competence components are essential. If they are to be ranked, then the most important component is knowledge, followed by attitude and skills. Communication is the use of knowledge, which indicates the change of the term *competence* component. It is recommended that the competence component *communication* should be replaced with a more understandable term – *intelligibility, comprehension or comprehensibility*. Reflection is a prerequisite for creating new ideas, and it is used as a basis for the formation of new knowledge, creativity as well as other components.

Expert E.

All the elements of competence are significant. If they are to be ranked, the most significant ones are attitude, knowledge and skills. It is necessary to emphasize the key components of competence in the labour protection specialists' competence formation and development model, namely those components which promote competence development.

It could be concluded that the experts point at the necessity to improve the model of the competence components in labour and civil protection, including the most significant components of competence. The experts express the necessity to improve the labour protection specialists' competence formation and development model emphasizing competence development and competence components.

The recommendation proposed by expert D regarding the professional terminology for the competence component *communication* is disputable.

To assess the ranking of the significance of competence components, they have been summarised in Table 2, and the statistical processing of data has been performed. Non-parametric statistics of the data have been determined: medians **M**, modas **M** and amplitudes **A** (Mean, Median, Mode, Range Calculator).

Criterion: relative significance of competence components.

Parameters: the sum ranks of competence component ranks: attitude - 1, knowledge - 2, skills - 3, communication - 4, reflection - 5, creativity - 6, professional ethics - 7, emotional intelligence - 8, intuition - 9.

Regarding intuition, skills, attitudes and professional ethics the ranking was the most unanimous one (**A** = 1). Unanimous was also the evaluation of knowledge, creativity, emotional intelligence and reflection (**A** = 2), the consensus reached in evaluation was relatively low for communication.

The competence component *attitude* was unanimously ranked as first by significance.

Table 2 *Relative significance of competence components*
(Results of expert evaluation)

Components of competence	Experts					Ranks L_i	Ranks rank	Median M_e	Mode M_o	Amplitu de A
	A	B	C	D	E					
	Level (rank)									
Intuition	9	9	9	8	9	44	9	9	9	1
Knowledge	2	3	2	1	2	10	2	2	2	2
Communication	5	2	5	4	4	20	4	(4)	2; 4.5	3
Skills	3	4	3	3	3	16	3	3	3	1
Attitude	1	1	1	2	1	6	1	1	1	1
Creativity	4	5	6	6	6	27	6	6	6	2
Emotional intelligence	8	8	7	9	8	40	8	8	8	2
Professional ethics	7	7	8	7	7	36	7	7	7	1
Reflection	6	6	4	5	5	26	5	5	5; 6	2
Total	45	45	45	45	45	225	45	X	X	X

In a partly structured interview and during the discussions with the experts both in groups and in individually, it was concluded that the most significant competence components should be emphasized in the component model of competence development: attitude, knowledge, skills and comprehensibility (replacing communication).

Attitude - a tolerant, positive, consistent and responsible attitude towards promoting labour practices which are safe, sustainable and harmless to health, accountability for one’s words and actions; responsibility to partners, a critical evaluation of dominant public attitudes to the observance of labour protection rules, thus reducing the impact of formal attitudes to these rules; respect for different and diverse views; objective and considerate evaluation and characterisation of accidents, observing confidentiality.

Criteria of attitude:

- tolerance has been observed: (*parameters* - respect of different views; awareness and ability to control one’s emotions, ability to evaluate his/her behaviour and adapt to changes; sensitivity in the evaluation and characterisation of accidents, observance of confidentiality; readiness to recognize and understand other people’s feelings experiences; stress control; the ability to separate personal feelings from professional relationships);
- understanding values and ensuring well-being both in the work environment and outside it: (*parameters* - understanding of the safety

priority in the workplace; the ability to update and justify each employee's personal responsibility and action, life, health and well-being both in the work environment and outside it; the ability to carry out activities within the framework of the function of a position using a value filter - in order to achieve the goals of the value, it should be based on the maintenance of health throughout the entire life; the ability to recognize the values of life and of the world in their inner essence - the ability to present one's own consciousness for the person him/herself by comparing values with one's own understanding and changing that understanding - preferably upward in order to carry out healthy safe and sustainable work);

- will behaviour: (*parameters* - the ability to evaluate behavioral attitudes in order to formulate a prediction for specific activities for the implementation of harmless to health, safe and sustainable work; being responsible for one's words and deeds thus demonstrating a positive example; ability to transfer the acquired knowledge, experience, genetic abilities in a new non-standard situation, the ability of self-control and self-correction).

Knowledge - the person understands occupational health and labour medicine, promotion of wellness, protection of the surrounding environment, management sciences, economics, business IT, record keeping, rules and regulations of labour protection, work environment risk assessment and management, choice of labour protection equipment, ergonomics, fire safety and civil protection, work psychology and pedagogy, Human-Contextual-Time model, the pillars of the 21st century education, promoting of wellbeing, organisation of learning and instructional process, and utilizing this knowledge in the development of the required methodological materials in the context of safe and sustainable work which is non-harmful to health.

Knowledge criteria:

- cognition activity and responsibility: (*parameters* - readiness to acquire new knowledge, because the person is aware of the lack of skills; self-awareness; the person is able to use the knowledge in creating a safe work environment and in reducing formal approach to the observance of rules; the person is able to use knowledge in constantly changing conditions and also is able to carry out self-evaluation, because he/she is aware of his/her knowledge);
- diversity of knowledge: (*parameters* - the person has a wide range of knowledge because he/she understands occupational health and occupational medicine, environmental protection, management science, economics, applied informatics, record keeping, labour

protection legislation, work environment risk assessment and management of work environment, choice of labour protection equipment, ergonomics, fire safety and civil protection, work psychology and pedagogy);

- updating of knowledge in a specific situation: (*parameters* - the person understands and knows how to apply the acquired knowledge to the Human-Contextual-Time model, education pillars of the 21st century, promotion of wellbeing, facilitation, organization and management of teaching and instructing process, development of the methodological materials and documents for their implementation in a safe, healthy and sustainable work context).

Skills - skills to create and develop a safe, healthy and sustainable working environment, to design and develop a learning environment in enterprises and organizations, to plan, organize and conduct training and instructing procedures, to develop and improve instruction, teaching aids and presentations, to use information technologies in training and to improve their use to identify and use Latvian and EU labour protection legislation;

Skills criteria:

- intellectual skills: (*parameters* - basing on experience an adult learner has skills to analyse complex phenomena, to determine the nature of the problem and means to solve it, synthesize and integrate various elements, crystallize values, effectively use information, constructively cooperate with others);
- professional skills: (*parameters* - skills to form and develop a safe, healthy and sustainable working environment, to create and develop a learning environment in enterprises and organizations, to plan, organize and manage training and instructing, to develop and improve instructions, teaching aids and presentations, to use information technologies in training and improve their use, to identify and use Latvian and EU labour protection legislation).

Intelligibility - the ability to clearly demonstrate and explain work issues associated with safe, non-harmful to health conditions and sustainable work, corresponding to the individual learner's or learner group's level of previously acquired knowledge and to develop understandable methodological materials and instructions.

Criteria of intelligibility:

- communication and interaction: (*parameters* - the person is able to use knowledge about the principles and rules for the successful implementation of the communicative process, creating communication between enterprises and communication within the

same enterprise and controlling state institutions; he/she directly addresses complex issues and is a good listener, kindly shares the information, promotes open communication and perceives both bad and good news; can maintain peace and balance, ability to substantiate his or her opinion, ability to persuade, demonstrates ability to cooperate with employers and employees, and is able to create a safe working environment, has the ability to explain both to employers and employees the need for using safe work practices which are harmless to health);

- professional intelligibility: (*parameters* - the ability to explain issues related to safe, sustainable work which is harmless to health, as well as to prepare comprehensible methodological materials and instructions, according to the prior level of knowledge of the particular learner's or training group's members).

Conclusions

The experts acknowledge that it is necessary to use the most significant components of competence in the development of the model. Evaluating the significance of the components of competence in the context of safe and sustainable work which is harmless to health, it has been stated that attitude is in first place. Basing on the experts' opinion it was decided to replace the competence component *communication* with *intelligibility*.

As a result of the research it was concluded that the most significant competence components in labour and civil protection context are knowledge, skills, attitude and intelligibility. These four most significant components will be included in the labour protection specialists' competence formation and development model.

References

- Bar-On, R. (2007). How important is it to educate people to be emotionally intelligent, and can it be done? In R. Bar-On, J. G. Maree & M. Elias (Eds.), *Educating People to Be Emotionally Intelligent* (pp. 1-14). Westport, CT: Praeger.
- Boyatzis, R.E., Goleman, D., & Rhee, K. (1999). Clustering competence in emotional intelligence: Insights from the Emotional Competence Inventory (ECI) s. In R. Bar-On and J.D.A. Parker (eds.), *Handbook of emotional intelligence* (pp. 343-362). San Francisco: Jossey-Bass.
- Brizga, D. (2018). Labour protection specialists' competence model. In V. Lubkina, S. Usca, A. Zvaigzne (Ed.), *Proceedings of the International Scientific Conference Society, Integration, Education*, 5, 60-67.

- Catlaks, G. (2015). The Introduction of the competence-based approach in general education. Advisory Council meeting "Education for all". Retrieved from https://ec.europa.eu/ploteus/sites/eac-eqf/files/broch_lv.pdf.
- European Qualifications Framework for Lifelong Learning. (2009). Belgium: European Commission. Retrieved from https://ec.europa.eu/ploteus/sites/eac-eqf/files/broch_lv.pdf
- Goleman, D. (2000). Emotional Intelligence: Issues in Paradigm Building. In D. Goleman, & C. Cherniss (eds.), *The Emotionally Intelligent Workplace: How to Select for, Measure, and Improve Emotional Intelligence in Individuals, Groups, and Organizations*. San Francisco, CA: Jossey-Bass.
- Greene, J.O. (2016). Communication Skill and Competence. In J. Nussbaum (Ed.), *Oxford research encyclopedia of communication*. Oxford: Oxford University press. DOI:10.1093/acrefore/9780190228613.013.158.
- Holodnaja, M.A. (2002). *The psychology of intelligence: Research of paradoxes*. Edition 2, Sanktpeterburga: Piter.
- Klucnikovs, S. (2012). *Intuition development*. Riga: Vieda, Publishing house of Latvian environmental education.
- Mayer, J.D., Roberts, R.D., & Barsade, S.G. (2008a). Human Abilities: Emotional Intelligence. *Annual Review of Psychology*, 59, 507-536.
- Mayer, J.D., Salovey, P., & Caruso, D. (2008b). Emotional Intelligence. New Ability of Eclectic Traits. *American Psychologist*, 63(6), 503-517.
- Mayer, J.D., Salovey, P., Caruso, D., & Sitarenios, G. (2001). Emotional Intelligence as a Standard intelligence. *Emotion*, 1(3), 232-242.
- Mean, Median, Mode, Range Calculator. Retrieved from <https://www.calculator.net/mean-median-mode-range-calculator.html>
- Orlov, A.I. (2002). *Assessments by experts*. Moscow: Bauman Moscow State Technical University. Retrieved from <http://www.aup.ru/books/m154/>.
- Preacher, K.J. (2001). *Calculation for the chi-square test: An interactive calculation tool for chi-square tests of goodness of fit and independence*. Retrieved from <http://www.quantpsy.org/chisq/chisq.htm>
- Sternberg, R.J. (2012). The assessment of creativity: an investment-based approach. *Creativity Research Journal*, 24(1), 3-12.
- Šteinberga, A. (2013). *Pedagogical competence*. Riga: RaKa.
- Tirri, K. (2010). Teacher Values Underlying Professional Ethics. In T. Lovat, R. Toomey, & N. Clement (Ed.), *International Research Handbook on Values Education and Student Wellbeing*. New York: Springer Dordrecht Heidelberg.
- Tirri, K., Nokelainen, P., & Komulainen, E. (2013). Multiple intelligences: Can they be measured? *Psychological Test and Assessment Modeling*, 55(4), 438-461.
- Zeidner, M., Matthews, G., & Robert, R.D. (2009). *What we know about Emotional Intelligence: how it affects learning, work, relationships, and our mental health*. Cambridge, MA: Massachusetts Institute of Technology.