

Further development of the competence field OSH-Management

Objective

The European Network Education and Training in Occupational Safety and Health (ENETOSH) is the first and currently only transnational network for education and training in safety and health in Europe. The Network provides a forum for a systematic exchange of knowledge and experience to improve the quality of education and training in safety and health. The Network addresses end users, intermediaries and policy makers working on mainstreaming occupational safety and health into education on national and European level.

The members of this Network have developed a standard of competence for instructors and trainers in safety and health. This standard covers four fields of competence:

1. Education and training
2. Safety and health at work
3. Workplace Health Management
4. OSH-Management

The field of competence Education and Training is based on an empirical requirement analysis for instructors and trainers in safety and health. The results of this analysis were used for the development of this standard. So, the latter is based on a scientifically verified approach (Koch, Kici, Strobel & Westhoff, 2006; Koch, Strobel, Kici, & Westhoff, 2009) and has been revised already. The fields of competence 2 through 4 have been worked out by ENETOSH experts who have long-years' experience in the fields concerned. They used a situational approach, i.e. the educational/training situation and the ideal behaviour of instructors/trainers were described. These descriptions were complemented by the necessary knowledge an instructor/trainer should have for a certain situation. The common structure developed for the standard is based on requirements (categories and descriptors) of the European Qualification Framework (EQF). The ENETOSH competence standard

has been acknowledged by 14 organizations of 10 European countries. The fields 2 – 4 constitute a solid foundation that are now continuously upgraded using scientific methods. Thus, it is made sure that the standard is always up-to-date and changes can be incorporated. This is an important measure of quality assurance and improves in general the validity of the standard.

Unlike the fields 2 through 4 a scientific approach was selected for Education and Training from the first step already. In a first step typical and essential work situations and the behaviour of instructors and trainers in these situations were listed. Based on the question which requirement is fulfilled by an instructor or trainer when he/she displays certain behaviour, these behaviours were grouped as requirements in a second step and these requirements were titled. For this purpose 45 instructors/trainers were interviewed thus providing a solid base of data that was analysed for its validity (Koch et al., 2009).

When it comes to a competence standard it should always be examined in how far it really reflects the requirements in the application field concerned. Only a real picture will make it possible to use the results profitably for future training measures or as a basis for certification. The field of competence Workplace Health Management was developed further successfully in 2008 already. It was completed by important and observable behaviours, which will be a valid and reliable base for a certification. On the backdrop of these positive results a second project was set up to proof the validity of the field of competence OSH-Management and to make it more concrete.

As well as in case of Workplace Health Management it was a further objective of this study to describe the terms of general competences, the personal competence as it is called, with the help of concrete, observable behaviours. These behaviours then could be observed directly whilst instructors and trainers are working and the standard would be easier to handle.

Method

For the survey the instrument Task-Analysis-Tools (TAToo, Koch, 2007, 2008) was used. This instrument has proved its worth in the pilot-project Workplace Health Management already. This tool builds on the basic assumption that high performing holders of positions show by efficient behaviour at work that they meet certain requirements (Flanagan, 1954). The requirements as such cannot be observed but the behaviour by which they show up at work. Therefore not the requirement itself is collected that is not always immediately accessible for a person or an observer, but work situations and work behaviour are asked and requirements derived from it inductively. In addition to this theoretical assumption the TAToo covers questions regarding the description of specific duties itself and questions regarding the qualifications and knowledge required for this work. The questions also contained in this tool regarding future work situations and the related successful behaviour, were excluded for this purpose because they were beyond the scope of validation.

Table 1 below shows the individual steps of analysis and the groups of persons involved.

Table 1: Steps of data collection

	Steps		
	Step 1: Collecting	Step 2: Grouping	Step 3: Assessing
Content	Interviewing the participants: - Job description - Necessary qualification - Required knowledge - Typical and essential	The information of step 1 was compacted as requirements	Interviewing the participants: - Importance of requirements and behaviour - Trainability of requirements - Compensability of requirements

	work situations and related behaviour - behaviour-based definition of personal competences from standard		- Completeness
Method	Online survey	Data analysis	Online survey
N	N_{ges}: 17 <hr/> FIN: 3 NL: 1 MK: 1 DE: 4 AT: 2 CH: 1 TR: 2 CZ: 3 ENETOSH-member: 13 Thereof trainer: 10	Investigator	N_{ges}: 19 <hr/> FIN: 2 NL: 1 MK: 1 DE: 6 AT: 3 CH: 1 TR: 1 CZ: 2 BE: 1 UK: 1 ENETOSH-member: 18 Thereof trainer: 11

Notes : N = random sample size ; N_{tot} = total sample for analysis step; AT=Austria;
NL=The Netherlands; PL=Poland; CZ=Czech Republic; FIN=Finland;
MK=Macedonia; TR=Turkey; CH=Switzerland; BE=Belgium; UK=United Kingdom;
DE=Germany.

STEP 1 – Collection

In the Step 1 a online survey was carried out with a total of 17 participants. For this purpose the questionnaire of Tool 1 of TAToo (Koch, 2007, 2008) was used and adapted to the OSH-Management field and to the objective of the study. The participants were invited to the survey by email. During four weeks they could access the questionnaire through an individual and keyed link. The online survey was developed with the Open-Source-Platform LimeSurvey (www.limesurvey.org). The questionnaire was divided into six sections: (I) Initially the participants were explained the content of the questionnaire and what the project was about. (II) Then the participants were asked to describe their work as a teacher or trainer in OSH-Management. The participants described the aims of their work, what exactly they do and at which place they are involved in the working process and with whom they are working. (III) In the 3rd section the participants were asked for the necessary qualification and knowledge that according to their opinion a trainer or teacher of OSH-Management required. In this connection one question was asked on qualification and others on specialist knowledge, methods knowledge, knowledge about computer applications, and one question on other knowledge and skills. (IV) Thereafter the participants were asked for their work situations they have themselves experienced or observed in the past and that were successfully managed by a teacher or trainer in OSH-Management. They were asked how it came to these situations, what exactly happened there, what the teacher or trainer did and how it ended. The participants were asked to report two situations. (V) Finally the participants were given the opportunity to give an open feedback to the project or to the questionnaire. Additionally the participants were informed about the further steps of the survey and how they will be involved in it.

Step 2: Grouping

The data of Step 1 were grouped by the investigator in accordance with the instructions of Tool 2 of the TAToo (Koch, 2007, 2008). The described objectives and tasks were listed and harmonized as regards wording and redundancies deleted without abridging the content. The described qualifications and knowledge were also listed. The requirements were designated according to the questions of the interview, e.g. qualification or expert knowledge. As regards the described work situations the

behaviours of instructors and trainers in critical work situations were extracted as a first step and put on a list. Similar to the procedure for qualification and knowledge, redundancies were removed and the wording harmonized. After that the behaviour descriptions were grouped by similarities.

In her approach the investigator always asked the question: Which requirement is met by a teacher or trainer when he/she displays a certain behaviour. The names of the requirement categories were assigned at the end so that they were as similar as possible to the behaviour descriptions of the relevant competence.

Step 3: Assessing

The lists of Step 2 were integrated into a rough questionnaire taken from Tool 3 of TAToo (Koch, 2007, 2008). This questionnaire was programmed as an online questionnaire. Similar to step 1 the Open-Source-Platform Lime-Survey was used. The same participants were invited to the survey. The participants had to assess each requirement and behaviour. The questionnaire consisted of three parts: (I) Assessment of qualifications and knowledge and (II) assessment of behaviour-related requirements and (III) questions regarding the completeness and the validity of the results. Part I and II contained the following assessment criteria: (a) Importance of requirement or behaviour for the success as an instructor or trainer in OSH-Management, (b) trainability of requirement, (c) compensability of requirement by other personal competences, (d) completeness of requirements. The importance of the requirements and behaviours was assessed based on a 5-level rating scale with the extreme levels *1 = unimportant* and *5 = highly important*. Trainability and compensability of requirements were assessed based on a 4-level rating scale with the extreme levels of *1 = no* and *4 = yes*. The criterion of completeness was assessed by the question to which extent the work of an instructor or trainer in OSH-Management was represented by the requirements of the survey (in percent) and by open feedback as well. The fit in percent was identified by a 4-point rating scale from *1 = 0-25 %* to *4 = 76-100%*.

Results

The answers from the questionnaire of step 3 were analyzed to create the final requirement profile. For this purpose the median of all answers was determined for

each aspect assessed. If the median was in the range of 1 up to including 2 (unimportant), the requirement or behaviour was not included in the result. If the median was in the range of 3 to including 5 (highly important), the aspect was incorporated in the final requirement profile. Trainability and compensability were also assessed by way of medians. Accordingly all those requirements were trainable or/and compensable which had a median of 3 and 4 (rather yes - yes). The comments on the completeness of the requirement profiles were assessed descriptively and any amendments to the profile or suggestions on alternative wording checked.

The Tables 2a and 2b below are a summary of the assessment results. Table 2a shows the qualifications and knowledge assessed in step 1. The categories *qualification, know-how, technical knowledge, methodical knowledge and skills, knowledge about computer applications, and other knowledge and skills* were asked successively by the questionnaire of step 1 as shown above. Each requirement is described by a concrete definition. The items (definitions) described by the participants in step 1 are subordinated to the categories. For each aspect is given the averaged assessment of the importance of the requirement for the success of an instructor or trainer in the field of OSH-Management. This assessment is shown in the table as median (category of answers with the most hits) of all answers. The participants assessed the individual aspects and then the requirement as such (printed in bold). Table 2b has a comparable structure: It shows the individual behaviours described in the questionnaire and the requirement categories allocated by the investigator. For each behaviour and each of these requirements there is also a median of all assessments made by the participants.

Tab. 2a: Rating of qualification, skills and experience

A1 Qualification	very
A - Bachelor or Master degree from a technical university and special knowledge in safety science	nice to have
A - Academic degree, PhD	nice to have
A - Degree of a technical university or university of applied science	nice to have
A - Minimum of 10 years of practical OSH-experience	nice to have
A - Studies of social science, arts and/or public health	nice to have
A - Technical or nature science studies	nice to have
A - Education as a teacher and trainer for adults	nice to have
A - Education as a safety engineer	nice to have
A - Experiences from involved industrial sector	nice to have
A - Educational background, teaching, training	nice to have
A - Extensive knowledge of OSH or OSH educational background	very
A - Previous experience in similar OSH topics or topics part of OSH management (risk assessment etc.)	nice to have
A - Additional pedagogical qualification	nice to have
A - Basic knowledge in administrative or business management	nice to have
A - OSH knowledge according to the needs of the branch where working	very
A - Qualification in pedagogical methods and didactics	nice to have
A - Long-term experience in OSH, in particular in businesses	nice to have
B1 know-how	very
B - Know-how concerning your own topics	very
B - Overview regarding the knowledge of health protection	very
B - Knowledge of the legal and content issues concerning OSH in a certain company or branch	very
B - Work experience with companies, from different organizations and branches at the best	nice to have
B - Know-how to deal with the role-expectations and -demands of the participants	very
B - OSH-substancy	very
B - To know about the working conditions of the participants	nice to have
B - Teaching and research skills	very
B - Practical experience in research	nice to have
B - Theoretical knowledge of OSH and management techniques	nice to have
B - Knowledge about different and widely OSH management modules	nice to have

B - Local knowledge about applicable legislation regarding OSH	very
B - Organizational knowledge	very
B - Knowledge about capacity building	very
B - OSH management systems like OHSAS 18001 and other standards and guidelines like ISO standards and ILO guidelines	nice to have
B - Knowledge of safety at work, health protection and workplace health promotion	very
B - Knowledge about administrative management	nice to have
B - Knowledge about OSH-systems	very
B - Overview of models of good practice for different branches	very
B - Sophisticated knowledge about OSH-Management-Systems, Workplace-Health-Management, Workplace-Integration-Management and other management systems e.g. QM	nice to have
B - Knowledge about legal provisions	very
C1 technical knowledge	nice to have
C - Technical knowledge from involved industrial sector (e.g. construction)	nice to have
C - Knowledge about sectors for which students are prepared at a particular university, e.g. technical knowledge about chemical industry, mining etc.	nice to have
C - Knowledge about typical risks and hazards of various sectors	very
C - Basic knowledge of noise	nice to have
C - Electrical applications according to the branch	nice to have
C - Application of new technology and media	very
C - Engineers knowledge	nice to have
C - Knowledge about information systems	very
C - Know-how to use the video projector	nice to have
D1 methodical knowledge and skills	essential
D - Skills of communication	essential
D - Group work	very
D - Competencies in conflict management	very
D - Adults teaching techniques	very
D - Ability to plan training courses	essential
D - Fruitful interactions with students	essential
D - Lecturing	very
D - Demonstration	essential
D - Case study	very
D - Be master in putting their experiences into practice in an easy way	very

D - Self-organized learning	very
D - Facilitation methods	very
D - Methods for analysis in the field of OSH	very
D - Facilitate dialogues	very
D - Skills of visualization	essential
E1 knowledge about computer applications	very
E - MS-Office package	very
E - Using video-clips	very
E - Using internet	essential
E - Using multi-media shows	very
E - Adobe applications	very
E - E-mail	very
E - Project management	very
F1 other skills and experiences	essential
F - Open-minded, good speaker/presenter	very
F - Flexibility	very
F - Leading the group	essential
F - Team-Teaching	very
F - Skill of speaking to other people and to motivate them for their task	essential
F - Be sensitive for conflicts	very
F - The mixture of theory and practice	essential

Note: 5-point rating scale with the grades "- -" = not important, "-" = less important, "0" = nice to have, "+" = very important/necessary, "+ +" = essential. Aspects with a median of more or equal 3 were included into the final profile. Aspects with a median of less or equal 2 were not included.

Tab. 2b: Rating of behaviour-related requirements

A	Be sensitive for practical problems	very
	A - Write reports of serious accidents and ergonomic hazards addressed to companies	nice to have
	A - Instruct workers whether other persons are endangered	nice to have
B	Teaching principles and a basic understanding of OSH-management	very
	B - Teach basic principles how to identify hazards and how to assess risks of these hazards	very
	B - Exercise methods of OSH-management in the seminar e.g. checklists, online-tools, interview guidelines, workshop	very

	concepts	
	B - Obtain feedback by the participants concerning OSH-methods	very
	B - Presentations are based on information provided by Occupational Safety Research Institutes	nice to have
	B - Explain how safety protection measures function and describe possible accidents	very
	B - Provide methods to prepare OSH programs at organizations	very
	B - Deliver information of OSH-management principles, systems and successful intervention methods	very
	B - Achieve an attitude of critical reflection on OSH items, including OSH management by participants	very
	B - Present the level of and manners of OSH management in an organization	very
	B - Present tools for successful OSH management	very
	B - Analyze the differences between business management and OSH management	nice to have
	B - Analyze the importance of the learning organization also in OSH	nice to have
	B - rise awareness for the importance to develop healthy and safe workplaces in enterprises that are efficient and close to the market	nice to have
	B - OSH knowledge at the general level and knowledge of special OSH issues and knowledge of the pedagogical skills as well	very
	B - Clear up duties from the OSH legislation	very
	B - Share his/her experiences with the participants for the best understanding	very
C	Provide a basis for the transfer of OSH-management content	very
	C - Make written reports including how to prevent accidents and ergonomic hazards addressed to companies	nice to have
	C - Have follow up meetings to discuss pilot risk assessments	nice to have
	C - Develop solutions to reduce strains together within dialogues	very
	C - Assist participants and supervise them in fieldwork	very
	C - Prepare specialists for OSH positions in both enterprises and public administration	nice to have
	C - Broaden knowledge and develop skills of students so that they are able to design and manage OSH topics in organizations	very
	C - Implement OSH into everyday work	very
	C - Encourage the practical side of the training	very
	C - Encourage the participants to active transfer	very

D	Convince the participants of OSH-management	very
	D - Ask participants to reflect on difficult work situations	very
	D - Ask participants to reflect on negotiations regarding OSH in their companies	very
	D - Bring the participants into positions/roles, that not necessarily reflect their own opinion	very
	D - Transfer the message of the necessity of an organized and systematic approach to OSH issues in an organization	very
E	Let the participants take active part in OSH-management training	very
	E - Practicing basic principles how to identify hazards and how to assess risks of these hazards with the help of videotaped cases	very
	E - Making pilot risk assessment in one or two work situations	very
	E - Putting her-/himself in the position of a supervisor, a colleague or person which created the problem for the participant	very
	E - Repeating a problem in a one to one dialogue with the participants	very
	E - Record practices on videotape and give feedback	nice to have
	E - Use debates on pros and cons and discussions on different topics	very
	E - Help nervous participants while speaking with encouraging words and empower them to speak	very
	E - To encourage participants to be active during the seminar and to learn by doing	very
	E - Teams of participants design a hypothetical campaign about personal safety aids at the workplace	nice to have
	E - The outcomes of the teamwork is presented by PowerPoint and posters	very
	E - Participants present their OSH-programs for the organization to the trainer	very
	E - Prepare and evaluate OSH-programs together with the participants	very
F	Prepare and hold OSH-management trainings	very
	F - Organize the course	essential
	F - Organize the examination	very
	F - Prepare the necessary materials and the topic	essential
	F - Present the topic clearly and concisely	essential
	F - Prepare sufficient information and tools for the participants	essential
	F - Prepare and hold courses for safety at work, safety and health management	essential
	F - Organize, develop, implement and evaluate web-based learning cases for participants	nice to have

	F - Aim at efficient education appropriate to the objective/risk	very
	F - Include changes of the state of technique in the courses	very
G	Customize OSH-management trainings to the target audience	very
	G - Help the participants with special problems	very
	G - Answer any possible question from the participants	very
H	Be upfront with diverse views of the participants of OSH-management trainings	very
	H - Ensure that all points of the arguments of the participants are taken into account	very
	H - Accept the criticism on the usefulness of OSH-management and discuss with regard to the content	very
I	Broaden the own knowledge of OSH-management issues	very
	I - Have an up to date safety knowledge	essential
	I - Learn skills (e.g. risk assessment)	very
	I - To supervise thesis research	very
	I - Organize and work within workgroups	very
	I - To assist research projects in OSH and OSH management	very
J	Cooperate with others in OSH-management trainings/activities	very
	J - Inform other trainers about special characteristics of participants	nice to have
	J - Arrange things together with a co-trainer and define common learning objectives	very
	J - Develop and organize learning modules together with a co-trainer	essential
	J - Help the co-trainer in face of problems in the seminar and solve them together	very
	J - Point out co-trainers strengths and weaknesses	nice to have
	J - Discuss the detailed actions of OSH-programs presented by participants with their management	nice to have
	J - Organize OSH-program planning sessions with management and OSH-committee	nice to have
	J - Present communication flows as part of OSH-management-systems	very
K	Lead the participants of OSH-management trainings to the educational objective	very
	K - Have a personal dialogue with difficult participants	very
	K - Offer exercises to the participants as an option	nice to have
	K - Adapt the training concept and involve distracting participants active into exercises	very

Note: 5-point rating scale with the grades "- -" = not important, "-" = less important, "0" = nice to have, "+" = very important/necessary, "+ +" = essential. Aspects with a median of more or equal 3 were included into the final profile. Aspects with a median of less or equal 2

were not included.

19 participants assessed the qualifications and knowledge according to a 5-level rating scale. All items of the questionnaire were assessed with a median higher than 2 (less important). Most items related to qualifications and requirements that were close to the behaviour were assessed with a median of 3 (moderately important) and 4 (quite important). As expected less items were assessed with a median of 5 (very important). All aspects of qualifications and knowledge were assessed as trainable, but cannot be compensated by other, personal competences.

At the end of the survey the participants were confronted with a 4-level rating scale with the extreme levels of 1 = 0-25 % and 4 = 76-100%. By means of this scale the participants rated the fit of the collected requirements to an instructor or trainer working in the field of OSH-Management. Figure 1 gives the results of the assessment.

Fit of the results to the work of instructors or trainers in OSH-Management

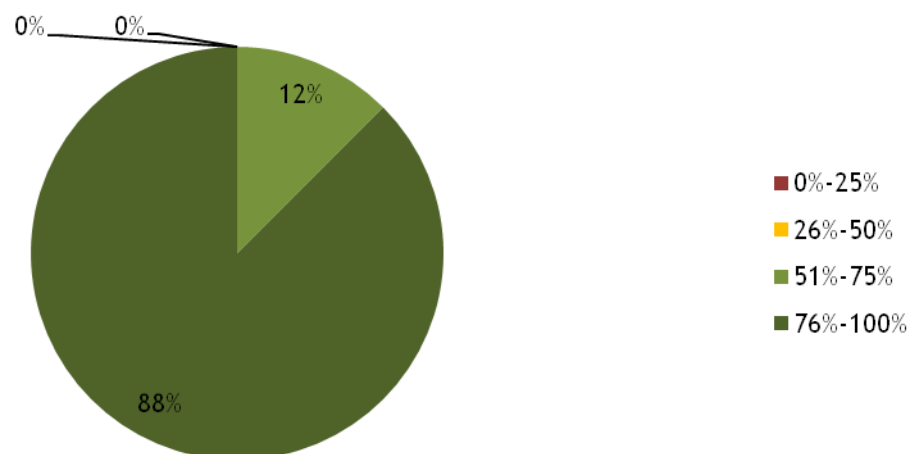


Figure 1: Rating of the fit of the resultet requirements to the work in OSH-Management

8 participants assessed the fit with an average of $x = 3,88$ ($s = 0,35$). That corresponds to the category 76%-100%. In detail $n=1$ participant assessed the fit with 51%-75% and $n=7$ participants with 76%-100%. No participant assessed the fit with 0%-25% or 26%-50%.

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