E1: **“Pure-H2O model of education in Sanitation for Pure Drinkable Water contributes to the EU efforts for sustainable economy"**

The event was performed on 19th of September, 2016 in the premises of Sofia University, Faculty of Biology; 8, Dragan Tsankov Strs., 1164 Sofia, Bulgaria as one-day session with the following schedule:

Schedule of the event	
Type of activity	Time
Welcome address	15 min
Presentation of Pure-H2O project – aims, objectives and products	15 min
Technical instructions for work with the b-learning module	15 min
Presentation of the tested subject	15 min
Coffee break	30 min
Acquaintance with the tested subject: Chapters 2 and 5 of the “Drinking purified water” book and corresponding LPs	30 min
Performance of testing	90 min
Lunch	75 min
Discussion on the results	30 min
Filling the questionnaire	30 min
Conclusion remarks and final briefing – coffee break	60 min

Moderator of the evant:

Assist. Prof. Dr. Ventsislava Petrova

Participants:

Nineteen (19) teachers, trainers and other VET providers in microbiology, chemistry, civil and environmental engineering, genetics, landscape architecture, computer science; R & D managers working within biotechnological SMEs equipped with (D)WTPs; representatives of social sciences interrelated to educational policy.

Objective of the event:

The objective of the testing was to provide guidelines, check and evaluate the validity and success of project main products bringing together representatives from the key project stakeholders in facilitated group sessions.

Performance of the event:

After a welcome address by Assoc. Prof. Anna Kujumdzieva, the event proceeded with presentation of Pure-H2O project, its aims, objectives and products.

The project "Implementation of ECVET for Qualification Design in Drinking Water Treatment Plants and Sanitation for Pure Drinkable Water - PureH2O" includes environmental planning and education in the field of drinking water sustainable development. The rationale of the project is enhancing the quality and performance of VET system, improving education in drinking water supply and development. It is achieved through promoting creativity, innovation and transfer of EQF/NQF principles in education of the main target groups in the sector.

The main testing object of the event was concentrated on approbation of Intellectual Outputs 2 and 3 in terms of operation and practical applicability. Pure-H2O project has established a multilingual e-learning platform as a technical background for creating of blended learning programme. The programme is operating through a structured model, built on the basis of European Qualification Framework (EQF) and ECVET based system for sectoral qualification description.

The trainees were acquainted with the basic elements of the training model and its capacity of operation. They explored the blended learning programme in water supply sector comprising 13 courses which knowledge part is organized in Learning Pathways (LPs) and Short Intensive Courses (SICs) designed to match EQF levels 5, 6 and 7, and weighed through ECVET. They took place in this pilot procedure for assessment and transfer of the learning outcomes covered in formal and non-formal education.

LO	Title	ECVET
1	Introduction of drinking water treatment	1.5
2	Water contamination risks	3.0

3	Quality standards for drinking water treatment plants	3.0
4	Unit operations for producing clean drinking water	3.5
5	Disinfection	1.5
6	Basic facts about water supply	2.0
7	Selection of water treatment processes	3.5
8	Residual management	2.0
9	One countries' relationship with water: dependence and interdependence in access to (drinking) water in the Netherlands	1.0
10	Technology-enhanced learning & innovative education and training for drinking water treatment plants	1.0
11	Economics of drinking water	3.0
12	Economic and financial aspects of drinking water and water treatment plants	3.0
13	Best Practices/Case Studies	2.0
	ALL	30.0

Considering the subject-specific profiles of the tested participants, the Learning Pathways for **Trainers in Microbiology and Chemistry** were followed. These LPs are designed for specialists working as VET Trainers in Microbiology / Chemistry with the purpose to help their training, to upgrade their knowledge and to broaden their wider competence in the subject, thus facilitating their realization on the labour market.

The participants were acquainted with the main descriptor of the qualifications - the **Unit of Learning Outcomes (ULOs)**. In PureH2O each ULO is coherently constructed and organized in respect to the overall qualification. It outlines in an eligible and understandable way the knowledge, skills and competences to be adopted and allows the discrete assessment and validation of the LOs comprising it through credit points.

The Trainers in Microbiology with ocupatonal qualification ISCO 2131 followed an LP composed from 3 Units of LOs (a total of 8 LO) that brings 16.5 ECVET points.

The objective of this Learning Pathway (LP) is to provide some specific knowledge and skills about the basic facts about the water supply and DWTP characteristics, evolution of water treatment technology and EU legislation. Trainees are acquainted with the basic facts about water supply, as well as with achievements and shortcomings in project partner countries. Introduction to drinking water unit operations is made and all physical, chemical, biological and mechanical processes are comprehensively described. How to perform feasibility analysis of drinking water supply is defined. The fundamentals of residual management – categories of residuals, the regulatory requirements for their management, technical details on basic treatment and disposal options are presented as well. Best practices applicable in project partner countries are described. Special attention is given on innovative concepts and methodologies for training engineers and technical staff working in the drinking water supply sector.

The Trainers in Chemistry with occupational qualification ISCO 2113 followed an LP composed from 2 Units of LOs (a total of 5 LO) that brings 11 ECVET points.

The objective of this Learning Pathway (LP) is to deliver basic facts about drinking water unit operations with all physical, chemical, biological and mechanical processes comprehensively described. How to perform feasibility analysis of drinking water supply is defined. The fundamentals of residual management – categories of residuals, the regulatory requirements for their management, technical details on basic treatment and disposal options are presented as well. Special attention is given on innovative concepts and methodologies for training engineers and technical staff working in the drinking water supply sector.
4. PureH2O Skill Passports will be provided for gathering of documents certifying completed training and acquired competence/qualification in water supply sector.

The trainees finalized their training experience with the self-evaluation of the newly adopted knowledge. The test questions are presented in Annex 2. The quiz has been followed several times to fully exploit its flexibility to generate and feed the trainees with as much combinations of tests questions as needed.

The overall impression of the test tour performed as well as of the training programme as a whole in terms of quality of the learning material, training possibilities it offers, evaluation system, etc. is outlined in the filled in evaluation questionnaires.

From feedback data accumulated important conclusions about the flexibility and applicability of the b-learning programme were launched, And trainees practical recommendations were used for final tuning of its operation.

Gathering the feedback information from participants

General information about the trainees

Fig. 1 Gender:

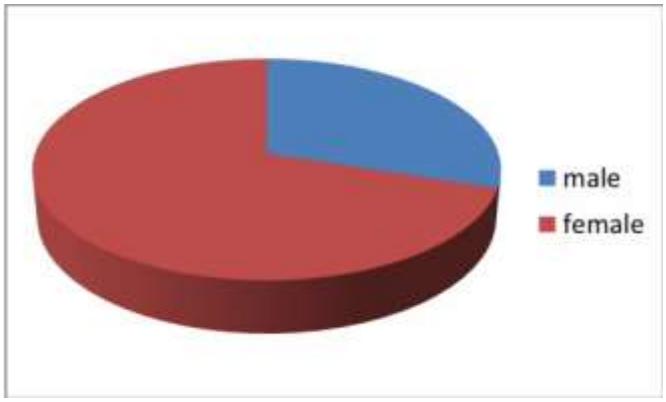
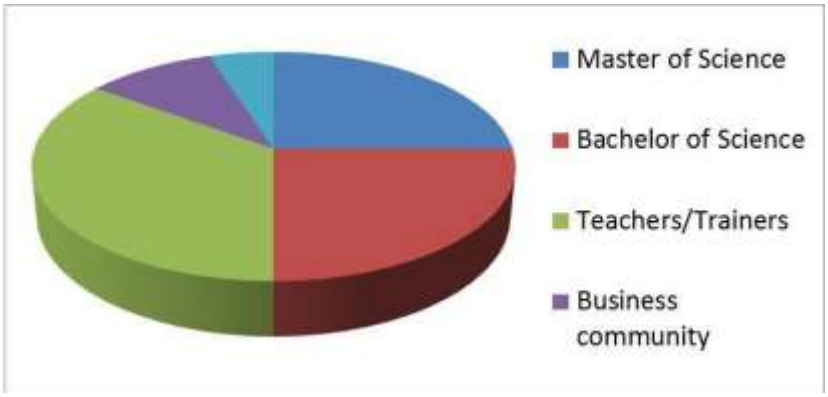


Fig. 2 Educational degree:



Questionnaire data and test results

1. Was the material easy to understand?

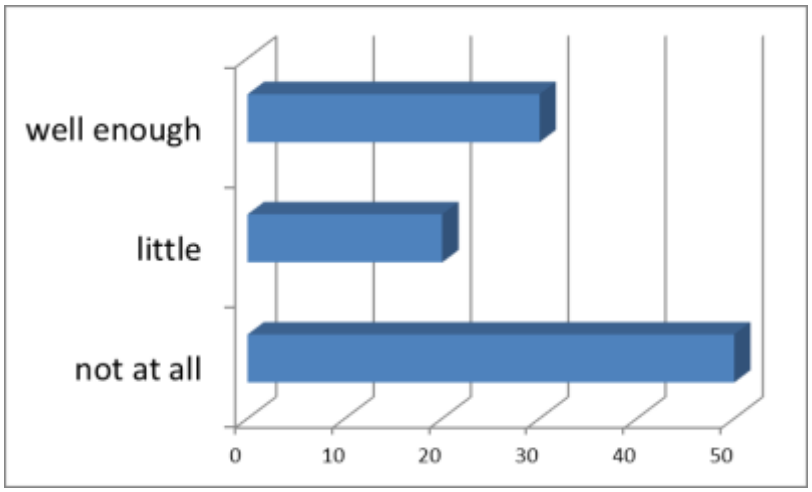


Fig. 3 Perception of the learning material

2. How do you estimate the training possibilities in the Pure-H2O project?

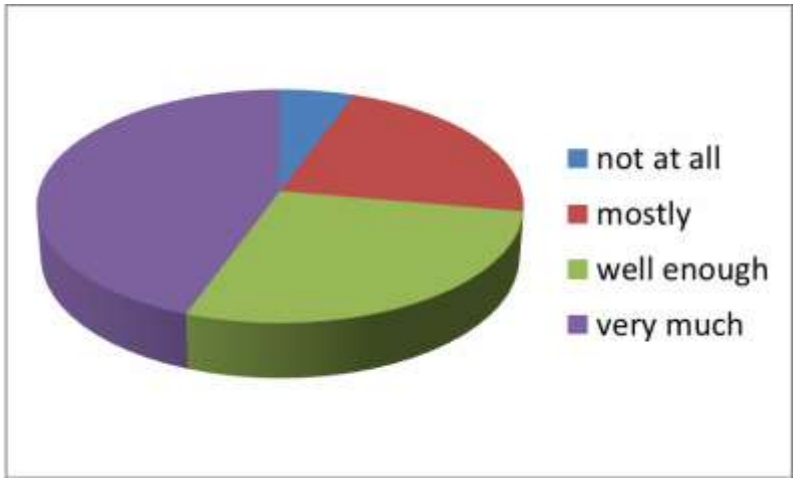


Fig. 4 Training possibilities of Pure-H2O project

3. How do you estimate the evaluation system used?

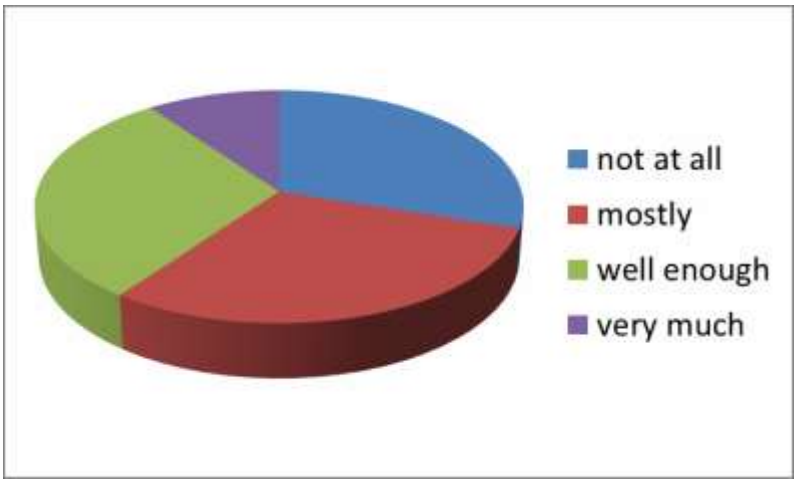


Fig. 5 The evaluation system

4. How well was the session organized?

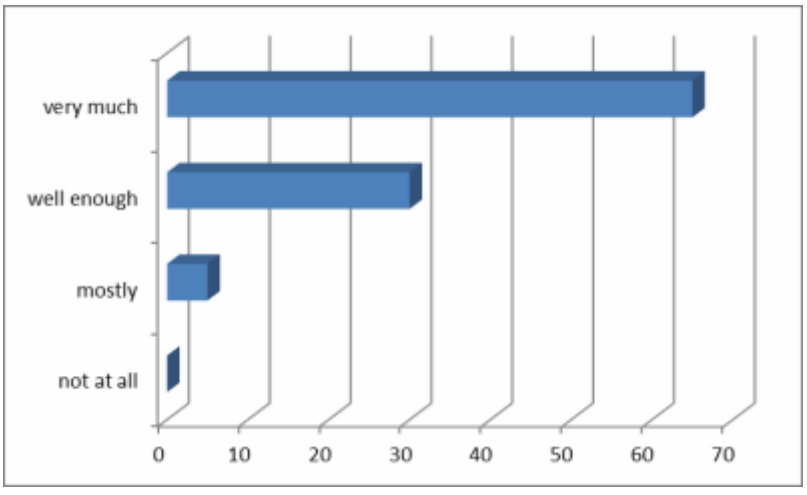


Fig. 6 Session organization

5. Did you consider the learning objectives important?

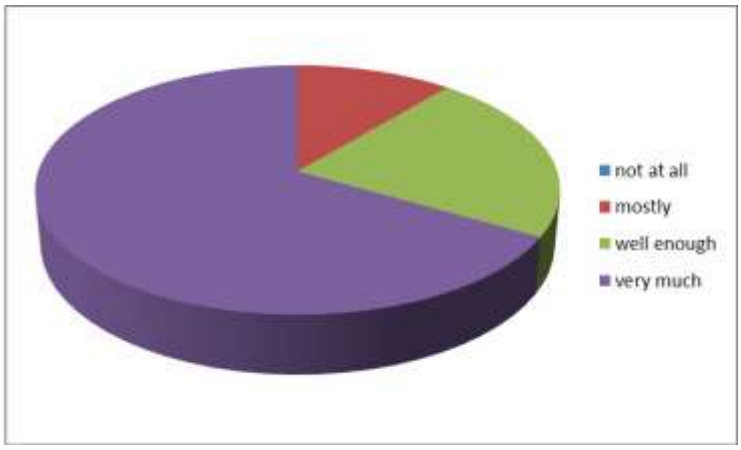


Fig. 7 Learning objectives importance

6. Are you satisfied with the provided on-line training materials?

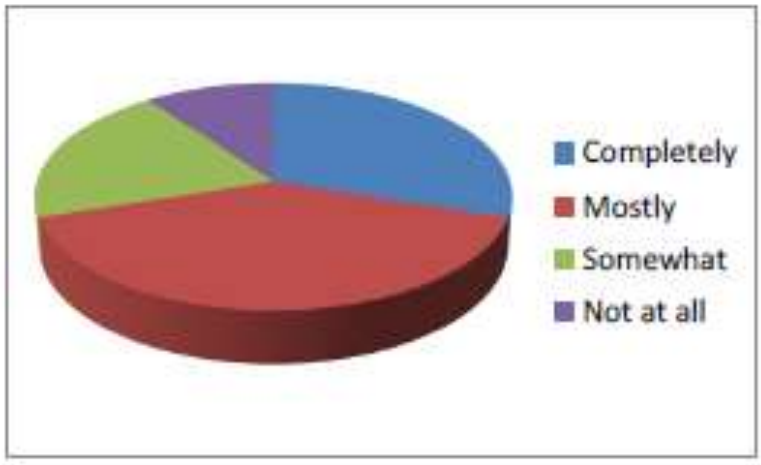


Fig. 8 On-line training materials

7. What type of results did you obtain?

	Up-to-date knowledge	Practical skills	Professional competence	Other
Number of respondents	18	7	0	0
Percentage of respondents	86%	33%	0%	0%

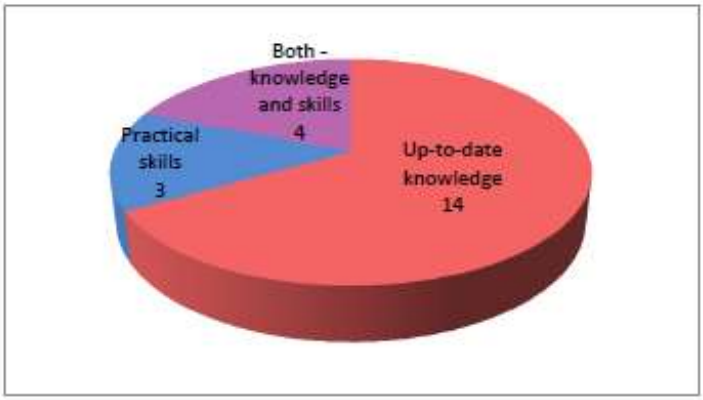


Fig. 9 Obtained results

8. Do you need any pre-requisites (e.g. specific education, practical experience, etc.) to be able to use this training product?

	No	Yes
Number of respondents	2	19
Percentage of respondents	10%	90%

Fig. 10 Need of pre-requisites

9. **Did you meet your learning objectives?**

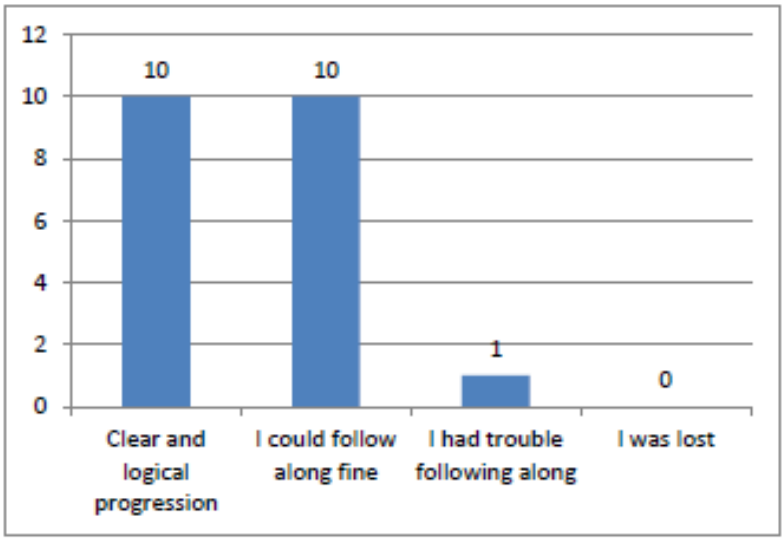


Fig. 11 Learning objectives met

10 Do you think the Pure-H2O b-learning model could contribute to your job performance making it easier and more productive?

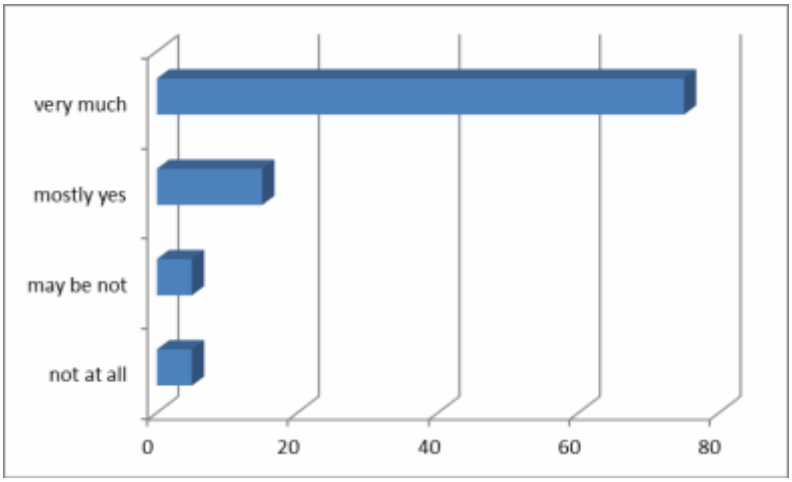


Fig. 12 Impact of Pure-H2O b-learning model

The testing session was supported fully by P2 staff members as follows:

- ✓ Support of the pre-session information campaign
- ✓ Support with experts the performance of the testing session: delivering of lectures and explanations; supervising activities – minding of KSIs determined by PMB;
- ✓ Support for data accumulation and evaluation;
- ✓ Support in conclusions launching and national report issue.

Results review and final tuning of units and corresponding learning outcomes

- ✓ The participants shared the opinion that the contents of the project, in particular the type of e-learning is very well done.
- ✓ The target respondents from various professional and work areas could quickly adapt to this type of learning.
- ✓ The b-learning is particularly important for them since makes them independent in their timing; they evaluated positively the combination of content, design and personal pace.
- ✓ The trainees can arbitrarily repeat the content without any difficulties, can communicate with other participants if needed, can learn contents they know are important for their profession.
- ✓ The target participants learn both technical, biological and economical content and in this way receive open up perspectives.
- ✓ They have received the basis for further professional development on the basis of the content and methods of Pure-H2O project.
- ✓ Such developments are recognized by employers and are honored to be a good initiative.
- ✓ Some of the target groups expressed willingness to experiment the proposed learning materials in some kind of professional training, thus implementing the Pure-H2O model in specific working reality.