IMPROVING THE PROFESSIONAL SKILLS IN GREEN CONSTRUCTIONS THROUGH ONLINE TRAINING

Erasmus+ Strategic Partnership KA2
Nr. 2017-1- LV01-KA202- 035483

O9 – Final Report

"Pilot test"

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1. INTRODUCTION

1.1.   AIM OF THE INTELLECTUAL OUTCOME

This analysis is an official report on the results of Output O9 of the Erasmus + project on "Improving the professional skills in green construction through online training" GREEN CONSTRUCTION (Nr: 2017-1- LV01-KA202- 035483). The goal of Output 9 is to evaluate the quality of the curriculum's content and the learning effectiveness of the training modules developed.

The evaluation was done on the basis of selected criteria and assessment methodology content and quality of the 3 modules developed by the project team. They will also show the need for certain adjustments the project team will undertake in the next stages in order to provide better professional training for green technology construction workers.

The analysis is based on surveys. Two surveys were conducted - at the beginning - in advance and at the end - final evaluation of the participants in the pilot phase of the project. The respondents expressed their opinion, answering the questions. Their responses helped assess the content of web based learning modules and showed the need for certain adjustments that the project team will undertake in order to provide better training content for construction workers in the field of green building.

1.2.   THE WORKING PROCESS

The survey method is used to evaluate the results of pilot testing. For the assessment of attitudes and measurement of the satisfaction of the training, 2 surveys were prepared – entry survey and final outgoing survey. The polls were anonymous for all respondents. They were structured in 3 parts - social part, main (content) part and final part.

In the social section 6 questions were included requiring information on profession, gender, age, level of computer literacy.

The questions in the main part of the preliminary and the outgoing questionnaire were directed to the content of the developed modules. The comparison of the results of the entry and the outgoing survey is a basis for assessing the effectiveness of the training, the quality of the learning contents, the resources and the training environment.

Most of the indicators rated by respondents are on a scale of 1 to 5, with 1 being the lowest score, 2 poor, 3 good, 4 very good, and 5 decent.

The entry test includes information on the profession, gender, age, educational attainment, motivation, preference and expectations of the participants.

The baseline survey is mainly focused on assessing the severity of the individual learning modules, the volume of the material, the quality, and the test of the lessons, the glossary and the videos. The questionnaire aims to obtain an assessment of the graphical layout quality of the figures and the functionality of the work with the electronic platform for distant learning. Finally, it is required to give a general assessment of the overall course of training and whether the participants would recommend it to other colleagues in the industry.

Construction workers - the participants 58 (Latvia - 33, Bulgaria-15, Germany – 5, Hungary - 5) attended the pilot testing. All participants in the pilot training provided feedback on the quality of the

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training modules by participating in the entry and outgoing surveys. Participation in the survey was anonymous for all participants.

Questionnaire survey

Pilot test

The questionnaire for the preliminary evaluation contained 37 questions, while the final evaluation questionnaire contained 36 questions.

To demonstrate the effectiveness and extent of the acquired knowledge, skills and competences, learners were given an initial and baseline test during the pilot testing of the course developed.

The test is aimed at evaluating the acquired knowledge and skills in the field of developed training modules – Materials; Energy-efficient construction; Passive house.

The survey was conducted within 7 weeks - from the beginning of January 2019 to the middle of April 2019 by all project partners: Rezekne Academy of Technologies - Latvia, Veda Consult- Bulgaria, Schnellkraft Personal management GmbH – Germany, European Center for Education, Science and Innovation – Bulgaria, ITStudy Hungary – KFT.

2. RESULTS OF THE SURVEY

2.1.   STRUCTURE OF THE PILOT TEST

I.   Social part
II.   Content part
III.   Final part

Evaluation of Piloting the Modules

I. Social part

The group of respondents is heterogeneous, they are men (100%) of different age groups and different educational level, but all are related to the construction sector - employers, self-employed, working and currently unemployed. (fig.1)
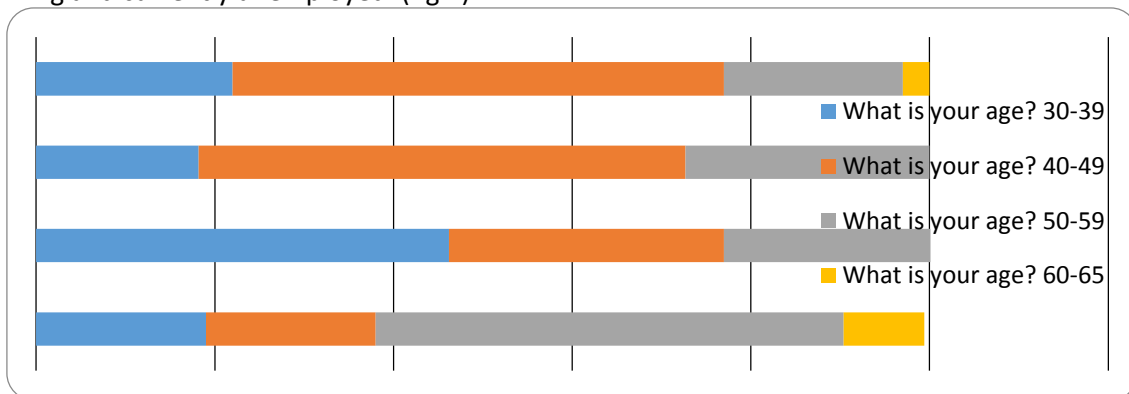

Figure 1

Most of the young participants in the test were from Latvia.

In order to see how the material is perceived, respondents are also selected with different educational levels. (Fig.2)
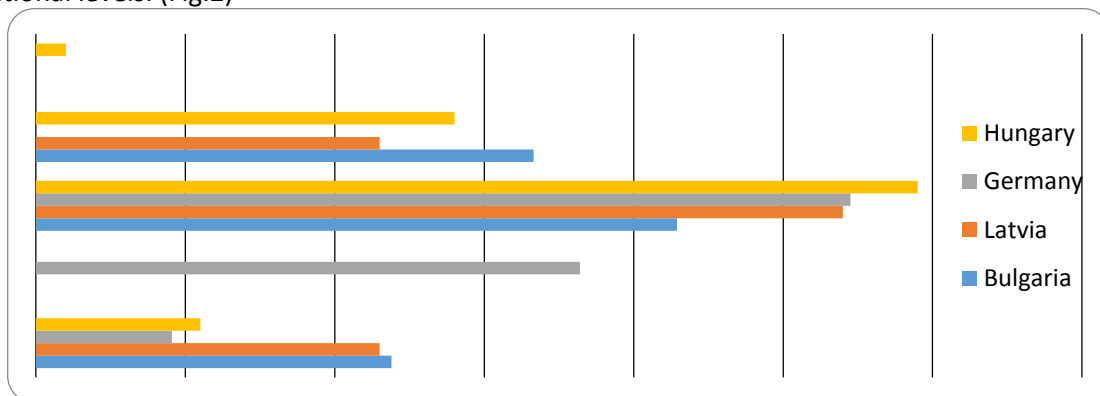

Figure 2

The answers show that the highest number of respondents is a high school professional. This assumes objectivity when evaluating modules and platform work.

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It is noteworthy that, to a very large extent (66.7%), the expectations of the respondents from the training, regardless of their educational level and professional status, are strongly focused on the acquisition of new innovative knowledge, which can be appreciated as a quest for a more successful career in the fast-growing construction sector.

The study shows a relatively good announcement of pilot testing.

II. Content part –Modules

The second phase of the pilot test focuses on testing the training modules developed in each country, depending on the training needs, personal interests, motivation and expectations of the participants in the test.

What does the analysis of incoming questionnaires shows?

All of the learners have basic computer and internet skills, but none of them has worked in online learning platform. 50% do have knowledge in construction - partially, and the remaining 50% - do not have such knowledge. Asked what "Passive House" means - 100% say they do not know. About the question of a habitable wood and clay house, as well as the topic of "Energy Efficiency" - 100% responded that they are partially familiar.

The analysis of exit pilot tests showed more, that the level of knowledge after studying the modules is higher than in admission tests.
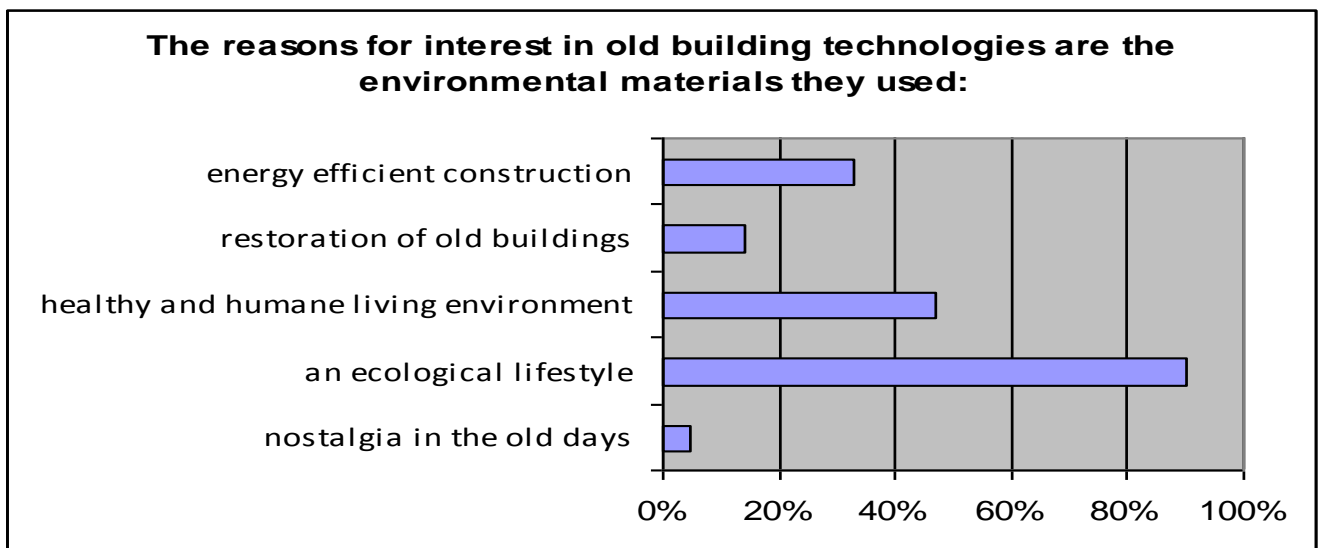
An example – Module 1

Pre-course evaluation

Figure 3

End-course evaluation

The reasons for interest in old building teghnologies are the environmental materials they used:

energy efficient construction — 100%

restoration of old buildings — 0%

healthy and humane living environment — 100%

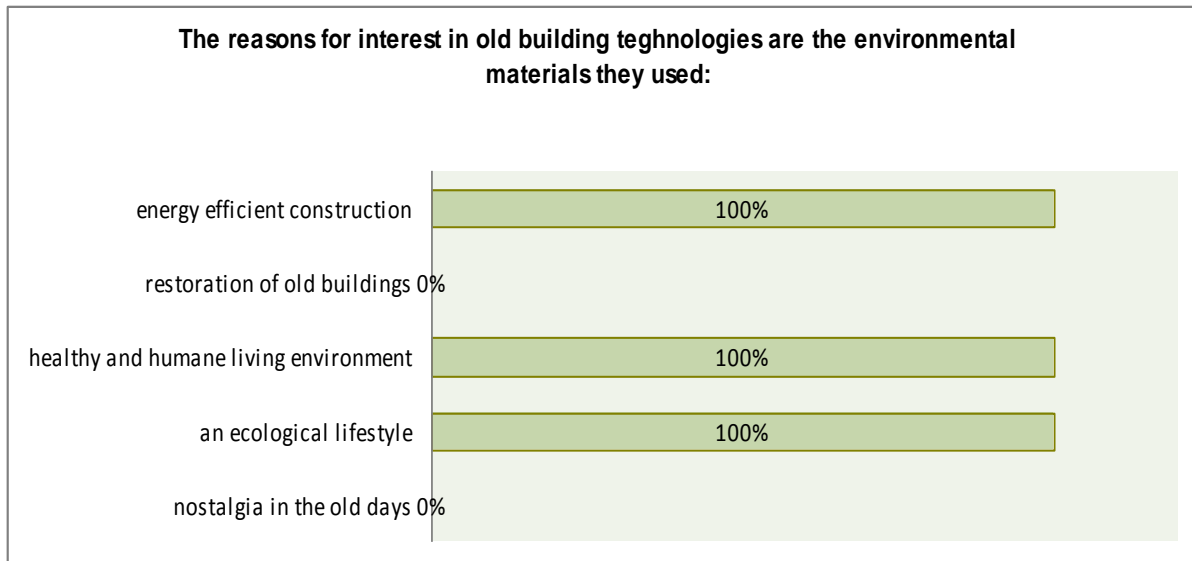an ecological lifestyle — 100%

nostalgia in the old days — 0%

Figure 4

The analysis of the Difficulty Level of the study material points to an increase of the degree of difficulty in each subsequent module, which is a logical necessity, based on the fact that the learners already have knowledge in the given field and the purpose of each next module is to complement and establish a new, higher level of knowledge.

An example – Module 2

Pre-course evaluation

The construction sector is the largest energy consumer in Europe. How much do you think the construction sector can contribute to the efficient use of energy and reduced emission of greenhouse gasses?

- I don't think so
- can contribute
- can make a serious contribution

10%

33%

57%

Figure 5

IMPROVING THE PROFESSIONAL SKILLS IN GREEN CONSTRUCTIONS THROUGH ONLINE TRAINING

End-course evaluation

The construction sector is the largest energy consumer in Europe. How much do you think the construction sector can contribute to the efficient use of energy and reduced emission of greenhouse gasses?

■ I don't think so   ■ can contribute   ■ can make a serious contribution
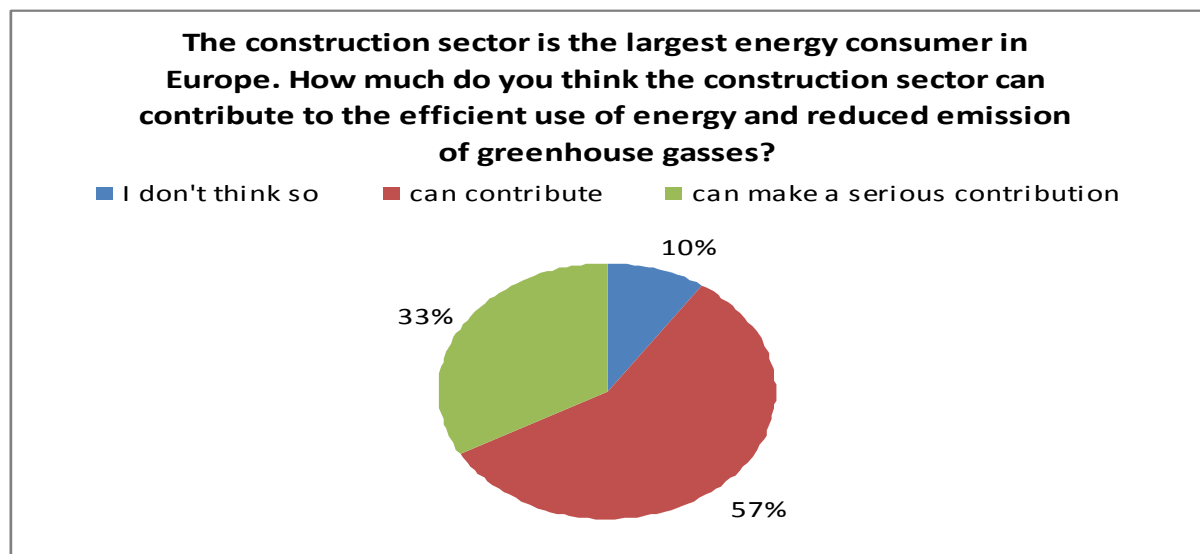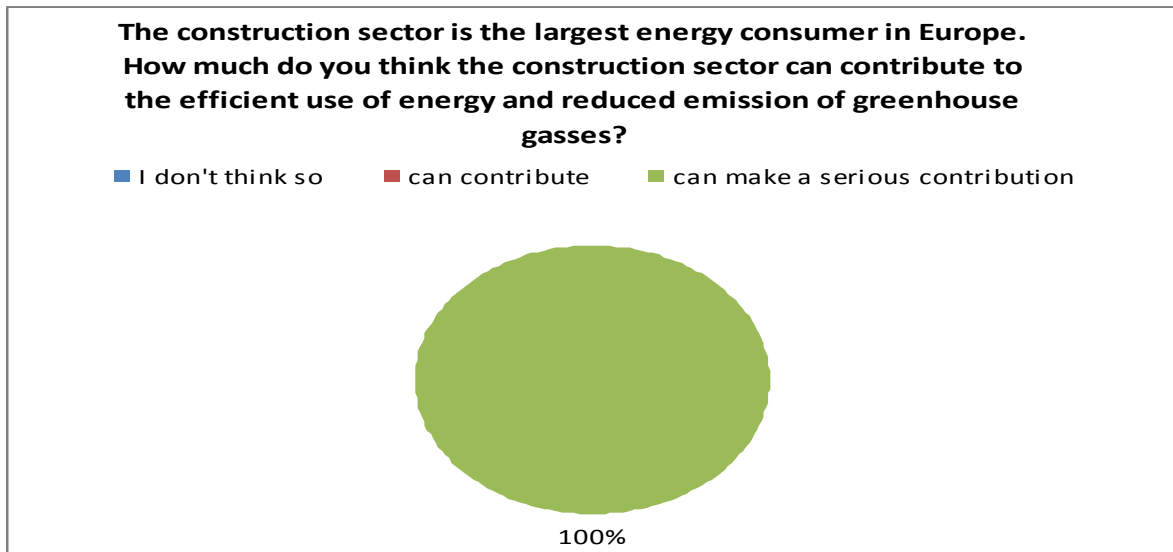
100%

Figure 6

The comparison of the survey results before and after the 2nd Module training shows that as a result of the training the respondents more accurately assess the role of the construction sector in the fight against climate problems - the largest energy consumer in Europe and responsible for about 20% of greenhouse gas emissions in Europe.
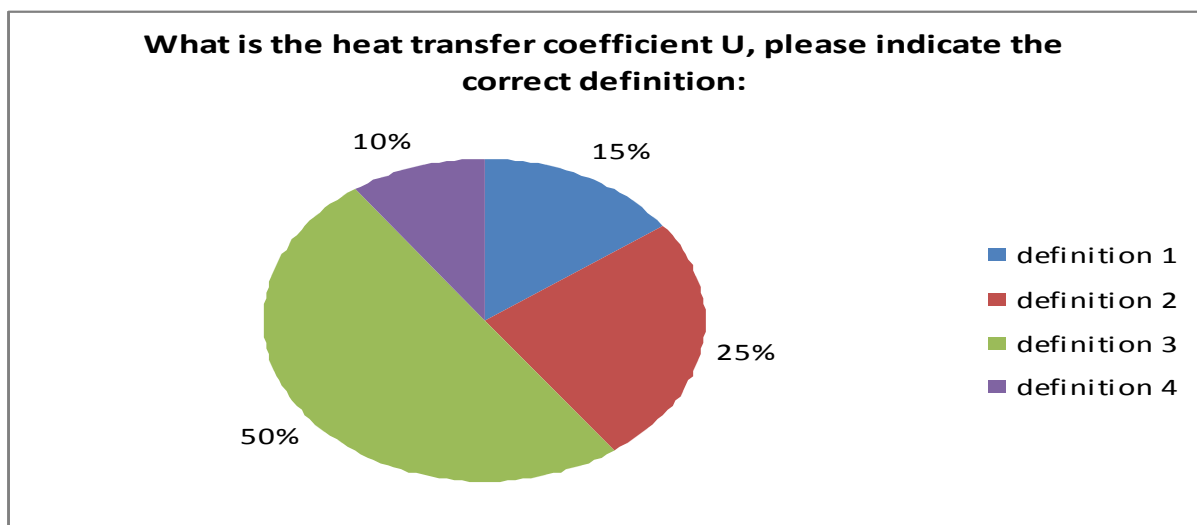
An example – Module 3

Pre-course evaluation

What is the heat transfer coefficient U, please indicate the correct definition:

10%   15%   25%   50%

■ definition 1
■ definition 2
■ definition 3
■ definition 4

Figure 7

Co-funded by the Erasmus+ Programme of the European Union

GREEN CONSTRUCTION

End-course evaluation

What is the heat transfer coefficient U, please indicate the correct definition:

- definition 1
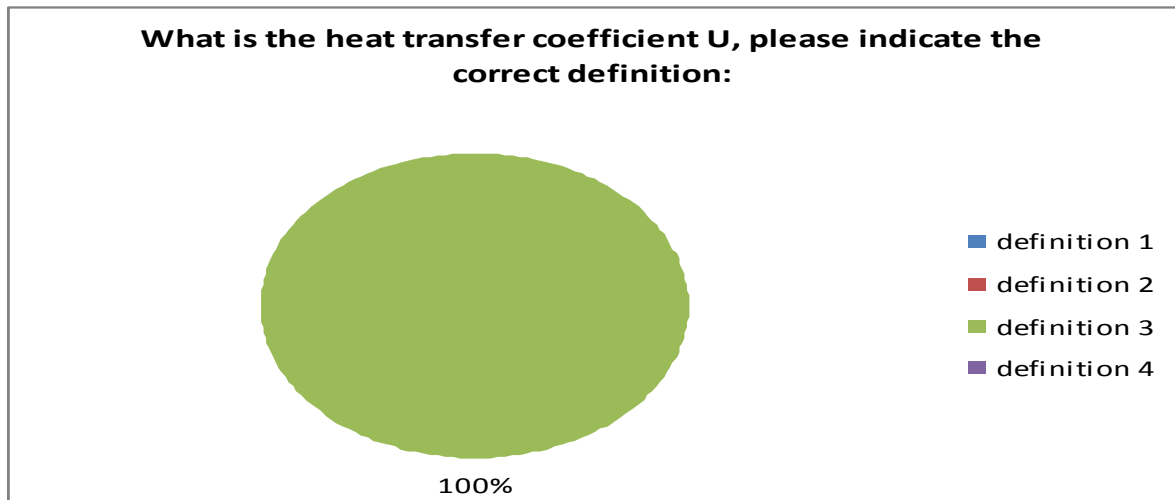- definition 2
- definition 3
- definition 4

100%

Figure 8

Questions with numbers 17 to 22 are related to physical quantities and their units of measurement, which have a significant place in the design and implementation of the Passive House. The comparative analysis of the assessment of the knowledge of the respondents shows that very good results (100%) have been achieved in the acquisition of the underlying knowledge.

What more does analysis of outgoing questionnaires shows? 100% of learners responded that the „Materials", Energy efficiency and "Passive House" modules was well developed, the content is well structured and the volume is sufficient. The materials are written in an accessible language – according to 80% of the students.
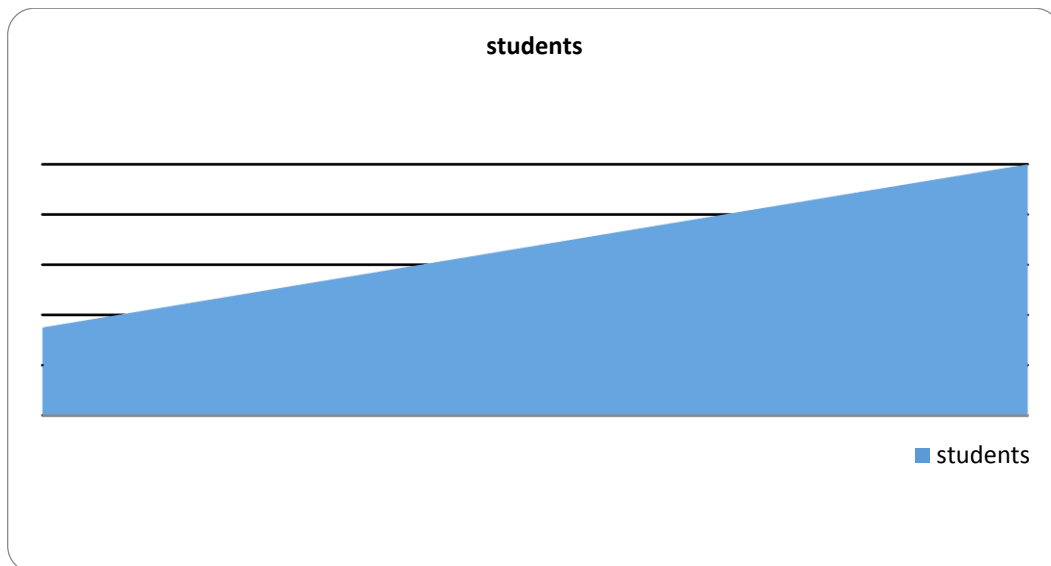
students

- students

Figure 9

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III.   Final part

How do you rate the quality of the course as a whole? Very high motivation to participate in green building courses (69.2 % of participants). Most participants (more than 90%) consider the difficulty level of the pilot modules as «normal»; 70% asses the quality of materials as «good», 30% as «average».

Most participants (more than 80%) would like to read the materials once more before taking the test.

Does the level of difficulty of the learning material correspond to your knowledge and pre-training?

normal 90%, good 70%, medium difficulty 30%, difficult 0% — surveyed students from the pilot testing
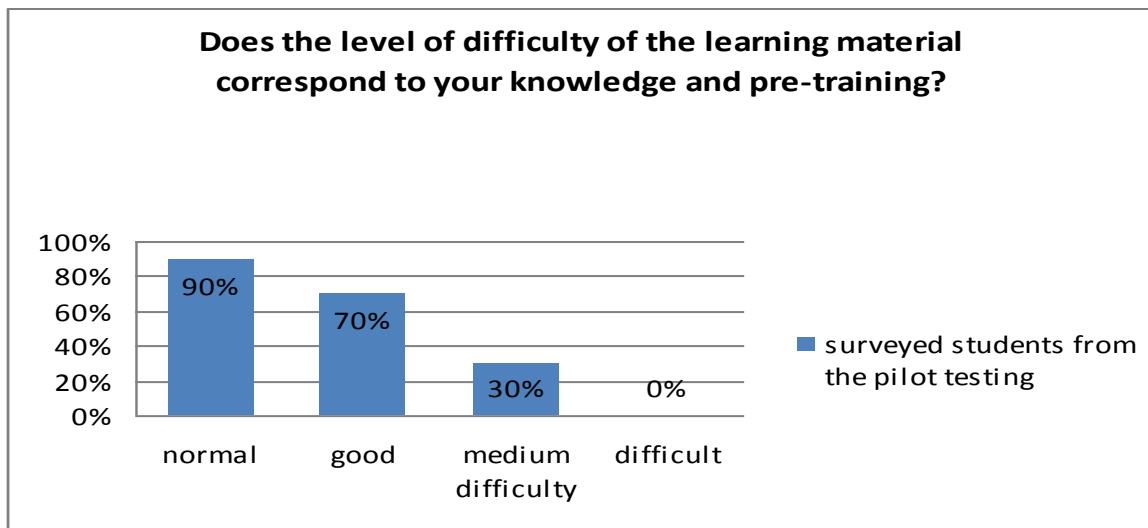
Figure 10

Over 90% of all participants in the pilot test gave high marks glossary and video materials. 10% of Bulgarian participants believe that the glossary can be enriched with more terms.

Student feedback from all partner countries: 100% of learners believe that the content of the materials is directly related to the construction field and the lessons learned can be put into practice. They are 100% satisfied with the acquired knowledge and would choose green building modules for advanced vocational training.

3. CONCLUSION

- The analysis of pilot test results shows that the modules created meet the green skills needs of construction workers.
- The learning content corresponds to the actual level of training of the trainees. In order to prevent the learners from being restricted by place and time for training, the content of the modules has been uploaded to the MOODLE electronic platform. Although most of the participants in the pilot

training have never worked with an electronic platform before, the results of the survey show good success rate.

- The created platform work guide helped participants not have any difficulty in working with the platform. This proves the functionality and the proper structuring of the platform. The information on the platform is adequate, the self-assessment tests are appropriate for the course material. The platform attracts learners to acquire new content and improves learning efficiency.
- The results showed high learning effectiveness. The learners met expectations for the training in Green Construction.
- In conclusion, we can say that the training modules are attractive; they expand the trainees' knowledge, activate them, and increase their interest in the new trends in the construction sector - low energy and environmentally friendly construction.
- 100% are satisfied with the gained knowledge and would choose Green Building modules for extended professional training.

4. PROJECT BASICS

- Acronym: Green construction
- Grant agreement no.: No. 2017-1- LV01-KA202- 035483
- Title: IMPROVING THE PROFESSIONAL SKILLS IN GREEN CONSTRUCTIONS THROUGH ONLINE TRAINING
- Duration: 1 September 2017 – 31 August 2019
- Action type: KA2
- Program: ERASMUS+
- Participating countries: Latvia, Bulgaria, Germany, Hungary

OBJECTIVES

The project proposal aims through the creation of transnational partnerships to develop training product with innovative multimedia modules to meet the identified needs of the European construction sector of green skills of low-qualified workers and young people who have a choice of profession. The project team will study and analyze the existing trainings in the field of energy-efficient construction in partner countries it takes the identified needs of the European construction sector, into account, and it will develop, test and validate the modules for continuing professional education, in the field of green construction.

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TARGET GROUPS

- **Primary target group: Construction workers**

PARTNERS

- Rezekne Academy of Technologies, Latvia
- Veda Consult, Bulgaria
- Schnellkraft Personal management GmbH, Germany
- European Center for Education, Science and Innovation, Bulgaria
- It Study Hungary Számítástechnikai Oktató- és Kutatóközpont Kft., Hungary