



Kaunas Municipal Vincas
Kudirka Public Library



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ADaPT4Future project

Adult People create Technologies
for their Future

No. 2021-1-LT01-KA220-ADU-000026995

3D workshop evaluation survey: Research report

The goal of the **ADaPT4Future: ADult People create Technologies for their Future** project was to develop 3D printing and design-based thinking skills among adults and to strengthen adult educators' competencies (technological and andragogical) in delivering innovative non-formal activities. During the project, adult learners, including those with fewer opportunities due to social, economic, geographical or migrant background barriers, were involved in 3D printing workshops based on non-formal learning principles in their community/city/town.

3D printing workshops took place from December 2022 to March 2023 at the Kaunas City Municipality Vincas Kudirka Public Library and the School of Robotics in Lithuania, Fundacja Nova in Poland and Comune di Santarcangelo di Romagna in Italy.

The content of the workshops was specifically developed by project partners at an earlier stage of the project and became the basis of learning for the target groups. Therefore, these practical activities implemented at partner organizations served also as a pilot course related to the developed 3D teaching methodology.

In the project, a strong emphasis was laid on the evaluation, improvement and assessing the impact of the developed methodology and the quality of learning activities. Therefore, a participant survey (a product quality research) was implemented. It aimed at collecting feedback from workshop participants in all 3 partner countries. This research report presents the data collected during this survey.

The participants were surveyed right or soon after the workshops, either by electronic or paper questionnaires. Project partners made efforts to collect responses from each participant who took part in the workshops, but several questionnaires were unfortunately not completed. However, the response rate was 96% (205 responses out of a total number of 213 participants).

54 adults participated in the 3D printing workshops at the library in Lithuania, but 51 participants answered the survey. In the School of Robotics 55 adults participated in the 3D printing workshops, but 50 participants answered the survey, in Italy 52 participants and in Poland 52 participants. In total, 205 participants' responses were analysed and evaluated.

INFORMATION ABOUT THE PARTICIPANTS

The first four survey questions sought to uncover the demographics of workshop participants: gender, age, employment status and education.

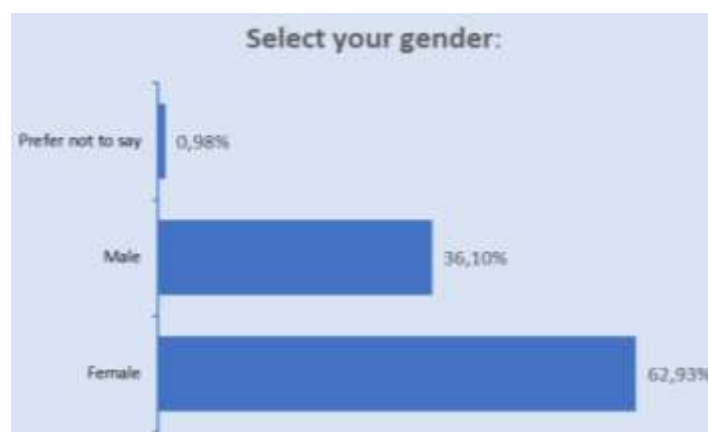


Figure 1. Gender

More responses were collected from female participants. 129 (62,93%) women and 74 (36,10%) men participated in the survey. The age distribution of participants is shown in Figure 1.

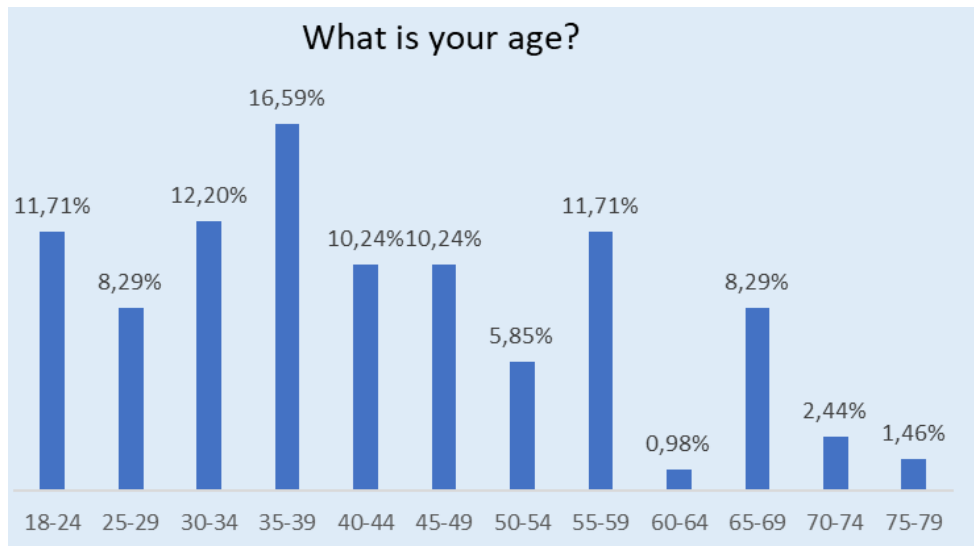


Figure 2. Age

Most participants were aged **35-39** (16,59 % (34)), **30-34** (12,2% (25)), **55-59** and **18-24** (after the same amount of 11,71% (24)), **40-44** and **45-45** (after the same amount of 10,24% (21)) participants. The age groups with the lowest participation were 60-64, 75-79 and 65-69.

The educational background of the participants is shown in Figure 3.

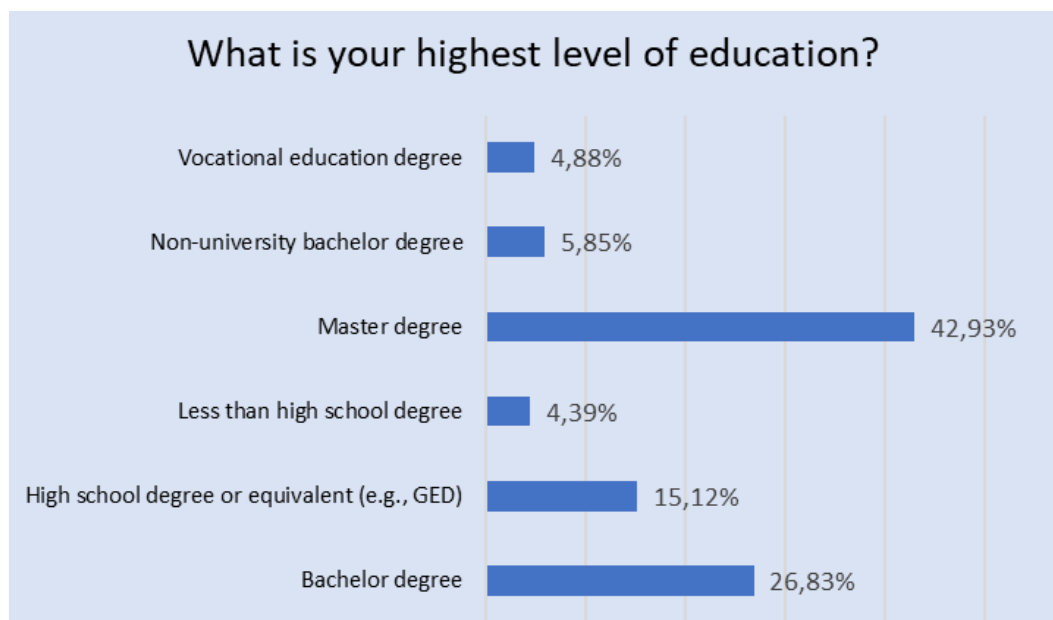


Figure 3. Level of education

The 3D printing workshop was attended by educated people. The workshop was attended by 42,93% (88) participants with a master's degree and 26,83% (55) participants with a bachelor's degree.

The workshop was mainly attended by participants working full time. The number of such participants is 59,51% (122). There were 12,2 % (25) pensioners and 10, 73% (22) part-time employment participants. The responses are shown in the figure „What is your status of employment?“.

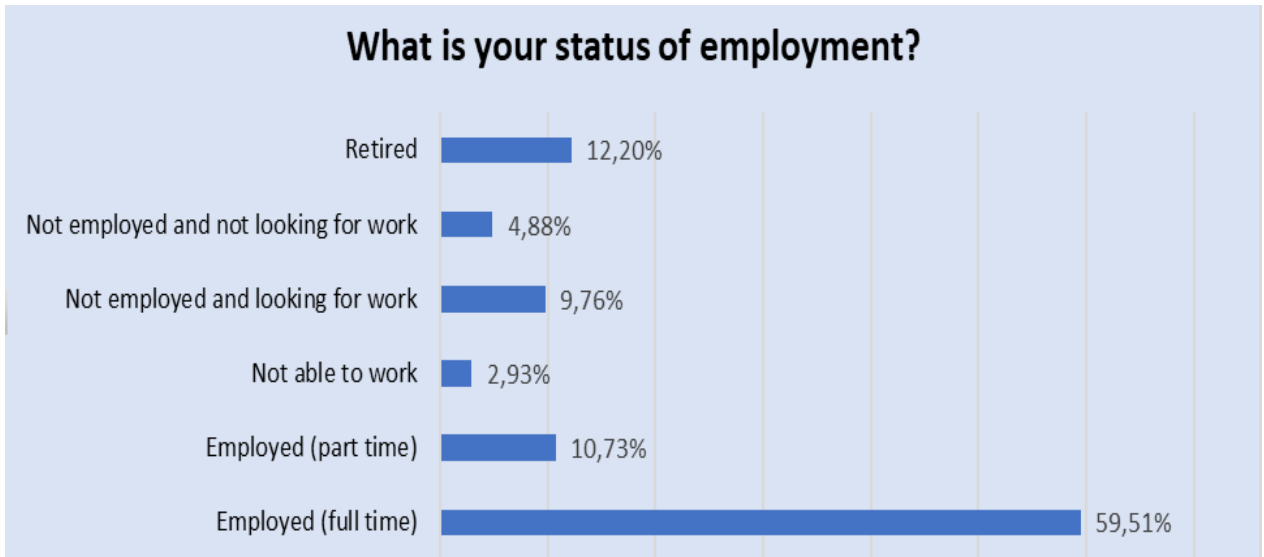


Figure 4. Status of employment

EVALUATION OF 3D PRINTING SKILLS

Participants were asked to rate their ability to use 3D modelling software to make projects before the workshop and after the workshop. **Before** the workshop, 44,39% (91) workshop participants had no skills and 31,22% (64) participants reported having poor skills in using 3D modelling software to make projects. And only 8,29 % (18) participants rated having good (4.39% (9) participants), very good (1,95% (4) participants) and excellent (1,95% (4) participants) skills. Participants' abilities before the workshop are shown in the figure „How would you rate your ability to use 3D modelling software to make a guided (step-by-step) project?“ The distribution of responses is shown in Figure 5.

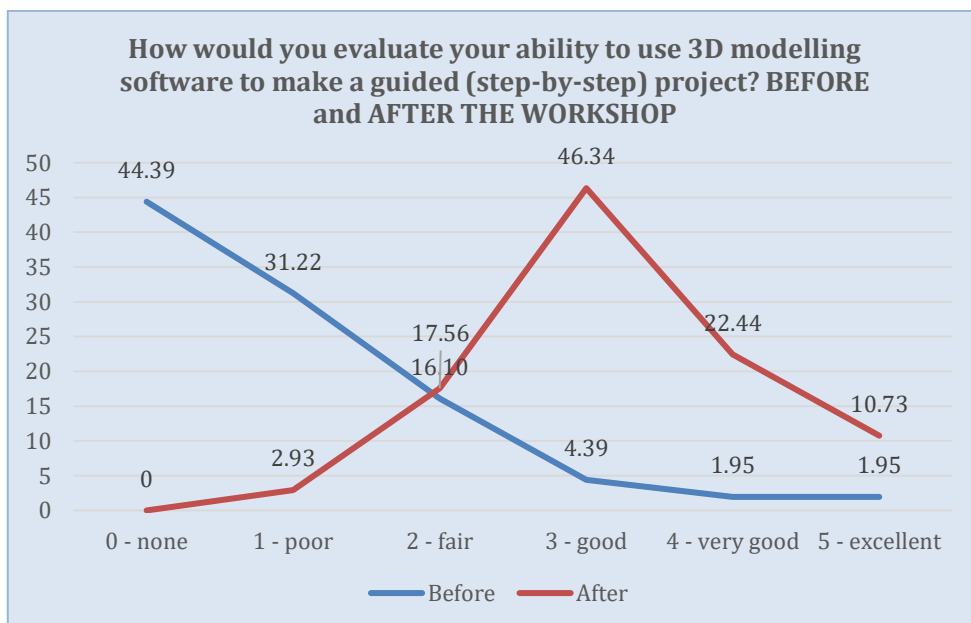


Figure 5. Ability to use 3D modelling software. **Before and after** the workshop

After the workshop, the participants rated their abilities differently: 46,34% (95) participants said they had good abilities, 22,44% (46) said they had very good abilities and 10,73% (22) said they had excellent abilities to use 3D modelling software to make projects. After the workshop, participants rated their skills better 79,51% (163) participants rated their skills good, very good and excellent.

Workshop participants' responses on their ability to use the 3D printer before and after the training are shown in Figure 6.

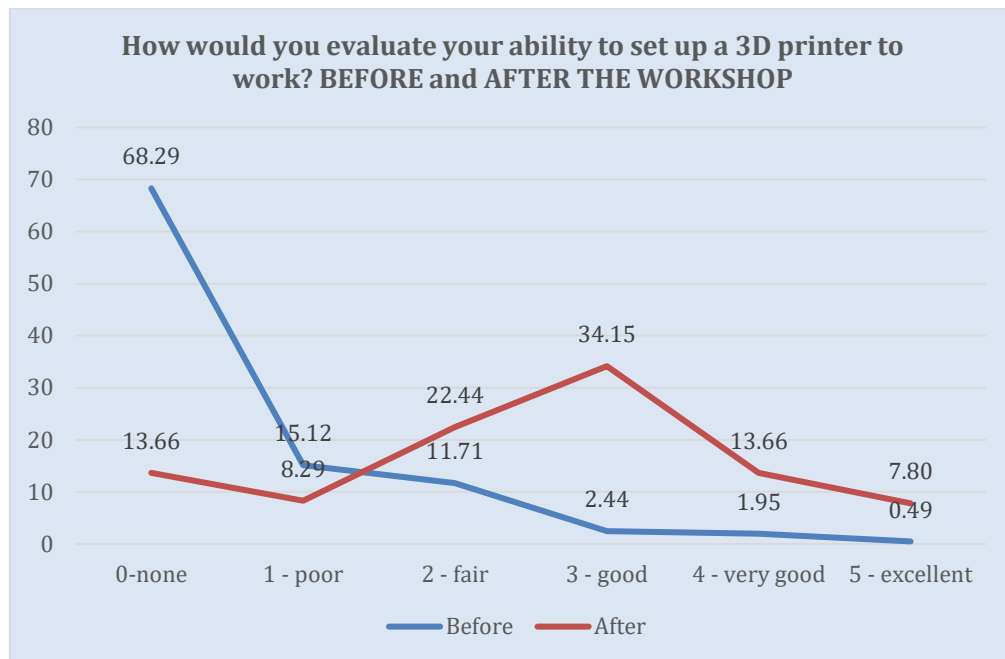


Figure 6. Ability to set up a 3D printer. **Before and after** the workshop

Before the workshop 68,29% (140) participants had no skills to set up a 3D printer to work. 15,12% (31) participants rated their skills as poor and 11,71% (24) as fair. Only 4,88% (10) participants claimed to be able to step up a 3D printer to work.

After the workshop, more participants rated their ability to set up a 3D printer to work as good – 34,15% (70) participants, very good - 13,66% (28) participants, excellent - 7,8% (16) participants. Interestingly, after the workshop 44,39% (91) participants rated their ability to set up a 3D printer to work as none - 13,66% (28) participants, poor - 8,29% (17) participants and fair - 22,44 % (46) participants. Before the workshop, 95,73 % (195) participants rated their skills as such. It can be said that the workshop participants have improved their knowledge of how to prepare a 3D printer for use.

The question on the ability to use the slicing software was designed to find out how participants rate their current ability to use the slicing software. **Before** the workshop, 57,07% (117) participants had no such skills, 16,1% (33) had poor skills and 9,76% (20) had fair skills. And 17,08% (35) participants rated their ability to use slicing software as good (9,76 % (20) participants), very good (9,7% (9) participants) and excellent (2,93% (6) participants). The distribution of responses is shown in Figure 7.

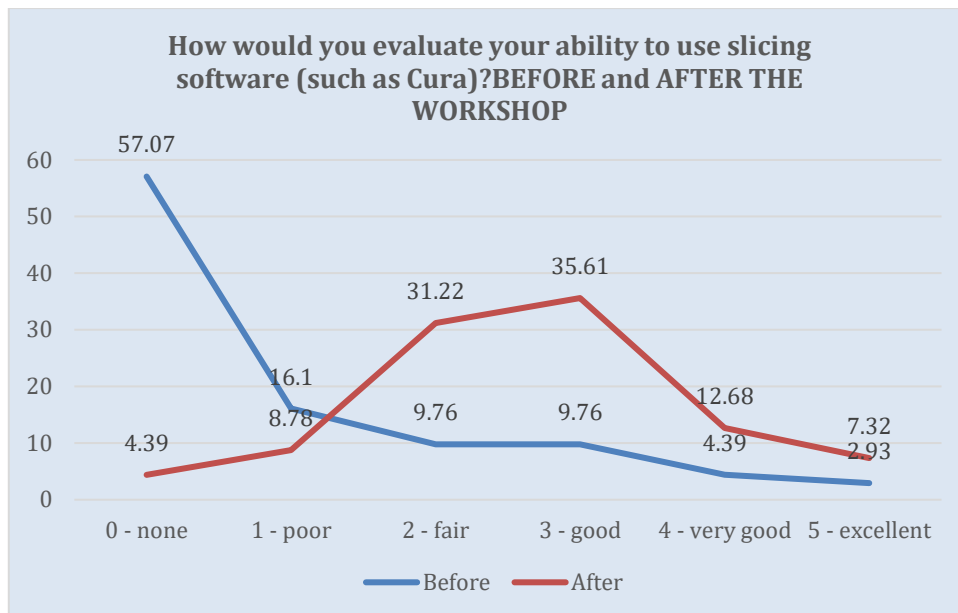


Figure 7. Ability to use slicing software. **Before and after** the workshop

After the training, the ability to use the cutting equipment was assessed differently. Responses are shown that 55,61% (114) participants rated their ability to use the cutting equipment: as good (35,61% (73) participants), very good (12,68% (26) participants), excellent (7,32% (15) participants). However, the number of participants with no, poor or weak skills in using cutting equipment remains quite high. It is possible that the workshop did not focus on the cutting software, with little emphasis on the cutting software application.

EVALUATION OF SOFT SKILLS

Participants were asked what competences they had acquired after the workshop: “Please rate the extent to which the workshop gave you the opportunity to develop these general competences”. Ten competences were given, and participants were asked to rate them: 1 - very slightly, 2 - slightly, 3 - moderately, 4 - significantly, 5 - very significantly.

All competences and the workshop participants' responses are presented in Figure 8. Respondents reported that they had the opportunity to develop all the competences presented during the training to a very significant or significant extent: Creativity, innovation, initiative, communication, teamwork, critical thinking, problem solving, design thinking, IT, reflection.

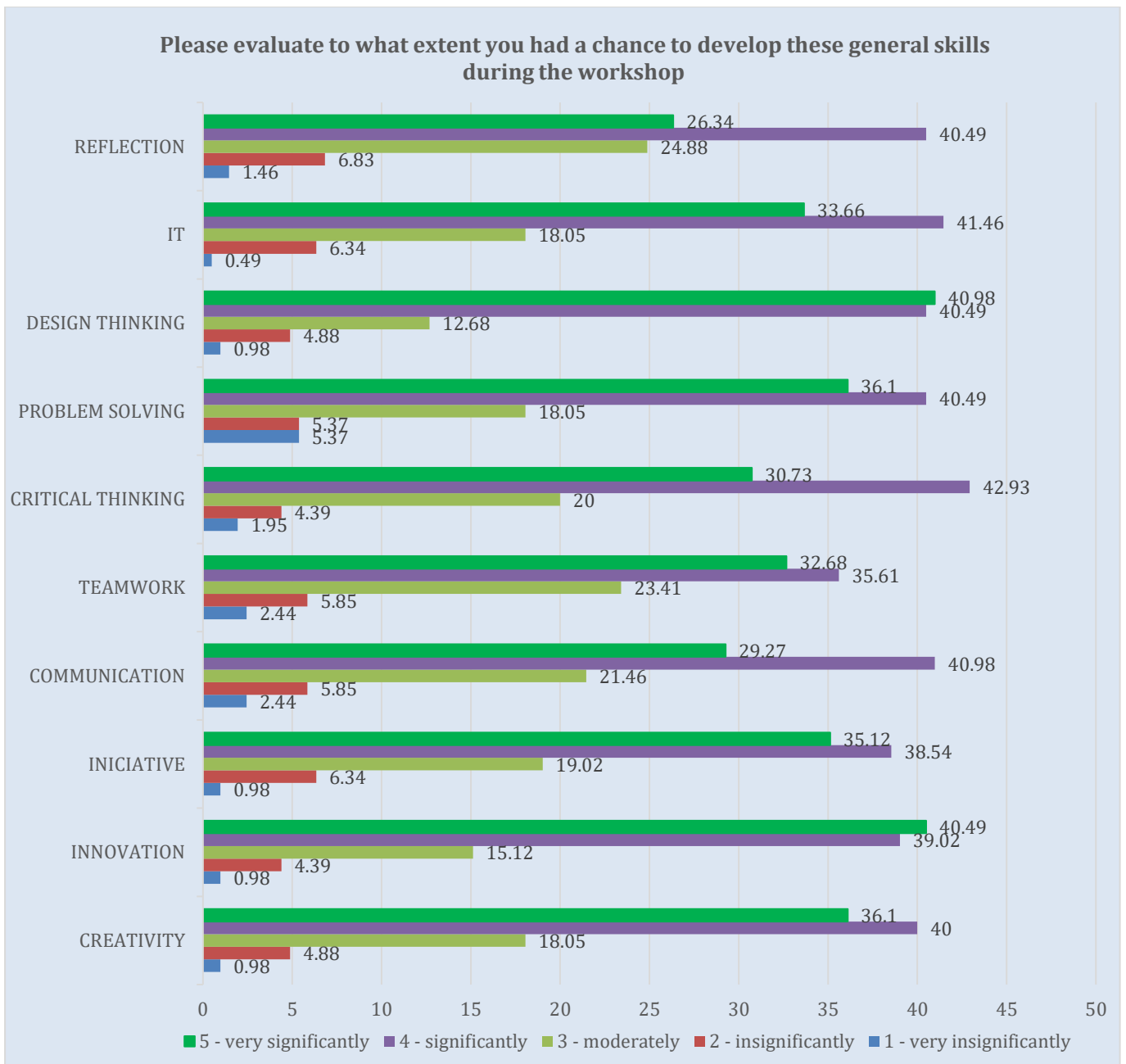


Figure 8. The opportunity to develop these general competences

It can be said that the workshop had a positive impact on the participants' competences, as the sum of the positive ratings (moderately, significantly, very significantly) shows that more than 90 % of the participants felt that they had acquired all competences. The most important competences acquired by workshop participants were critical thinking, problem solving, and innovation.

EVALUATION OF THE WORKSHOPS

Participants were asked to rate the quality and usefulness of the workshop and the competence of the facilitators. Workshop participants were asked to select the options corresponding to their opinion: 1 - strongly disagree, 2 - disagree, 3 - neutral, 4 - agree, 5 - strongly agree.

Most participants strongly agreed (62,44% (168) participants) and agreed (31,71% (65) participants) with the statement that the workshop was well organized. The answers are shown in Figure 9.

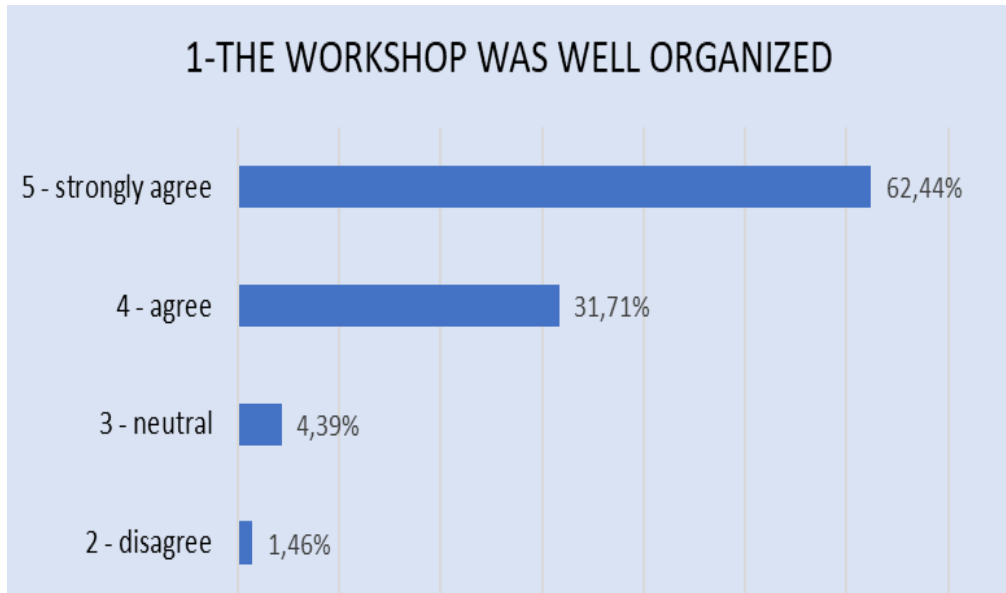


Figure 9. Organizing workshops

64,88% (133) workshop participants strongly agreed with the statement that the workshop was interesting, 30,24% (62) workshop participants agreed. The answers are shown in Figure 10.



Figure 10. Interesting workshops

Most participants strongly agreed (58,54% (120) participants) and agreed (34,22% (64) participants) that the workshop met my expectations. The responses are shown in Figure 11.

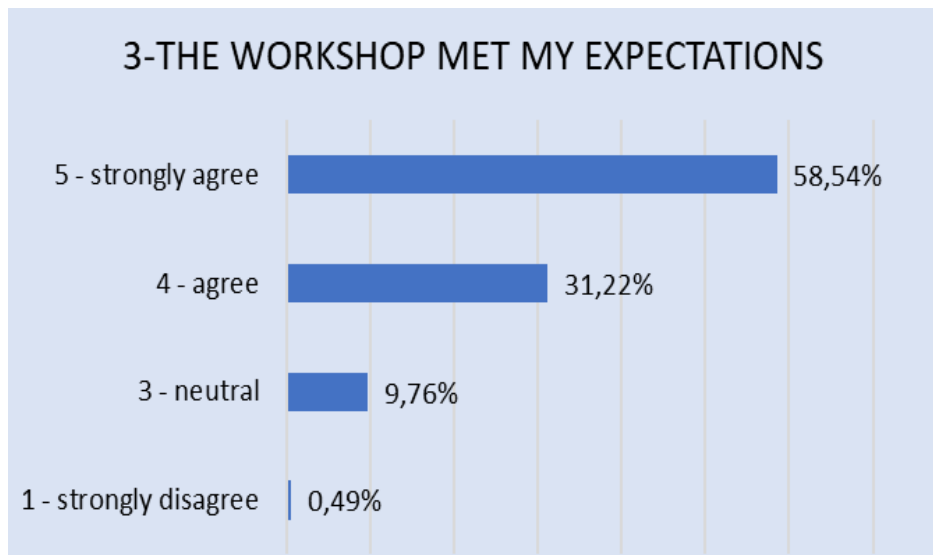


Figure 11. Expectations

It is essential to meet the expectations of the participants. According to the workshop participants, their expectations were met.

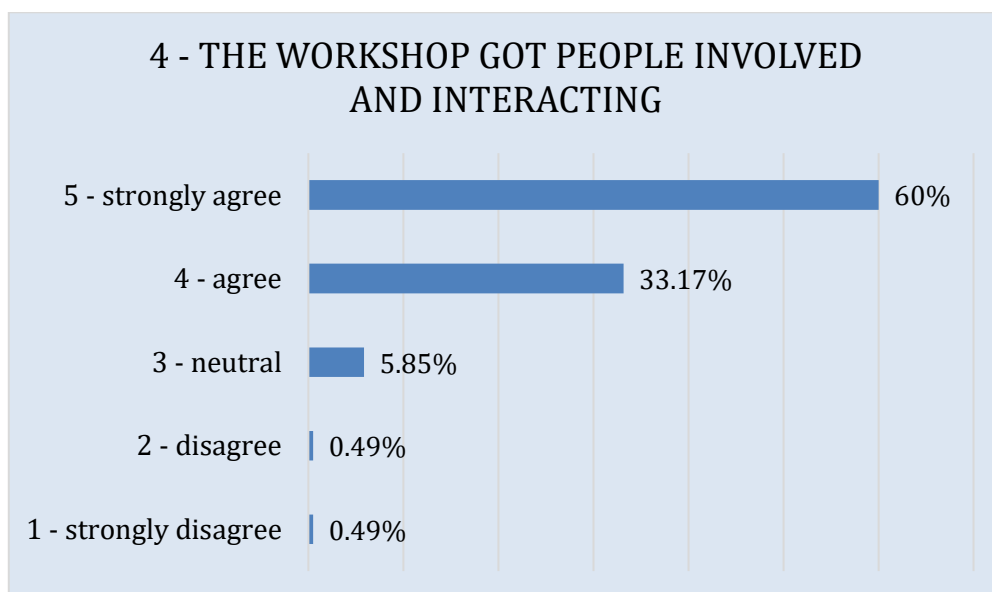


Figure 12. The workshop got people involved and interacting.

Participants strongly agreed (60% (123) participants) and agreed (33,17% (68) participants) with the statement that the workshop got people involved and interacting. Responses are shown in Figure 12. This means that the lecturers paid attention to engaging the participants in the tasks and the tasks were such that they encouraged the participants to collaborate and find ways to complete the task.

In terms of the facilitators' performance, workshop participants strongly agreed (77,56% (159) participants) and agreed (20,98% (43) participants) with the statement that the facilitator(s) knew what he/she was talking about. Responses are shown in Figure 13.

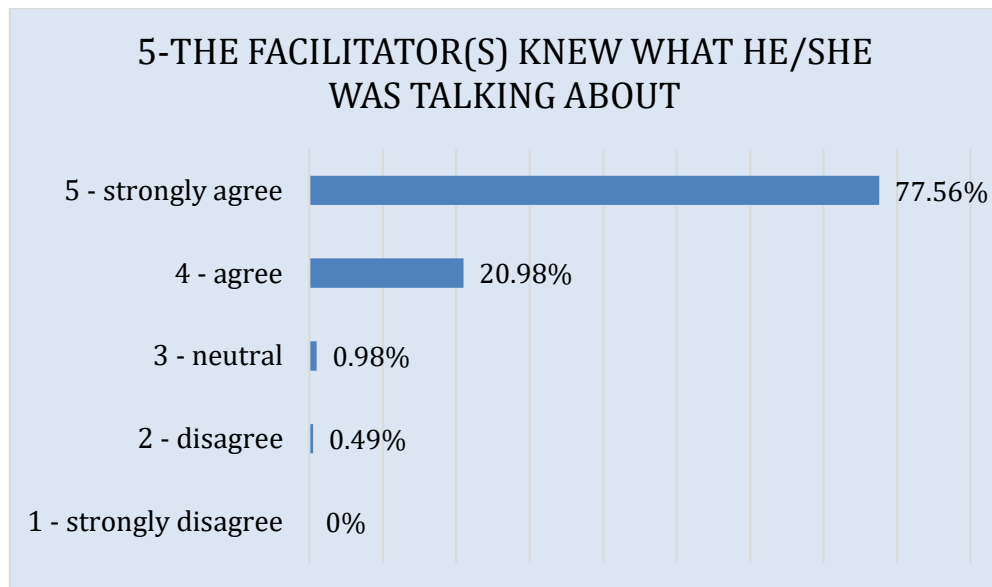


Figure 13. The facilitator(s) knew what he/she was talking about.

The participants felt that the facilitators were prepared and competent in the field of 3D printing. However, the atmosphere of the workshop was also very important. The facilitator(s) connected with the group and made people feel comfortable. 73,17% (150) participants strongly agreed and 22,93% (47) participants agreed with this statement. Responses are shown in Figure 14.

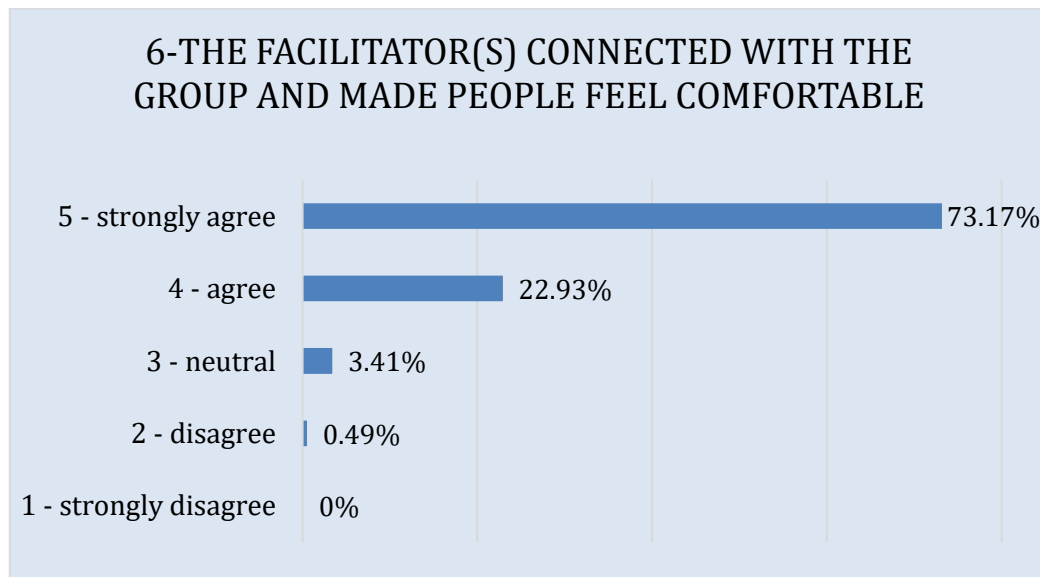


Figure 14. The facilitator(s) connected with the group and made people feel comfortable.

96,1% of the participants felt comfortable and connected with the facilitator during the workshop.

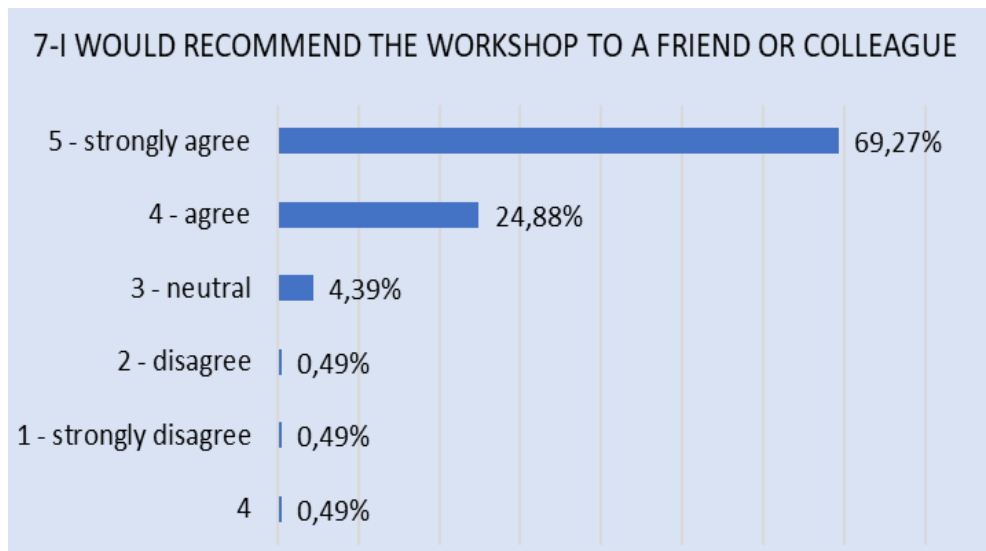


Figure 15. I would recommend the workshop to a friend or colleague.

69,27% (142) of workshop participants strongly agree that they would recommend the workshop to others. 28,88% (51) participants agree with this statement. Responses are shown in Figure 15.

Therefore, summarising the evaluations of the workshop participants, it can be said that the workshop was well organised, involved the participants in a collaborative process with other participants, fulfilled the expectations of the workshop participants, created a friendly contact with the workshop facilitators, and would be recommended by the participants to the people around them.

GENERAL COMMENTS FROM THE PARTICIPANTS

Participants were asked if they had any general comments on the workshop. The open comments of the workshop participants are presented in the table below, grouped into 1) positive feedback and appreciation 2) critical feedback 3) suggestions.

Positive feedback and thanks	Critical feedback	Suggestions
<p>But the work of the lecturers was especially qualitative. The atmosphere, preparation for the training and the idea itself are very great.</p> <p>Thank you, we had a very good facilitator.</p> <p>Everything splendid, thank you for the initiatives!</p> <p>It was a very useful experience!</p> <p>Thank you for an opportunity to revise knowledge and learn new things.</p> <p>The facilitator is great. The training was attended by my colleague who does not speak Lithuanian, but all</p>	<p>The pace of the training is slightly too quick. I would like more learning time and starting with more simple projects.</p> <p>It was missing for a participant to set up the printer for work. Everything was done by the facilitator, so you practically do not remember anything.</p> <p>The activities took place quite early, so I had to excuse myself from work.</p> <p>Too little time to learn something really.</p> <p>I wanted more time for the technical side of TinkerCad (exploring and trying out its features).</p>	<p>Thinker Cad could be skipped. More time for modelling with On Shape.</p> <p>Maybe give some tasks to do at home and then discuss together :)</p> <p>If the participants are older, it would be good to slow down the pace. Practice after theory, not all together.</p> <p>If the activities took place later, they would be more attractive to people who work full time.</p> <p>For example, drawing in the library, at certain times, and receiving consultations if something doesn't work out. Making notes. Fixing. Practicing. Improving. Did I dream?</p>

<p>training materials were delivered perfectly, clearly and in two languages.</p> <p>Great workshop for starting one's journey in the world of 3D printing. Accessible to people of all ages and everyone could benefit from more workshops like this one.</p> <p>I'm not satisfied so much with the results as I am with the fact that I attended. I am solely responsible for what I could take away from what the instructors provided.</p> <p>More events like this, please. Thank you, it was interesting and useful.</p> <p>It was very enjoyable, interesting, and professionally beneficial to enhance IT skills. The lecturers were amazing, and the training topic was very good and promising.</p> <p>I really liked the training and would like to participate in similar ones :)</p> <p>Very interesting workshops. Facilitators are really well prepared and extremely available!</p> <p>The workshop has been extremely interesting!</p> <p>Interesting course, it helps to develop team working and interaction and socialisation between the various members, as well as to improve one's skills in this field. It was a great experience and an excellent initiative. I hope there will be a sequel, carrying forward this proposal or similar others.</p> <p>I didn't have any 3D design skills and for me it was a first approach. Thanks to the support of the facilitators and the good learning climate, I began to take my first steps. I'd like to continue.</p> <p>It was amazing!</p> <p>Training conducted professionally.</p> <p>Interesting workshops, interesting topics, total novelty for me. I learned a</p>	<p>The duration of the training - the training could have been more focused; it was too long considering the level of training.</p> <p>I was not introduced to the slicing software (Cura) during the training. Or maybe I didn't understand something myself.</p> <p>Work group exercise is too complicated. Uninspiring Facilitators</p> <p>In general, they were a bit too simple.</p>	<p>I think the time allocated for the creative task with chair design was unnecessary or could have been much shorter if the goal.</p> <p>It will be great to organise specific workshops (due to the fact that in our school there is a 3d printer) to organise specific workshops for the teachers at our school.</p> <p>Maybe shorter lessons but with more hours in total</p> <p>Maybe it is better to underline at the beginning of the course the possibility for the students to experiment in a completely non-judgmental and calm environment (as it has actually been)</p> <p>It would be nice to be able to explore more specific topics and/or provide a list of topics before the course so as to identify and explain the most requested ones (clearly related to the 3D printing / modelling course).</p> <p>It was interesting to deal with the group work of the second lesson.</p> <p>I think that the workshop would have need 1 or 2 more lessons.</p> <p>Really interesting, I suggest more workshops and lessons related to 3d printing.</p> <p>I would like to have more practical training on how to use 3D printing software and programs.</p> <p>I need more practice, because I consider that it is the best way to learn.</p> <p>It would be great to participate in a full version course on 3D modelling. One-two workshops are not enough.</p> <p>You need to do a second part of the workshop on the more advanced programs.</p>
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<p>lot and would be happy to attend a similar 3D workshop again in the future.</p> <p>Even such an old woman can do it! I would be happy to continue the course.</p> <p>I think it is a great tool to implement your business ideas.</p> <p>I am considering buying a 3D printer, not necessarily the same model, but definitely a similar one.</p> <p>I work in the field of dental prosthetics and therefore have a little knowledge of 3D printers, but the amount of detail I learned about printing during the workshop was overwhelming.</p>		
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To summarise the comments of the workshop participants, we can say that many of them were happy and satisfied with the work of the facilitators and thanked them for the opportunity to participate in this workshop. The biggest critical feedback of the training was the large amount of information in a short time. Respondents suggested more lessons, much more practical work, homework, training and need to continue the workshops and to teach other 3D printing programmes.

Summary

1. The 3D printing workshop was attended by 213 adult learners -from Italy, Poland and Lithuania. More women than men participated in the workshops and the survey. Most of the workshop participants had a master's degree and a bachelor's degree. By age group, the participants were: 35-39 (16,59% (34)), 30-34 (12,2% (25)), 55-59 and 18-24 (after the same amount of 11,71% (24)), 40-44 and 45-45 (after the same amount of 10,24% (21)) participants. The workshop was mainly attended by full-time employed persons.
2. All participants improved their skills with 3D printing equipment and software. Respondents indicated that they had the opportunity to improve all competences presented during the training in a very significant or significant way.
3. The open comments of the workshop participants can be grouped into 1) positive feedback and appreciation 2) critical feedback 3) suggestions. Many participants were very positive about the workshop and the work of the facilitators. The biggest critical feedback of the training was the large amount of information in a short time. Suggestions reflected the need to continue the workshops and to teach other 3D printing programmes.

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