GENTLY

Games for Energy Efficiency Youth Literacy

Project Result 3: Alternative Board and Application Games for Energy Efficiency

Needs Assessment & Analysis Report

Methodology & Development of the Alternative Game

This document is also available in German, Greek, Hungarian, Lithuanian, Romanian and Spanish

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	ASOCIACION CULTURAL Y DEPORTIVA LAHOYA

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Introduction

Project Result 3 (PR3): Alternative Board and Application games for energy efficiency, reflects the commitment of the project to inclusion and accessibility. Building on the efforts and deliverables of Project Result 2 (PR2): Board and Application games for energy efficiency maximisation, PR3 adapts the games to ensure that they meet the needs of people with fewer opportunities and they are able to prompt engagement and commitment to energy efficiency and sustainable energy practices.

In order to achieve the above, the board game has been adapted to address people with disabilities, health problems, and educational difficulties. More specifically, the efforts of Project Result 3 have been directed towards people with visual disabilities and they are relevant to learner's needs to acquire the appropriate knowledge and to promote critical thinking in sustainable development contexts.

As part of their efforts for PR3, The project partners have undertaken needs analysis and have produced country reports that represent their findings. In the following section (Section 2: Country Findings & Summary Report), the country findings as well as their comparative results are presented and discussed.

Further on, the methodology that underlined the adaptation to the alternative game format, as well as the steps that were prompted by the country findings, and the process of engaging stakeholders and receiving insights are detailed and presented in Section 3, Methodology & Adaptation Strategy.

Finally, the data produced through the survey process are included in the ANNEX.

Country Findings

All 7 partners (representing Greece, Cyprus, Lithuania, Spain, Germany, Romania, and Hungary) conducted an online survey through the use of an online Google questionnaire. The individual country findings are presented below.

GERMANY (IN2 Digital Innovations GmbH)

Demographic Information

14 responses were collected in Germany. The Questionnaire was directed at the German Blind Association, as well as at other schools for the blind and the visually impaired. 85.7% of the answers came from persons living in urban areas (with a population of more than 50000 inhabitants) while 14% were from people living in villages.

Respondents represented almost proportionally all educational levels:
21% had a technical education, 28% had a Bachelor's degree, 14% had a Master's degree and the remaining had other kinds of educational training. 35.7% were male and 64,3% female, 64,3% were limited-sighted, 14.3 blind and 14.3 not good-sighted but still able to recognize forms and light.

Assistive Tools

50% of the participants have an android mobile telephone, 35% an apple I-phone, and 14.3% a Microsoft (Cortana) mobile phone. The majority (78%) prefer for their activities to use a computer with speech or magnification software. Other options like magnifier, touchscreen with voice over, braille device etc. are less preferred. 57% prefer computers with speech software and 67% rooms to work in with natural light. Most of them (85.7%) use long cane to move around
The free screen reader NVDA for Microsoft Windows is the tool mostly used by them (64.3%)

Questions related to the environmental practices

Among the listed ecological challenges, almost all of them are rated with concern. 71,4 % of the respondents have adopted in their daily life a variety of environmentally friendly practices. Recycling and limited consumption are the most common habits adopted.

In the efforts for environmental sustainability, the following actions were proposed by the respondents:
Recycling, reducing consumption, using public transport, buying products with eco-friendly packaging, minimising electricity consumption, learning to respect nature, buying regional products, separating waste, living more sustainably, e.g. going to an unpackaged shop, developing awareness of environmental protection, drinking tap water, be considerate of materials and resources.

50% of the respondents rated their neighbourhoods as not clean, while 85% declared that they are practising recycling. 35% recycled glass and paper and the rest, equally batteries and food waste. The majority (78.6%) do not know the European Green Deal and 50% of them rate the goal of reducing greenhouse gas emissions by 55% , as not feasible; while 14% think that it is impossible. Most of the respondents (68%), are not optimistic about the climate change problem and they rate it as very serious. The industry (78%), local administrations (64%), and the national governments (57%) are named as main actors that should take initiatives to address environmental issues.

78% of the respondents have tried to take measures to avoid the adverse effects of climate change and the most prominent activities mentioned were: recycling in 85% of the cases and the effort to avoid excessive consumption of goods. 92% try when possible not to use cars but mainly move on foot, and 64% aim to use public transport. In addition, when planning vacations and travels, the carbon footprint produced plays a role in the choices made by 91% of the respondents.

Overall, it should be stated that the people taking part in the survey are concerned and informed about environmental problems and are willing to take appropriate actions to avoid the adverse effects of climate change.

CYPRUS (S.E.A.L CYPRUS)

Demographic Information

The questionnaire aimed to identify the learning needs of the PR 3's target group, visually impaired people. The questionnaire was sent to the Pancyprian Organisation of the Blind (POT), which was responsible for distributing the questionnaires to its members. In total, 16 visually impaired people completed the form.

More than half of the questionnaire respondents are over 30 years old (68.8%). 18.8% of the respondents are between 25 and 30, and only 12.5% are younger than 25 years old. The responses come mainly from people over 30, an age group representing the most active section of society, socially and professionally. More than 50% of the respondents are women, and 43% are men, meaning an equal representation of the two genders.

The majority of the respondents live in the capital of Cyprus, Nicosia. It should be noted that more than half of the respondents (56.3%) live in an urban area with a population of over 50 thousand people. 37.5% of the respondents live in a community or town, and only 6% of the respondents live in a village or remote area.

It should also be noted that the respondents have a quite high level of education overall. In fact, 37.5% of the respondents obtained a university degree. 25% of them have a Master's degree. 18.8% have a more technical educational background since they have a degree from a Higher Education Institute or college. In addition, 12.5% of the respondents have a

basic level of education (School diploma). Therefore, the sample used for this questionnaire represents a highly educated part of the blind community.

43.8% of the respondents have a high degree of visual impairment (limited visual acuity). 31.3% of the respondents are totally blind. Two of the respondents have a heavy degree of visual impairment.

Assistive Tools

Concerning the assistive tools used by visually impaired people, the data shows that the respondents are familiarised with the technological tools that can support the reading and writing skills of blind people. More than 50% of the respondents use a screen reader for reading, and almost 38% of them use a computer with magnification software. In addition, 4 out of 16 respondents use a magnifier and a computer with speech. None of the respondents use a braille device for reading. In addition, more than 60% of the respondents prefer a computer with speech software rather than magnification software. When asked which screen reader software they prefer, more than half of the respondents (62%) use the NVDA (Windows) software. However, 25% use the Apple VoiceOver (OS X). 2 out of the 16 respondents use the Serotek System Access (Windows).

In terms of the most suitable learning environment, the majority of the respondents (75%) prefer a room with natural light rather than one with artificial light. Regarding supporting devices for walking, the great majority (81%) prefer getting help from an adult assistant. Some people prefer using a long cane because it gives more autonomy and freedom of movement.

Questions related to environmental practices

The second section of the questionnaire focused on identifying the habits and green practices visually impaired people have or apply in their everyday lives and the knowledge they have concerning the EU Green Deal and other policies for the protection of the environment.

According to the respondents, the biggest environmental challenges for humanity are air and soil pollution. Overpopulation and waste follow, while some people think that the loss of biodiversity is also a major environmental issue.

The majority of the respondents (87.5%) have adopted eco-friendly habits. When asked to specify what kind of habit they have, the great majority of them mentioned recycling.

When asked to describe the action young people should take to help the environment, the respondents mentioned the following: taking action in advocating for the protection of the

environment, recycling, use of public transport, reforestation, reducing the use of paper, recycling items like PMD, glass, batteries, use of composting technique, use of bicycles instead of cars.

In terms of recycling, 37% of the respondents recycle plastic, and 31% recycle paper and cardboard. Only 4 out of the 16 respondents recycle organic material (food waste). Therefore, the respondents seem to have a high level of environmental awareness since they recycle. However, it is shown that the only eco-friendly activity they follow is only recycling, and the main materials they do recycle are paper and plastic. Based on the questionnaire data, the majority of the respondents (75%) are unfamiliar with the European Commission's Green Deal containing all the strategies the Union aims to implement to reduce global warming and increase green sustainability.

When asked to specify the most important provisions of the EU Green Deal, the respondents showed their preference for the provisions related to the quality and longevity of sustainable food. More specifically, fresh air, clean water, healthy soil and biodiversity (provision 1), healthy and affordable food (provision 2) and longer-lasting products that can be recycled (provision 3) are the respondents' most important provisions of the Deal. Some respondents indicated that the future-proof jobs and energy-efficient buildings are also important areas in which the EU should take action to improve and develop.

When asked if the EU Green Deal's goal to reduce greenhouse gas emissions by 55% by 2030 is attainable, more than 42% of the respondents said they neither agree nor disagree with this statement. Moreover, 25% of the respondents somewhat disagree with it. Only two out of the 16 respondents are totally optimistic that this goal can be achieved.

When asked if Europe can become the first climate-neutral continent by 2050, more than 43% of the respondents expressed uncertainty about whether this is an attainable goal. 31% of the respondents disagree that this is an achievable goal.

The majority of respondents realise that climate change is a severe problem that needs to be addressed. When asked which actor is more responsible for tackling climate change, 12 out of the 16 respondents stated that national governments have this responsibility, while 8 of them consider citizens to bear the responsibility for taking climate action. In addition, only 3 out of 16 respondents believe that the EU institutions are responsible for addressing the serious problem of climate change.

When asked which actions they follow to fight climate change on a personal level, the respondents mentioned the following:

75% of the respondents try to reduce waste and separate it regularly for recycling. Half of the respondents stated that they consider the amount of consumption when buying a new household appliance. Only 6 out of the 16 respondents have installed solar panels. It should be noted that none of the respondents has an electric car. Therefore, the

respondents are familiar with the most popular eco-friendly practices (recycling, considering energy efficiency, reducing the consumption of appliances).

In case the car is not needed for transportation, the preferred environmentally-friendly alternative for the majority of the respondents is walking (62%), followed by public transport (37%) and car-sharing (37%).

Finally, when asked if they consider the carbon footprint of their transport when traveling, the great majority of the respondents answered negatively (87%).

GREECE (INSTITOYTO KOINONIKIS KAINOTOMIAS KAI SYNOXIS)

Demographic Information

In total, 15 responses were collected from Greece. 5,2% are aged between 15 and 20, 33% are aged between 20 and 25. 52% are aged between 25 and 30. 9,8% are older than 30.

Additionally, 19.6% are living in a city with population numbers between 2500 and 5000, 32% are living in a city with population between 7000 and 15000, while 48,4% are living in a city with population of 50000 or more. 53% hold a Bachelor's degree, 28% Master and 19% college or higher education institute. 26,8% are Male and 73,2% Female.

35,9% stated low vision with high visual acuity, 58,6% stated low vision with limited visual acuity, 3,2% are blind but can see light and shapes and 2,3% stated totally blind.

Assistive Tools

Smartphones' usage the answers were: 29,3% iPhone (Apple), 65,9% Google

(Android) and only 4,8% Microsoft. 57,2% prefer using touch screens with voice-over to access information, 13,2% computers with speech, 13,2% computers with magnification software, and 16,4% Braille devices. 71,8% prefer to use a computer with speech software to read something, 28,2% prefer to use a computer with magnification software. The most suitable learning environment is: 66% a room with natural light and 34% a room with well-distributed light. As for which device they use when they walk, 54,7% use a guide cane, 15% use a symbol cane, 19,3% use a guide dog, 5% are having an adult assisting and 6% use a long cane. In terms of screen reader software: 23,3% use Apple VoiceOver (OS X), 16,6% use ORCA (Linux), 37,8% use Serotek System Access (Windows), and 22,3% use BRLTTY (Linux).

Questions related to environmental practices

All the participants answered that they have adopted some eco-friendly habits, with the most popular habits being recycling, use of public transport and a vegetarian diet. The majority believes that global warming, air pollution, ocean pollution, and waste are the greatest environmental challenges for humanity. Regarding the actions that young people could take when it comes to environmental protection the most famous answers were recycling, education and cooperation with non-governmental organisations.

58% of the people asked rated their neighbourhood as not very clean, while only 8.5% stated their neighbourhood is very clean.

In addition, 83,6% stated that they recycle with 42,1% recycling plastic, 27,8% paper and cardboard, 17,6% glass, 9,5% metal and only 3% batteries. 90% of the participants are familiar with the European Commission's European Green Deal. When asked what they think it's the most important provision of the European Green Deal, the highest rated were distributed among "fresh air, clean water, healthy soil and biodiversity", "more public

transport" and "healthy and affordable food". The majority (67,8%) have a neutral attitude towards the statement that the European Green Deal's goal to reduce net greenhouse gas emissions by at least 55% by 2030 is attainable. Moreover, 69,8% disagree that Europe will become the first climate-neutral continent by 2050. The majority (89,3%) think that climate change is a really serious problem. Regarding the actors they consider more responsible for tackling climate change within the EU, most of the people answered national governments, regional and local authorities and individuals. Further on, 67,4% state that they have personally taken action to fight climate change over the past six months. When asked what actions they take the answers were: 68% reduction of personal waste and recycling, 22% reduction of disposable plastic items and 10% increased consumption of organic food. 64,8% use public transport as an alternative to their personal vehicle, 20% prefer walking and 15,2% use bicycles. Finally, 86,5% consider the carbon footprint of their transport when planning their holiday and other long-distance travel and adapt their plans accordingly.

SPAIN (ASOCIATION CULTURAL Y DEPORTIVA LAHOYA)

Despite the repeated and intensive efforts of the organisation, there was a prominent reluctance of the target audience to participate in the research and fill out the questionnaire. Although the one participant cannot be considered representative of the target population, the results have been included as indicative.

Demographic Information

The participant of the survey was 30 years old, female, they live in Spain, and they live in an urban area (population 230000). They have completed a Bachelor's degree and a PhD. They have poor vision, although they are not classified as legally blind.

Assistive Tools

In terms of assistive tools, the person uses an Apple, iPhone and they prefer screen readers in terms of assistive tools. They also use a computer with voice software, and they prefer a room in which the light is well distributed. The participants also used a guide cane, and their preferred screen reader is the Apple VoiceOver.

Questions related to environmental practices

In regards to environmental problems, the participants rate waste management, ocean pollution, global warming, loss of biodiversity, air pollution, soil pollution, and lack of drinking water quite high. The participant has also adopted ecological habits, including recycling, better buying choices, avoiding buying and using polluting products. In relation to actions that young people can do to help the environment, the participant suggested raising awareness in schools, organising cleaning efforts for all people with mandatory attendance, to clean areas and respect the environment.

The participant also indicated that the area in which they live is perfectly clean, and that the materials they recycle the most are paper and cardboard. However, the person was not aware of the European Commission's Green Deal, but they expect it to have provisions for fresh air, clean water, healthy soil, biodiversity, healthy and affordable food, clean energy, more public transport, and training for the transition to future-proof jobs. In addition, the participant disagrees with the statement that the European Green Pact target of reducing net greenhouse gas emissions by at least 55% by 2030 is achievable; as well as she disagrees with the statement that Europe will become the first climate-neutral continent by 2050.

To the question "How serious do you think the problem of climate change is?" the person replied that it is very serious, and that the institutions of the European Union should be responsible for fighting against climate change. On a personal level, the participant has taken action to combat climate change by reducing consumption of disposables, using public transport as an alternative to using private vehicles, and taking into account the carbon footprint of their vacation or other long distance trips.

ROMANIA (A.S.E.L Romania)

Demographic Information

17 responses were collected from Romania. In terms of age, 5.9% are aged between 15 and 20. 29.4% are aged between 20 and 25. 47% are aged between 25 and 30. 11.8% are older than 30. In terms of living area, 52.9% are living in a city with a population of 50000. 29.4% are living in a city with a population between 7000 and 15000 and 17.6% are living in a city with population between 2500 and 5000. When asked about their level of education, the responses were as follows: 23.5% had technical education, 47% Bachelor, 5.9% Master and the 17.6% college/higher education institute. In addition, 29.4% were male, 52.9% female and 17.6% stated "other". In relation to visual acuity, 29.4% claimed that they are visually impaired but with high visual acuity, 52.9% claimed that they are visually impaired with limited visual acuity, 5.9% stated they are blind but can see light and shapes and 5.9% stated that they are totally blind.

Assistive Tools

Regarding the smartphones that the participants use: 23.5% are iPhone users (Apple), 70.6% are Google phone users (Android) and only 5.9% are using Microsoft phones. Moreover, 52.9% prefer using touch screens with voice over in order to access information, 5.9% prefer computers with speech, 5.9% prefer computers with magnification software and 17.6% prefer Braille devices. When it comes to reading, 70.6% prefer to use a computer with speech software, 29.4% prefer to use a computer with magnification software. In the question which setting would be a more suitable learning environment, the survey's participants answered 52.9% a room with natural light and 47.1% a room with well distributed light.

As for which device do they use while walking 52.9% use a guide cane, 17.6% use a symbol cane, 17.6% use a guide dog, 5.9% are having an adult as assistance and 5.9% use a long cane. Regarding the screen reader software: 47.2% use Apple VoiceOver (OS X), 17.6%

use ORCA (Linux), 11.8% use Serotek System Access (Windows), 11.8% use BRLTTY (Linux) and 11.8% use WebAnywhere.

Questions related to environmental practices

Practically every ecological challenge on the list is considered as significant. All the

participants in the survey answered that they haven't adopted any green habits. Regarding the actions that young people could take when it comes to environmental protection the most famous answers were recycling, education and cooperation with non- governmental organisations. 47% of the people asked rated their neighbourhood as not very clean, while

only 5.9% stated their neighbourhood is very clean. The majority (82.4%) said that they recycle with 41.2% recycling plastic, 35.3% metal, 11.8% paper and cardboard and 11.8% glass. The vast majority (88.2%) are familiar with the European Commission's European Green Deal. When asked what they think it's the most important provision of the European Green Deal, the highest rated were distributed among "more public transport", "cleaner energy", "longer lasting products that can be recycled and re-used" and "future-proof jobs and skills training for the transition". The majority (76.5%) somehow disagree that the European Green Deal's goal to reduce net greenhouse gas emissions by at least 55% by 2030 is attainable.

Most of the questionnaire's participants (70.6%) somehow disagree that Europe will become the first climate-neutral continent by 2050. The vast majority (82.3%) think that climate change is a serious problem. Regarding the actors they consider more responsible for tackling climate change within the EU, most of the people answered national governments, environmental groups and themselves.

64.7% are not sure if they have personally taken any action to fight climate change over the past six months and the rest 35.3% answered positively. When asked what actions they take the answers were: 41.2% consumption of more organic food, 35.3% installation of solar panels in their houses and 11.8% check the consumption when buying a new household appliance (e.g. fridge, TV) . 52.9% use public transport as an alternative to their personal vehicle, 35.3% use bicycles, 11.8% prefer walking. Finally, 88.2% consider the carbon footprint of their transport when planning their holiday and other long-distance travel and adapt their plans accordingly.

HUNGARY (ECOCENTER ALAPITVANY)

Demographic Information

The questionnaire was sent to the Organisation of the Blind which was responsible for the distribution of the questionnaires to its members. In total, 10 visually impaired people have completed the form.

The responses mainly come from people with the age between 15-30, 60 % of the respondents are between the age of 20-25, 30 % of them are between 25-30 and the rest of the 10 % of them are between the age of 15-20. Regarding the participation rate by gender, 60 % of the respondents are women and 40 % of them are men, giving a nearly identical participation rate.

Most of the respondents live in Budapest, capital of Hungary. Only 10 % of the respondents live in a village, the majority with 90% live in a city. The level of education of the respondents is relatively in proportion to each other: 30-30% of the participants have BSc

degree, higher education qualification and high school education, the remaining 10 % of them have vocational qualification.

10% of the respondents are totally blind, 10% of them are blind with the visibility of lights and shapes. There is a 30-30 % distribution of participants with poor vision (legally not blind) and with low vision (with high visual acuity), 20% of them have low vision with limited visual acuity.

Assistive Tools

All of the respondents have a smartphone, 50 percent of them use Android operating system, 30 percent have iPhone and 20 percent have a Microsoft operating system. Concerning the assistive tools used by visually impaired people, the data show that the responders are familiarised with the technological tools that can support the reading and writing skills of blind people. More than 50% of the responders use a screen reader for reading, and 30% of them use a computer with magnification software. 6 out of 10 respondents prefer using computers with speech for reading, 3 of them prefer voice-led computers for obtaining information. When asked which screen reader software they prefer, we received a quite wide range of answers. The majority, 30% of the respondents use Serotek System Access (for Windows), 20% of them use Apple VoiceOver (OS X), the rest of them use different softwares or web tools with the proportion of 10-10 %, such as ORCA, BRLTTY, Emacspeak, SpokenWeb, WebAnywhere.

In terms of the most suitable learning environment, the majority of the respondents (60%) prefer a room with natural lights to a room with artificial light. In terms of the most suitable learning environment, the majority of the respondents (60%) prefer a room with natural light rather than one with artificial light, whereas 10% are neutral in their preference.

Regarding needing support or using supporting devices for walking, 30% of the respondents do not need any assistance when walking, 20% of them have a guide-dog as support, the rest of the participants with the proportion of 10-10% need either a white long foldable cane, an adult assistant, a telescopic tool, dioptric glasses with prescription lenses or does not need any support at all.

Questions related to environmental practices

The second section of the questionnaire focused on identifying the habits and green practices visually impaired people have or apply in their everyday life and the knowledge they have in relation to the EU Green Deal and other policies for the protection of the environment. According to the respondents, the biggest environmental challenges for humanity are waste handling and water pollution. Global warming and overpopulation

follow. The majority of the responders (60%) have adopted eco-friendly habits. When asked to specify what kind of habits they have, the great majority of them mentioned selective waste handling.

When asked to describe the action young people should take to help the environment, respondents mentioned the following: not using unnecessary packaging, reducing waste, obeying the environmental rules, saving water and energy, using public transport of bicycles instead of cars, using energy-saving devices, recycling, volunteering at waste collection actions, selective handling of waste, using of eco-friendly cleaning products.

In terms of recycling, 87,5% of the responders recycle plastic, paper, cardboard and metal, and only 37,5 % of them recycle glass. Therefore, the responders seem to have a reasonable level of environmental awareness since they recycle. However, it is shown that the only eco-friendly activity they follow is mainly recycling, and the majority of materials they recycle are paper, plastic and metal.

Based on the questionnaire data, the majority of the responders (60%) are unfamiliar with the European Commission's Green Deal containing all the strategies the Union aims to implement to reduce global warming and increase green sustainability. When asked to specify the most important provisions of the EU Green Deal, the responders showed their preference for the provisions related to fresh air, clean water, healthy soil and biodiversity (provision 1) and healthy and affordable food (provision 2).

Some responders indicated that the introduction of more public transport and energy-efficient buildings are also important areas in which the EU should take action to improve and develop. When asked if the EU Green Deal's goal to reduce greenhouse gas emissions by 55% by 2030 is attainable, 50% of the respondents disagreed with the statement, whilst 40% agreed or partially agreed and 10% did not wish to answer. Similarly, when asked if Europe can become the first climate-neutral continent by 2050, 30% of the respondents expressed their partial agreement of the goal being attainable, 50% of the responders disagree with the goal being achievable, however 20% fully believe in the success.

The majority of responders realise that climate change is a severe problem that needs to be addressed. When asked which actor is more responsible for tackling climate change, 10 out of the 10 respondents stated that the EU institutions are responsible, 9 out of 10 believe that national governments have this responsibility, while 8 of 10 blame businesses and factories for not having the responsibility for taking climate action. 6 out of 10 think that the regional and local authorities should take action and 5 of them call on the responsibility of environmental groups. When asked which actions they follow to fight climate change on a personal level, respondents mentioned the following:

40% of the respondents feel responsible for their environment by trying to reduce waste and separate it regularly for recycling and by reducing the use of packaging where possible. 40% of these stated that they consider the amount of consumption when buying a new household appliance and 40 % of them buy and consume meat. Therefore, the responders are more or less familiar with the most popular eco-friendly practices (recycling, considering energy efficiency, reducing the consumption of appliances). For avoiding using cars for transportation, 60% of the participants of the survey prefer the environmentally-friendly alternative of walking, followed by 50% of votes for public transport and 40% for using bicycles. 1 participant out of the 10 suggested the preference of using an electric scooter. Finally, when asked to consider their own carbon footprint when travelling, 50% of the respondents answered positively whilst the other 50% admitted their negligence.

LITHUANIA (ASOCIACIJA "AKTYVUS JAUNIMAS")

Demographic Information

The total number of responses is 8. 5 participants were 30 or more years old, 2 were between 20-25, and 1 between 25-30. 5 of the participants live in Vilnius, 1 in Kaunas, 1 in Alytus, and 1 in Kelme. All of the participants live in a city with more than 3000 citizens. 3 of the participants have bachelor's degrees, 3 finished technical school, and 2 said other education. 5 of the participants are blind, 1 is blind – light and shapes are visible, 1 is low vision – limited visual acuity, and 1 has a bad vision – not legally blind. 5 out of 8 participants are women.

Assistive Tools

5 respondents have Apple mobile phones, 2 have Google phones, and 1 a Microsoft phone. To the question "Which support tool do you prefer for accessing information?" respondents answered: Magnifier – 0, Screen Readers – 5, Touch screen with voice-over – 5, Computer with speech – 4, Computer with magnification software – 2, Braille device - 0

6 respondents prefer a computer with speech software, 1 prefers a computer with magnification software and 1 another system. To the question, "Which of the following configurations would be a more suitable learning environment for you?" respondents answered: A room with natural light – 2, A room where light is well distributed – 4, Other 5. 6 respondents used long cane while walking, 1 said a symbol cane, 1 guide cane, 2 participants had an adult assistant, and 1 said other devices. 3 respondents use NVDA software to read, 3 use Apple VoiceOver, 1 uses Emacspeak, and 1 uses other software.

Questions related to environmental practices

To the question from 1 to 10, "what is the greatest environmental challenge for humanity?"respondents answered: Waste is a very important issue, as 6 participants voted over 5 for this issue. Overpopulation is less important as 5 people voted less than 4. Ocean pollution is a very important issue as 3 people voted 10 and 2 people voted 8. Global warming is very important, as 3 voted 10. Loss of biodiversity is in the middle as votes contributed evenly. Lack of drinking water is very important as 5 voted over 5. Deforestation is very important as 4 people voted 10. Air pollution is very important as 4 people voted 10. Soil pollution is important as 3 people voted 10 and others contributed differently. Noise pollution is in the middle as votes contributed evenly.

All respondents have adopted eco-friendly habits. In the question "Can you specify which habit you have adopted?" participants replied: Recycling, Energy and water saving, Cleaning the neighbourhood, or the nearest forest, Composting, Sharing used items. To the question, "Name three (3) actions that young people can take to help the environment.", respondents said: Recycling, Not litter, Use eco-friendly alternatives instead of plastic, Plant trees, Choose environmentally friendly transportation, Save forests, plants and animals, Share used clothes and items, Save energy and water, Go to politics, Reduce plastic usage, Participate in environmental activities/events, Save food. 6 participants said they recycle, and 2 said partly. In a question, "which material do you recycle the most?", 2 said batteries, 2 - paper, 2 – food waste, and 2 - plastic.

Further on, 6 respondents are aware of the European Green Deal. To the question "On a scale of 1 to 8, what is the most important provision of the European Green Deal?" participants replied: Fresh air, clean water, healthy soil, and biodiversity is the most important, as 5 people voted 8. Energy-efficient construction is very important as 4 people voted 8 and others voted less important. Healthy and affordable food are important as 3 people voted 7, 2 people voted 8, and 2 people voted 7. More public transportation is moderately important as 2 people voted 5, 2 people voted 7, and 2 people voted 8. Cleaner energy is very important as 5 people voted 8. More durable products that can be recycled and be recycled and reused is important.

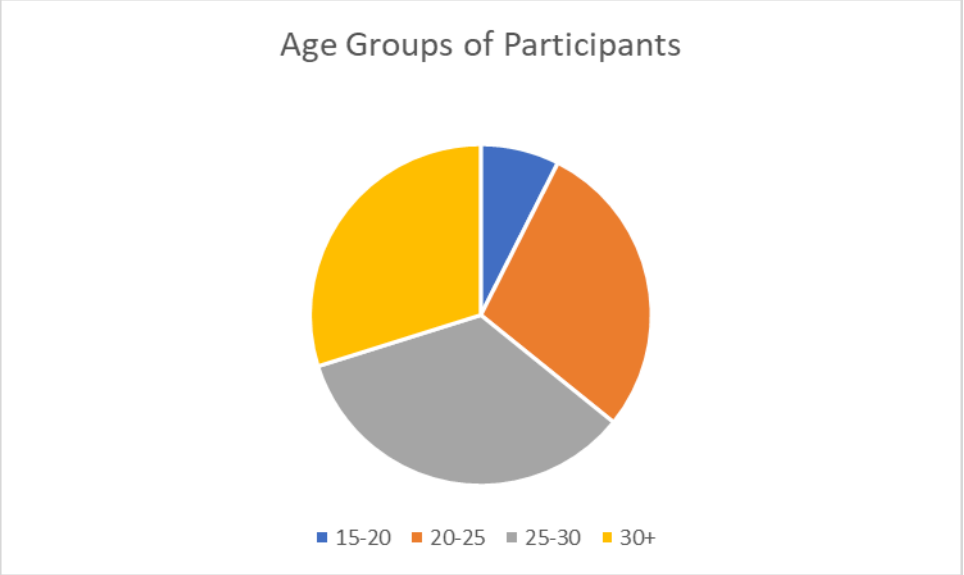
Future-proof jobs and training for Future-proof jobs and training for the transition is moderately important as votes are distributed evenly. A globally competitive and resilient industry is moderately important. All of the respondents think that the European Green Deal goal is impossible. To the question, "Do you think Europe will become the first climate-neutral continent by 2050?" respondents replied: 3 said neither agree nor disagree, 2 said somewhat agree, 2 said agree, 1 said somewhat disagree. Overall, all participants believe that climate change is a very serious problem. To the question, "Which

of the following actors do you think is most responsible for the fight against climate change in the EU?" respondents replied: National governments - 4 people, The European Union institutions - 2 people, Regional and local authorities - 3 people, business and Industry - 6 people, You personally - 6 people, Environmental groups - 2 people. In addition, 7 respondents have taken action to fight climate change. To the question "Which, if any, of the following actions apply to you?" respondents replied: I try to reduce my waste and regularly separate it for recycling. (6 people), I try to cut down on my consumption of disposable items whenever I can (e.g. supermarket, plastic bags, excessive packaging) (7 people). When buying a new household appliance (e.g. fridge, TV), consumption is an important factor in my choice. (3 people) I buy and eat more organic food (1 person), I buy and eat less meat (1 person)

I have installed solar panels in my home (1 person), I have a low-energy home (2 people), I have bought an electric car (0), None of the above (0). Similarly, 8 participants choose public transport instead of a car, and 4 also choose walking, while 5 participants do not think about CO2 when planning a trip, and 3 do.

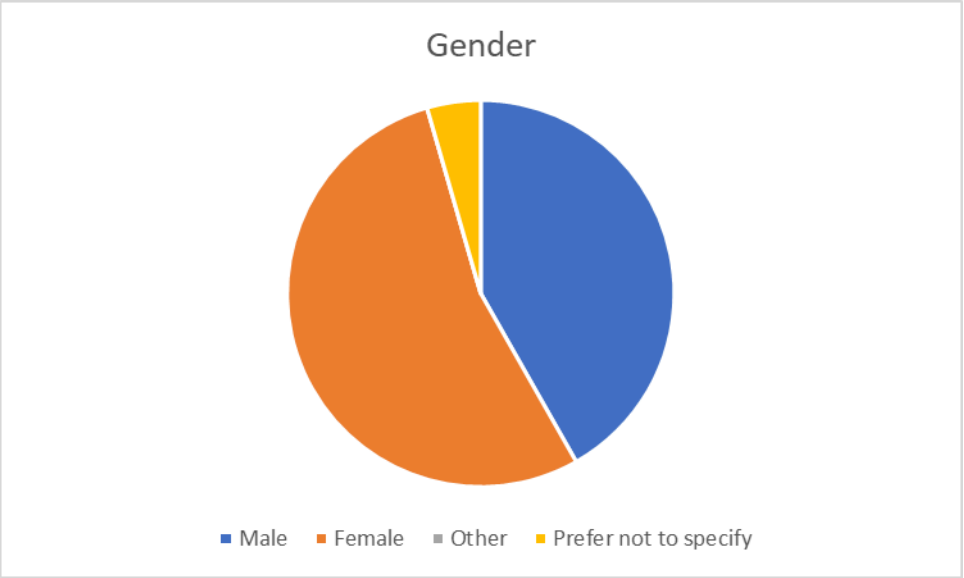
Summary Report

The age groups of participants can be summarised as follows:

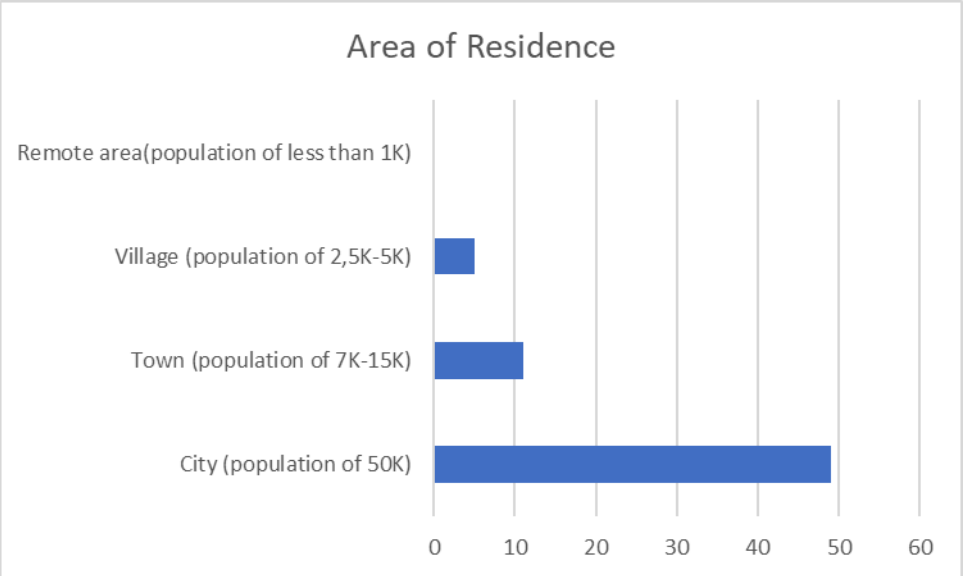


All age groups are represented in the group of participants, with the minority belonging to the 15-20 years old group, and the majority representing the 25-30 years old group.

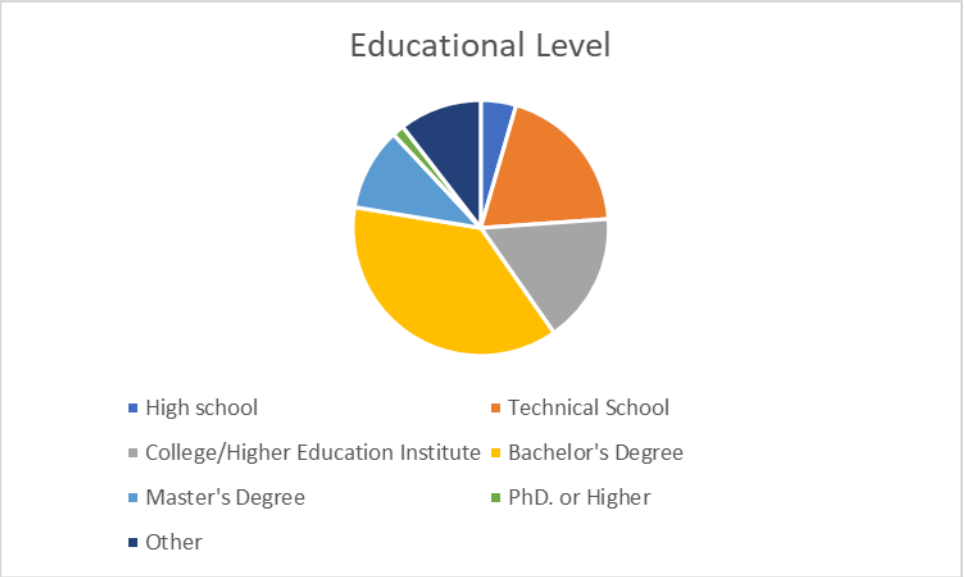
In terms of Gender, 28 participants are male, 36 are female, and 3 did not respond.



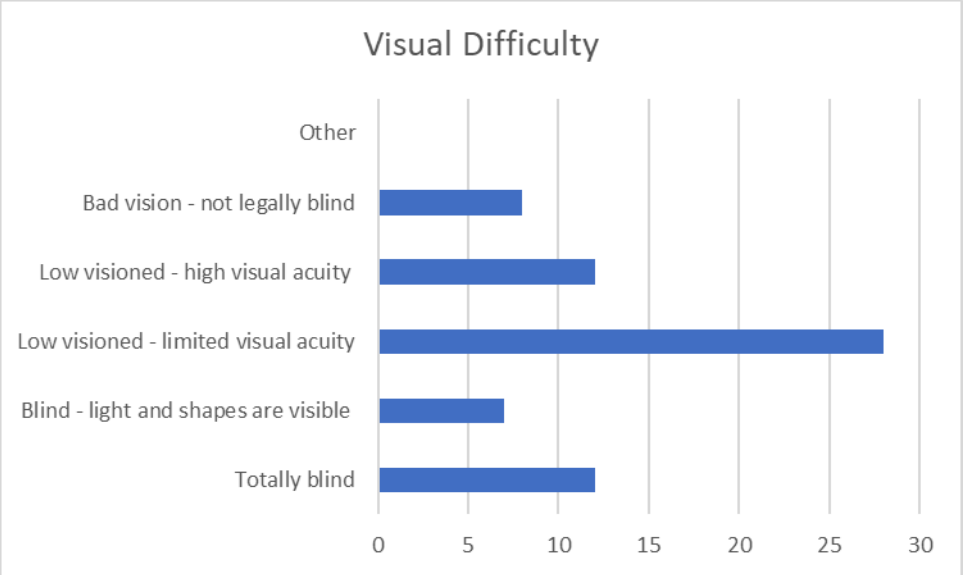
In terms of where they live, participants responded as follows:



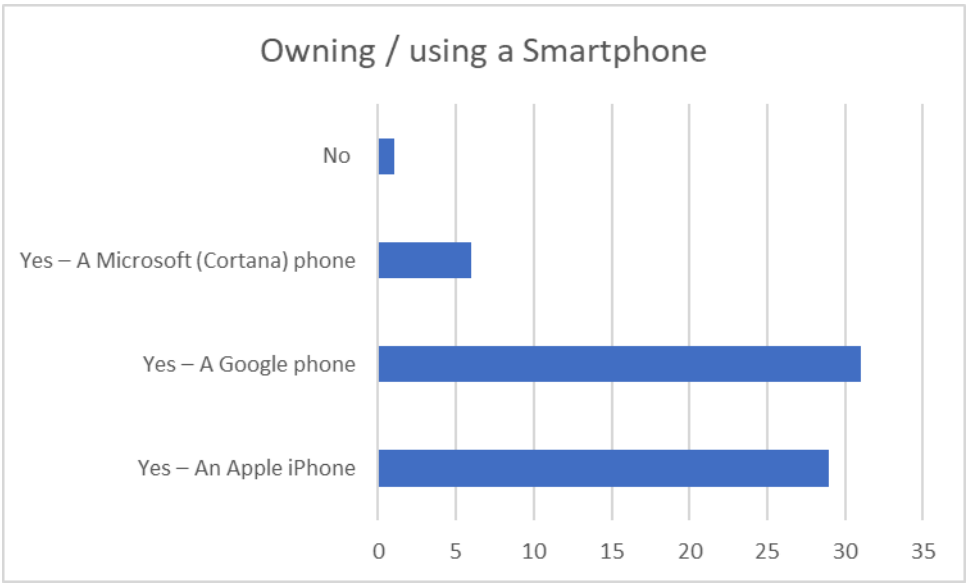
In terms of their academic background, participants educations level is as follows:



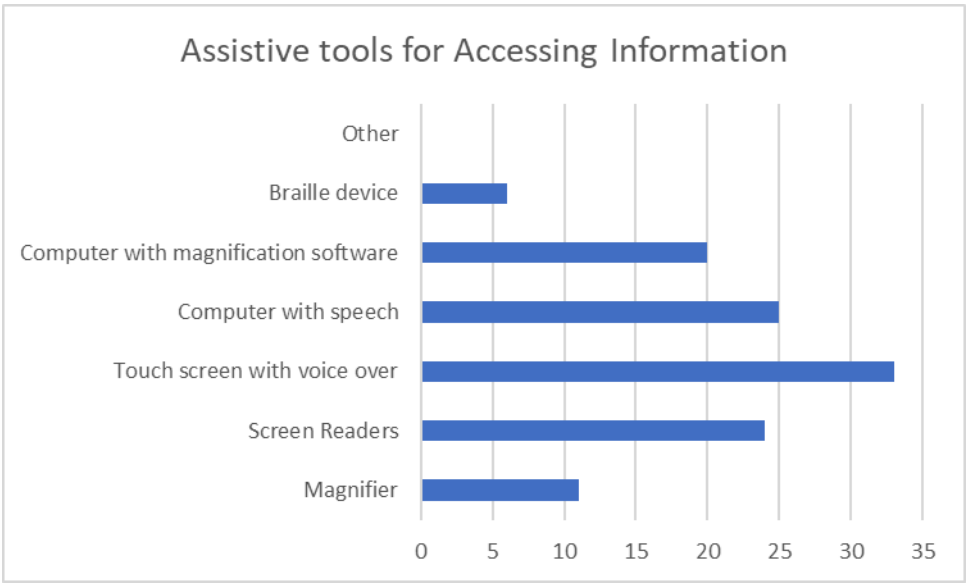
In relation to the degree of visual difficulty the participants face, the majority of participants are visually impaired with limited visual acuity, followed by visually impaired with high visual acuity and 12 participants being totally blind.



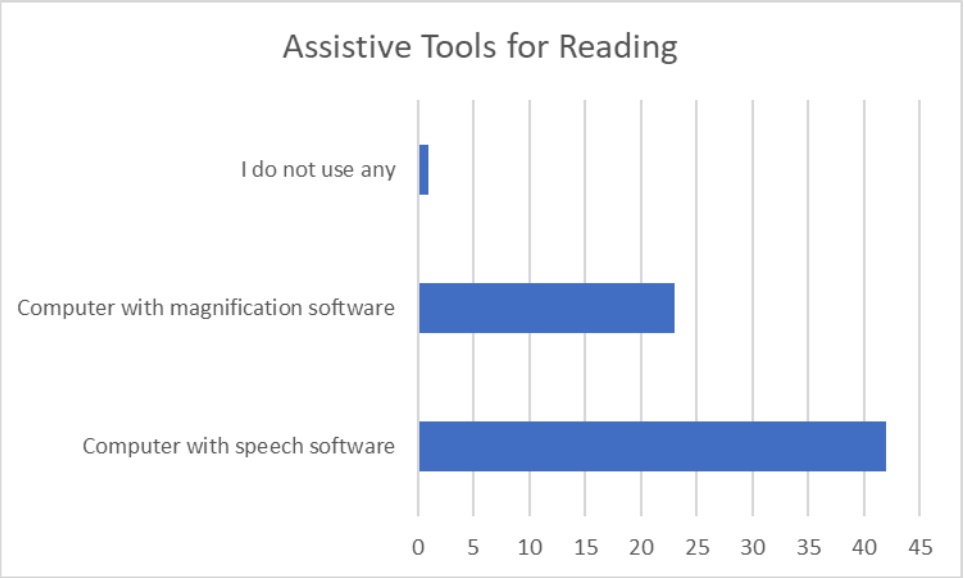
In terms of Smartphone use: only 1 respondent does not own a smartphone, while 29 people own an iPhone, 31 own an Android phone (google phone) and 6 own a Cortana (Microsoft phone).



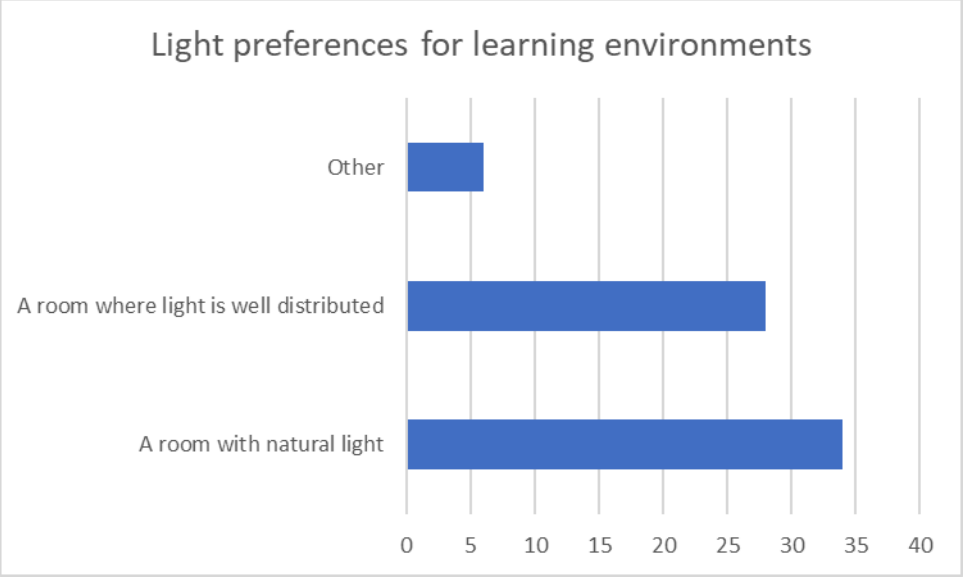
In relation to use of assistive tools for accessing information, participants favour the touch screen with a voice over, followed by a computer with speech, and screen readers. Braille is the least preferred option for assistive tools.



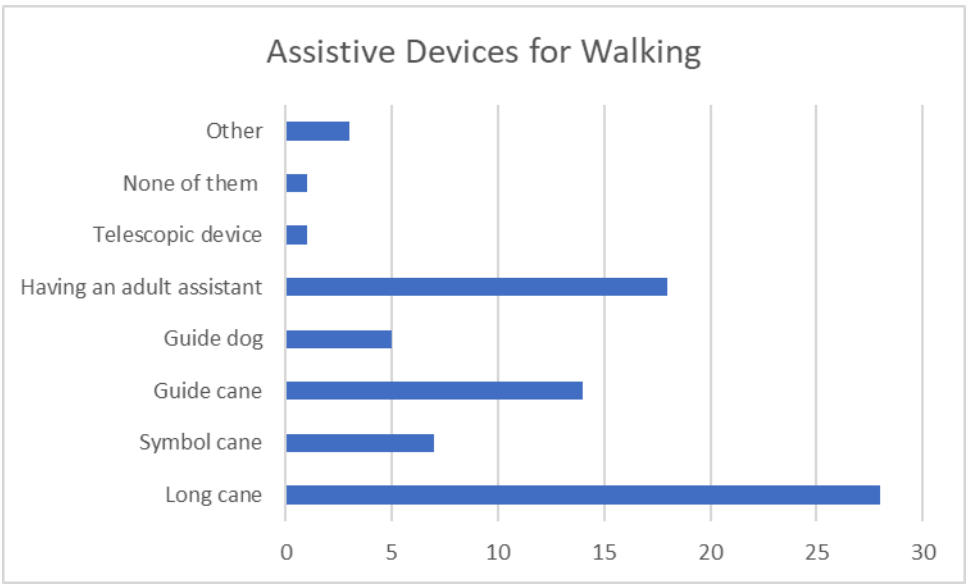
In terms of assistive tools for reading, participants of the survey favour computers with speech software.



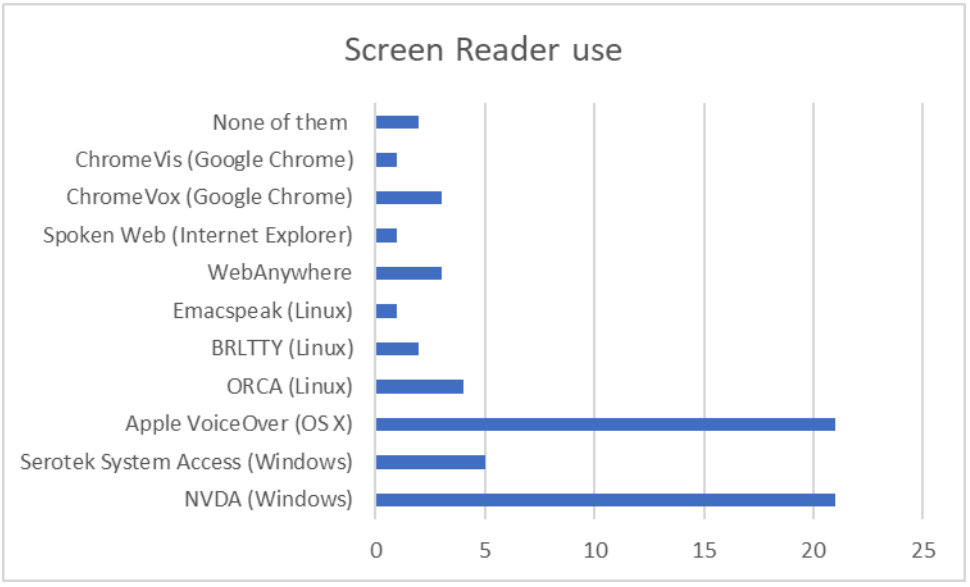
In relation to suitable learning environments, participants responded as follows:



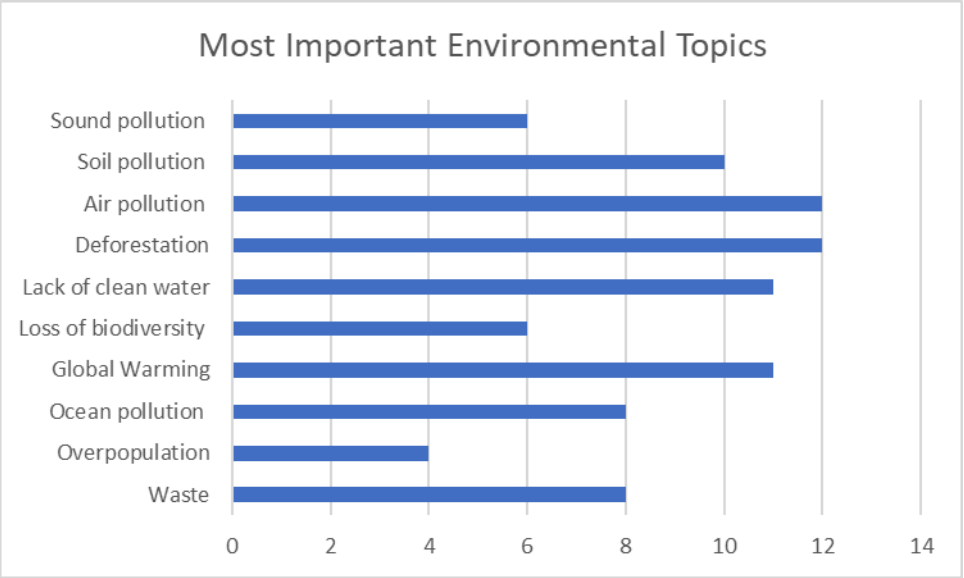
In regards to assistive devices for walking, the results are as follows:



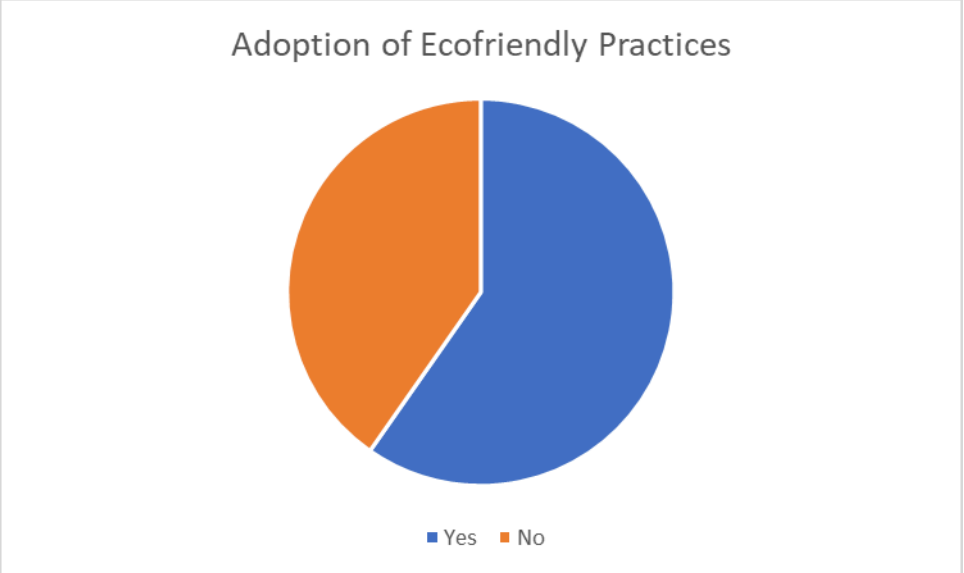
Lastly, in terms of Screen Reader use and preference, participants replied as follows:



Moving on the section about environmental practices, the most important topics have been identified as follows:



In terms of eco-friendly practices, respondents have replied as follows:



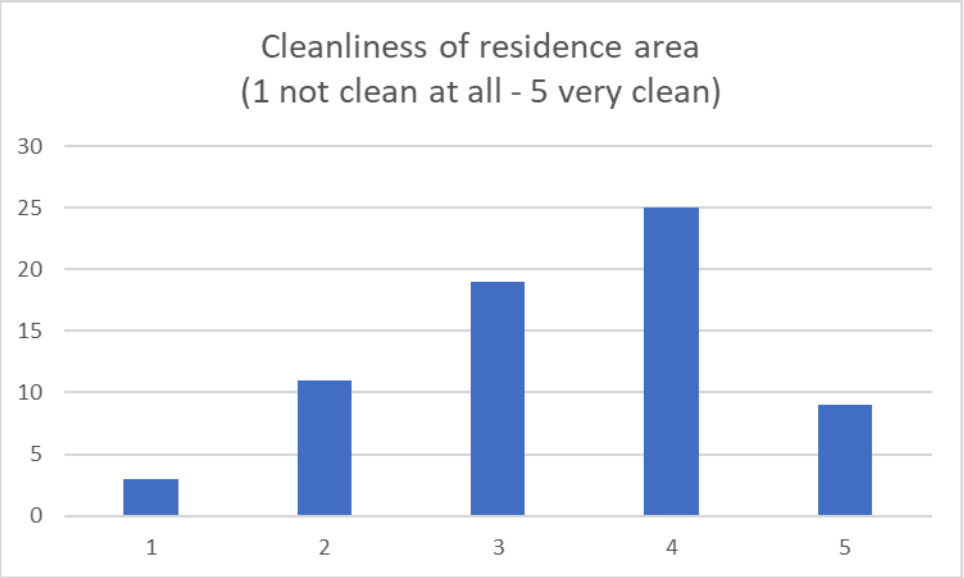
In terms of habits adopted the most common replies are presented below:

Use public transport more often
Reduce plastic packaging/Enhance the use of reusable packaging/Choose shopping from a packaging-free store
Use old things for longer/Buy less/Consume less
Buy organic and regional products
Recycling
Choose Eco-friendly and sustainable lighting
Choose sustainable options such as bamboo toothbrushes and cloth bags for shopping
Selective waste collection
Conserve water and electricity at home
Garbage disposal
Garbage sorting
Establish a neighborhood's garbage cleaning day every spring
Composting at home
Share used items

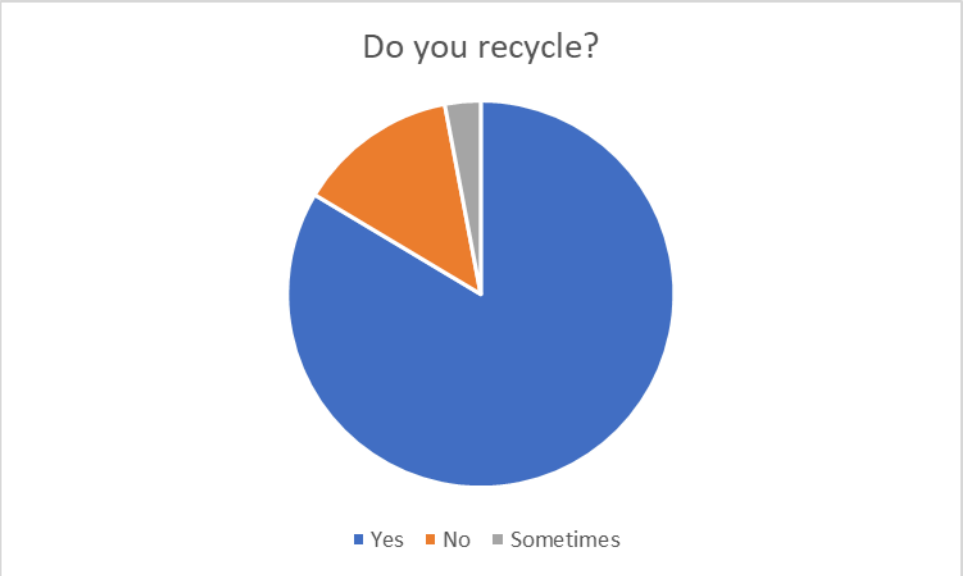
When asked to mention three actions that young people can take up to help the environment, participants suggested the following:

Recycling
Reduce consumption
Use public transport
Choose products with environmentally friendly packaging
Conserve water and electricity at home
Prefer regional products
Consume less
Garbage sorting
Raise awareness through education
Composting at home
Tree-planting
Reduce paper use as much as possible

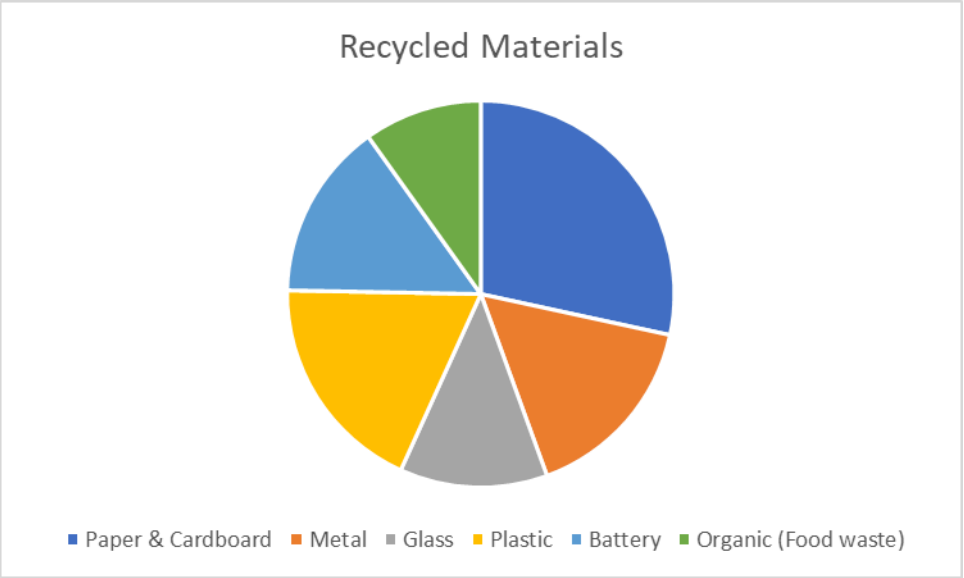
When asked to rate the cleanliness of the area in which they live in, participants rated their area as follows:



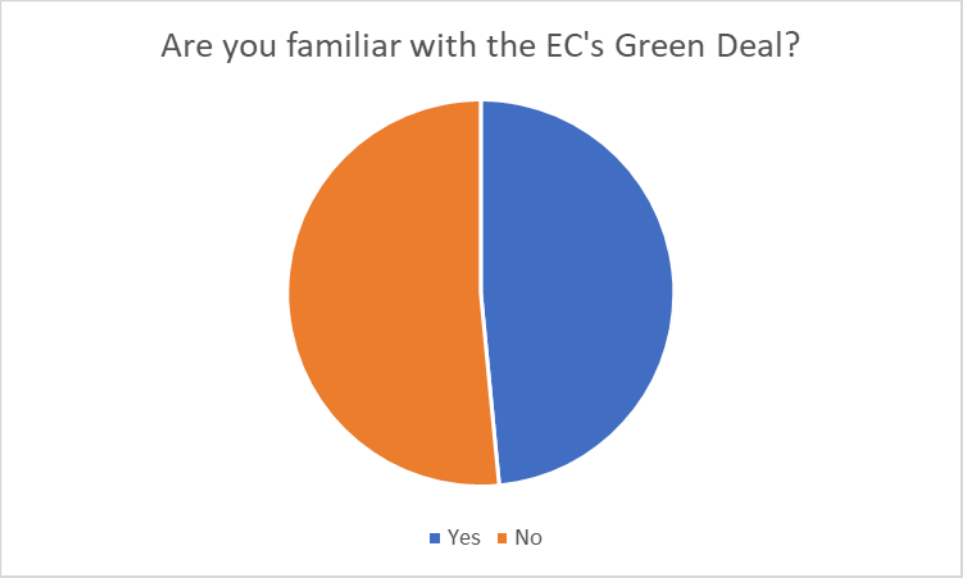
Additionally, when asked if they recycle, participants responded as follows:



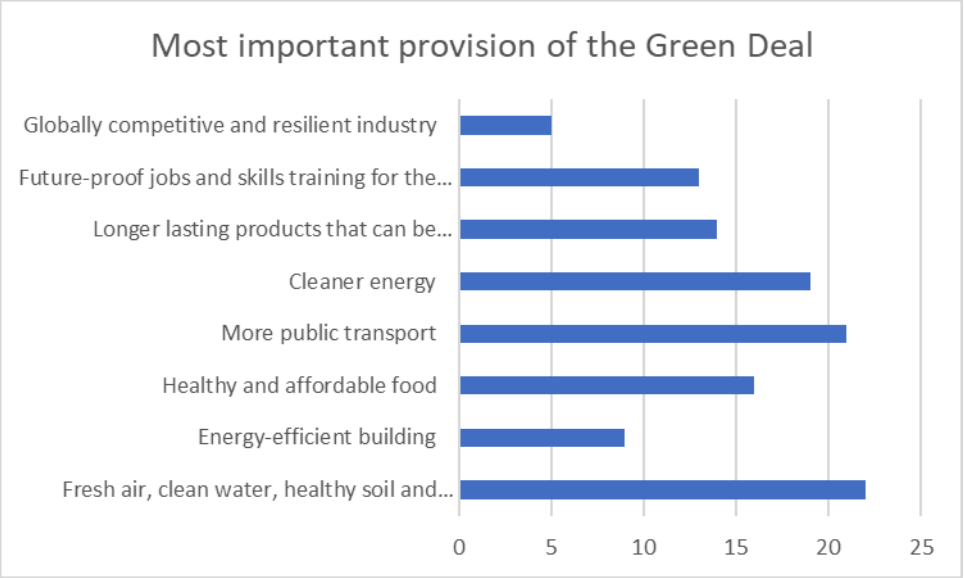
In addition to the above question, participants responded as follows in relation to the materials they recycle the most:



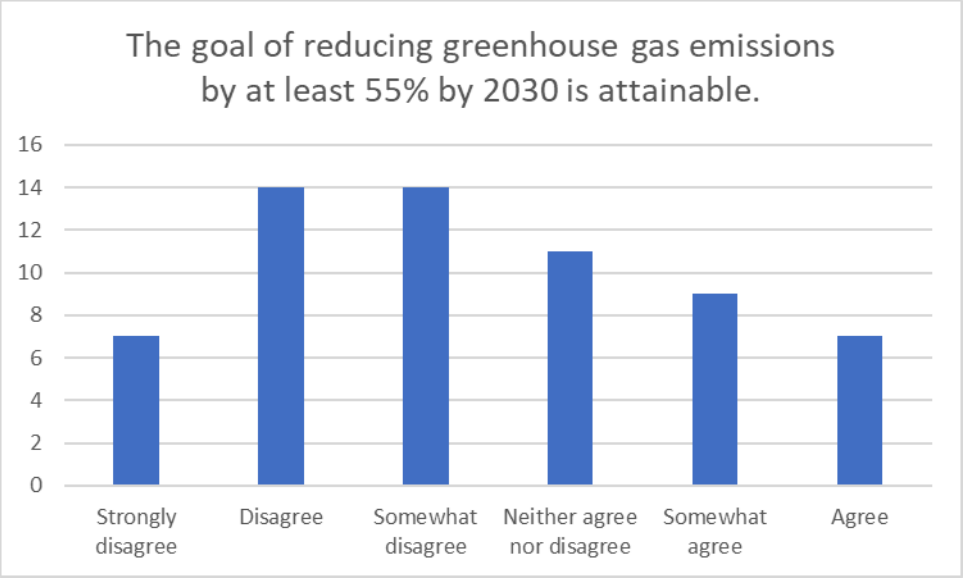
Moreover, participant percentages are almost split when it comes to familiarity with the European Commission's Green deal:



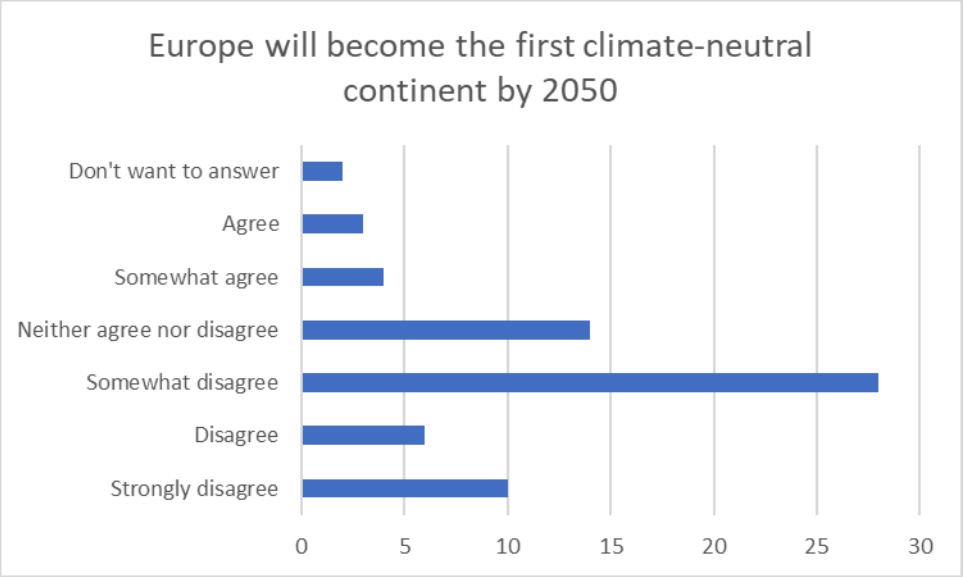
When asked about the most important provision of the European Green Deal, participants replied as follows:



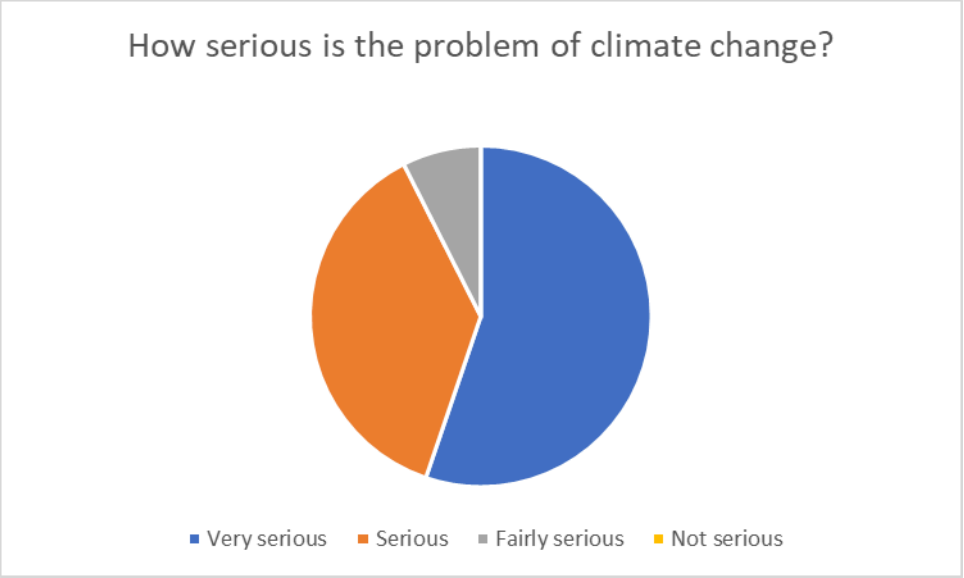
In relation to the attainability of the goal to reduce net greenhouse gas emissions by at least 55% by 2030, participants offered the following range of answers:



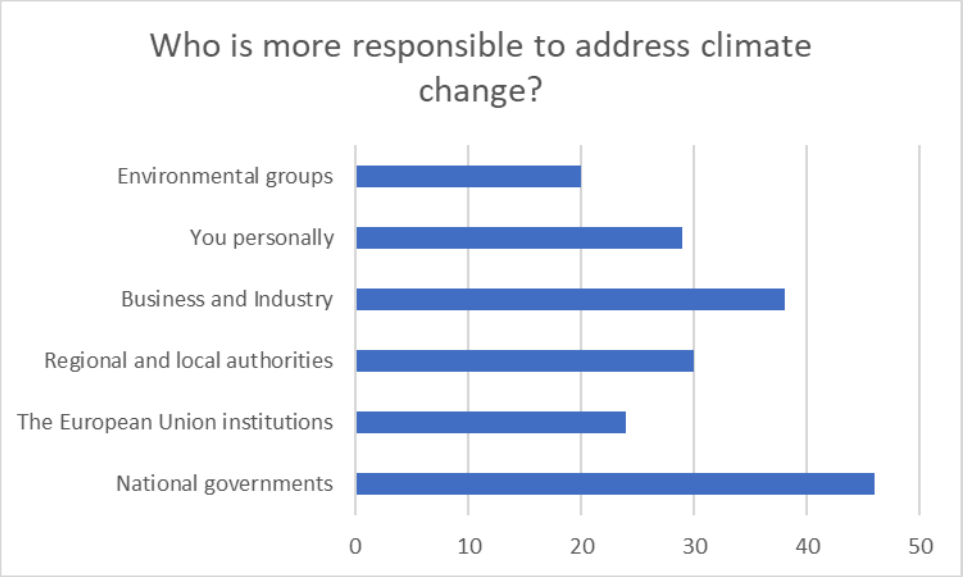
When asked about the statement that “Europe will become the first climate-neutral continent by 2050”, participants responded as follows:



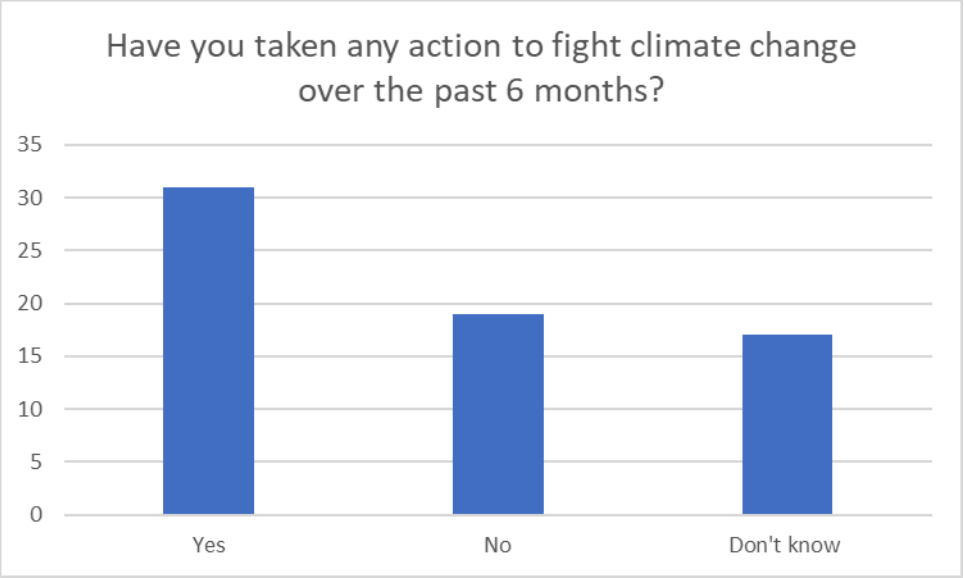
Overall, when asked about how serious the problem of climate change is, participants replied as follows:



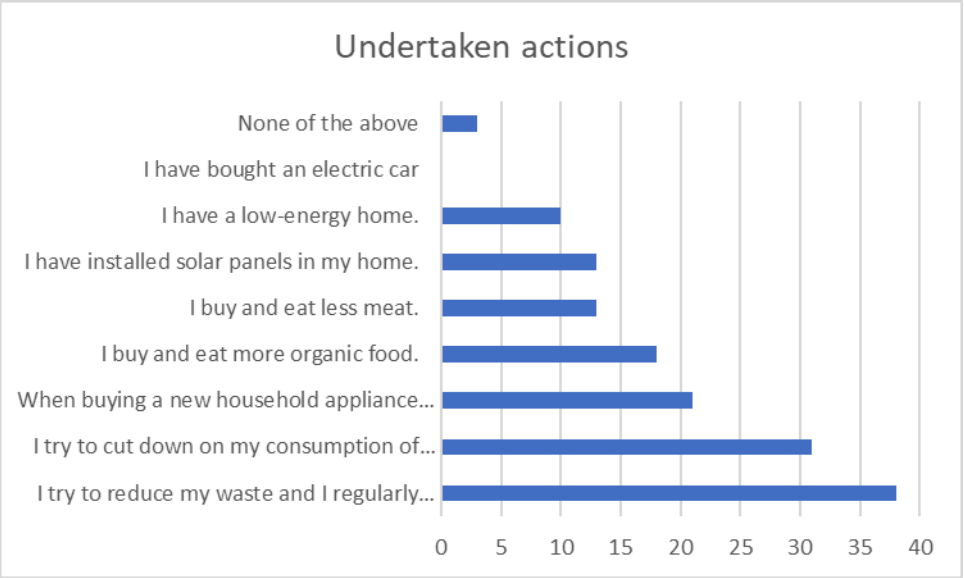
In relation to who is more responsible to tackle climate change, participants offered the following answers:



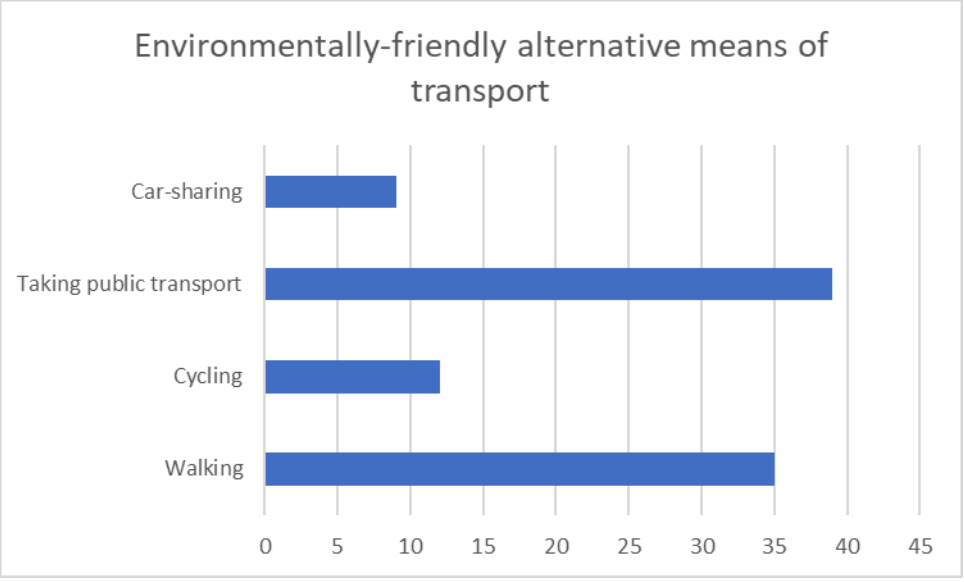
Further on, when asked participants have taken any action to fight climate change on a personal level over the past six months, they replied as follows:



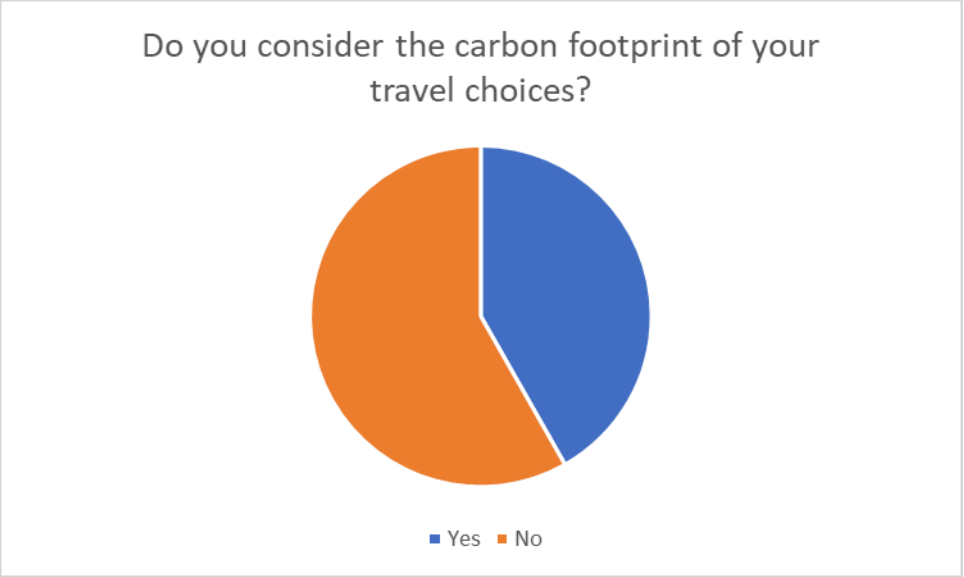
Similarly, when asked to specify their actions, they offered the following insights:



In addition, when asked about their environmentally friendly alternatives instead of the use of a private car, participants offered the following options:



Lastly, when asked if they consider the carbon footprint of their travel for holidays or long-distance travel, they replied as follows:



In conclusion, it appears that knowledge and awareness about environmental issues is prominent in people facing visual impairments, as is their willingness to take action and adopt environmentally friendly and sustainable practices. The vast majority of the participants of the survey who face visual impairments are extensively relying on technology for their everyday needs, and are using assistive tools primarily based on their phones and computers. The majority also shares a reluctance and distrust in relation to the ability of the EU commission and Europe's countries to attain the goals set in the Green Deal and the goal for Europe to reduce the carbon emissions by 2050. Despite the fact that participants of the survey are willing to take initiatives and employ sustainable practices in their travel, consumption choices, and everyday habits; they still place a lot of responsibility in the European Commission, the European Union and the local governments to take action and tackle climate change on a larger scale.

Methodology & Adaptation Strategy

As mentioned in the introduction, the efforts of Project Result 3 “Alternative Board & Application Games for Energy Efficiency” included an adaptation of the game created in Project Result 2, to make it accessible to people with fewer opportunities. Taking into account the time constraints and finite resources inherent in the project, the partners collaboratively chose to focus on young people with visual impairments / visual disabilities.

SEAL CYPRUS led the efforts of adaptation and managed the process with the feedback and input of all partners, under the guidance and support provided by the Coordinator (IN2 Digital Innovations GMBH). The adaptation process began with a small scale needs analysis in the form of an online survey conducted in each partner country. The findings of the survey per country can be found in the present document under the heading "Country Findings”, while the cumulative results can be found under the heading “Summary Report”.

The findings per country showcased that the term “visual disability” is a blanket term that entails many different degrees of sight impairment and does NOT solely refer to people who are deemed “legally blind”. The varied degrees of visual impairment present in people who have visual disabilities, meant that the proposed adaptation should be suitable and attractive to people who have no vision at all, as well as to people who have some degree of vision and/or varying degrees of visual acuity. It became evident therefore, that the degree of sight or the lack of sight would not be the decisive factor for the type and scope of the adaptation, but rather the need to promote energy efficiency and environmental awareness would be the goal that the game should focus on.

Having gathered and reviewed the primary results of the survey and after discussions and input by the partners in order to clarify and explore certain aspects of the findings, SEAL CYPRUS consulted with the faculty of the St Varnavas, School for the Blind (Σχολή Τυφλών Άγιος Βαρνάβας) in Nicosia and members of the Pancyprian Organization of the Blind (Παγκύπριος Οργανισμός Τυφλών). The consultation that took place over a course of several meetings aimed at exploring the needs of young people with visual disabilities but also the availability and prevalence of assistive tools, in order to decide the best medium for the adaptation of the game.

The input by both organisations included some common themes that are presented below:

- The majority of visually impaired young people rely on technology for their everyday needs, including their learning needs. Smartphones and applications are the primary tools employed for daily tasks.
- However, Braille remains the method – tool most widely used as the product does not rely on the presence of technology and electricity in order to be read. The

drawback remains that it takes considerable effort to learn especially when learning it as an adult while it is considerably easier when learned at a very young age.

- The choice of each person when deciding on the assistive tools they will use is based on matters of personal preference but also on factors such as the presence of the visual impairment from birth/very young age, the extent of the visual impairment, the age at which the person started training / school for people with disabilities. Limitations in the availability of software applications in the Greek language is also a factor affecting the choice of assistive tools.
- There are no uniform ways to address people with visual impairment / disability. The varying degrees of blindness and the personal story of each individual, affect how they choose to navigate everyday tasks, as well as their choices for training and learning. Their attitude towards their disability may also affect how they navigate the situation.
- Braille is a prominent option for people who have been born blind or they have lost their vision early on, as it takes a lot of time and effort to learn at an older age. The availability of resources in Braille, make it a suitable choice for a variety of learning needs, but also for everyday tasks. For example, medicine packages also feature the information of the product in Braille.

- Braille machines are quite common, they are very resilient and strongly built, and although the design hasn't changed much since they were invented, they are still the primary means of producing written materials for the blind.

- Modern devices such as mobile devices and tablets/laptops/computers and various software applications, have provided great facilitation in everyday tasks and learning for the blind, and they keep becoming better and better, with more options and extensive customizations. Nonetheless, they remain dependent on electric power and -usually- the availability of an internet connection. Some language availability barriers still exist.

- Different needs arise in young people depending on their socioeconomic situation and the ability of their families to support them and advocate for them. Young people facing further challenges, in addition to their disability, may have further and/or different needs for support.
- Wider issues such as the lack of public transport, accessibility challenges, bureaucratic issues, and issues of legal and administrative nature may also affect the quality of life of people with visual disabilities and these issues require holistic interventions both by the government and the public.
- Despite the common background of visual disability, people remain individuals with their own preferences, personalities, traits, skills, and talents and the tools and methods they choose to employ can also be a matter of personal choice and preference.

- What works for come, may not work for all; so efforts should not be aimed at creating one solution for everyone, but rather remain flexible and adaptable to ensure that it can be customised as needed and when needed.
- Historical, social, and cultural elements may affect how societies embed prejudice and bias and how they can overcome them.
- Efforts to make any type of product/service accessible, should focus on the primary need the products/services are addressing and not the disability they are addressing. Disability should not be the focus, but rather accessibility should be an aspect of the design of the product/service.

Based on the feedback and inputs offered through the consultation process, SEAL CYPRUS decided to base the adaptation of the game on the following principles:

The adapted game should be addressed to all kinds of players, including people with visual disabilities ranging from the mildest impairment and up to legally defined blindness. The game should be adapted in a manner that would allow players to mingle and play, regardless of their level of sight, and ideally people who can see should be able to play the full game with people that face visual challenges. The mode of adaptation should not interfere with the principles and content that the original game has and should focus on the same environmental issues. The adapted game should be usable both by people employing braille as a reading method and by people relying on software and mobile applications for their reading needs. The mode of adaptation should not interfere with the usability of the various applications and tools that people with visual impairments use and no tailoring of further adjustment should be needed, when people choose to use those digital tools/applications in order to play the game.

More specifically, the following elements and principles were applied in the adaptation process:

Clear and Distinctive Components:

Ensure that game components have distinct shapes, textures, or sizes to make them easily identifiable by touch. Use different textures or embossing on cards or game pieces to represent different elements.

- Braille and Tactile Information:

Incorporate Braille on cards, game boards, and other written materials. Provide tactile information such as embossed symbols or textures on components to convey important details.

- Accessible Game Board Design:

  Design cards with large, clear print and high-contrast colours. Utilise tactile features like raised symbols or Braille to represent card information. Consider using card holders or organisers to help players organise and locate cards.

- Accessible Dice:

  Use larger, high-contrast dice with clear, tactile markings. Consider using dice towers or trays to contain rolls and prevent dice from being lost.

  Include audio instructions or cues to provide information about game status and actions. All the instructions of the game are printed on Braille as well as text in a format suitable for reading by mobile applications, and/or laptops and tablets.

- Adaptable Rules and Components:
  Design the game to be flexible, allowing for modifications based on individual needs. Provide alternate rules or components that accommodate different abilities. The game has been adapted as a full game and it has also been adapted as a shorter version of the game, in a country specific manner, to ensure its enjoyable, beneficial and playable

even with smaller groups and less available time. The game fosters open communication among players, encouraging them to verbally describe their moves and actions as they play the game.

The game was tested as part of the Cyprus multiplier event and positive feedback was received by faculty members with extensive experience, facilitators, students, and guests. The game was playable and easy to access both by people familiar with Braille and for people relying primarily on software/applications. The interactions were smooth and playability was not affected by having players use difference reading tools. All participants enjoyed the content and the insights it offered in relation to environmental challenges and climate change.

ANNEX

Aggregated questionnaire data

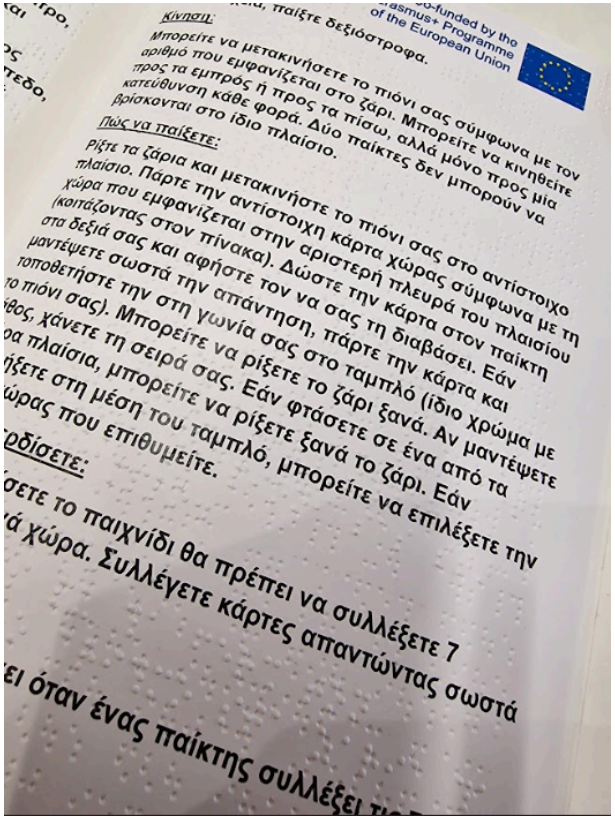
Q7	Do you have a smartphone? Choose one:	Total Number of Responders
	Yes – An Apple iPhone	29
	Yes – A Google phone	31
	Yes – A Microsoft (Cortana) phone	6
	No	1
Q8	**Which assistive tool do you prefer to access information?**	**Total Number of Responders**
	Magnifier	11
	Screen Readers	24
	Touch screen with voice over	33
	Computer with speech	25
	Computer with magnification software	20
	Braille device	6
	Other	0
Q9	**Which one do you prefer for reading?**	**Total Number of Responders**
	Computer with speech software	42
	Computer with magnification software	23
	I do not use any	1
Q10	**Which of the following settings would be a more suitable learning environment for you?**	Total Number of Responders
	A room with natural light	34
	A room where light is well distributed	28
	Other	6
Q11	**Which of the following devices do you use while walking?**	Total Number of Responders
	Long cane	28
	Symbol cane	7
	Guide cane	14
	Guide dog	5
	Having an adult assistant	18
	Telescopic device	1
	None of them	1
	Other	3
Q12	**Which screen reader software do you use?**	Total Number of Responders
	NVDA (Windows)	21
	Serotek System Access (Windows)	5
	Apple VoiceOver (OS X)	21
	ORCA (Linux)	4
	BRLTTY (Linux)	2
	Emacspeak (Linux)	1
	WebAnywhere	3
	Spoken Web (Internet Explorer)	1
	ChromeVox (Google Chrome)	3
	ChromeVis (Google Chrome)	1
	None of them	2

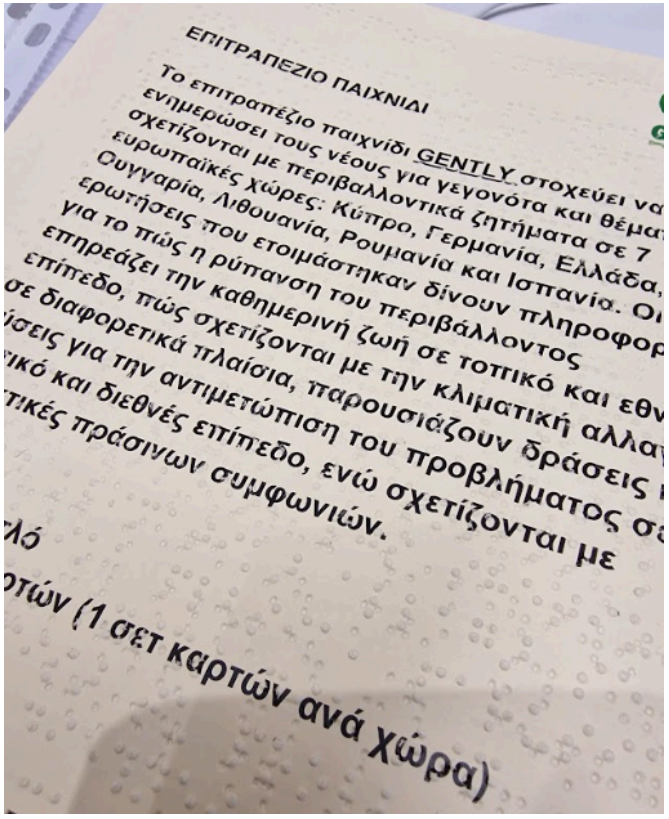
Q13	On a scale from 1 to 10, what is the biggest environmental challenge for humanity (1 – least important, 10 – most important)	Total Number of Responders
		10
	Waste	8
	Overpopulation	4
	Ocean pollution	8
	Global Warming	11
	Loss of biodiversity	6
	Lack of clean water	11
	Deforestation	12
	Air pollution	12
	Soil pollution	10
	Sound pollution	6
Q14	Have you adopted any eco-friendly habits?	
	Yes	
	No	
Q15	If so can you specify what habit yo adopted?	
	Use public transport more often	
	Reduce plastic packaging/Enhance the use of reusable packaging/Choose shopping from a packaging-free store	
	Use old things for longer/Buy less/Consume less	
	Buy organic and regional products	
	Recycling	
	Choose Eco-friendly and sustainable lighting	
	Choose sustainable options such as bamboo toothbrushes and cloth bags for shopping	
	Selective waste collection	
	Conserve water and electricity at home	
	Garbage disposal	
	Garbage sorting	
	Establish a neighborhood's garbage cleaning day every spring	
	Composting at home	
	Share used items	
Q16	Name three actions that young people can take to help the environment	
	Recycling	
	Reduce consumption	
	Use public transport	
	Choose products with environmentally friendly packaging	
	Conserve water and electricity at home	
	Prefer regional products	
	Consume less	
	Garbage sorting	
	Raise awareness through education	
	Composting at home	
	Tree-planting	
	Reduce paper use as much as possible	

Q17	On a scale from 1-5, how clean is the neighbourhood you live in? (1-less clean, 5-most clean)	
		1
		2
		3
		4
		5
Q18	**Do you recycle?**	
	Yes	
	No	
	Sometimes	
Q19	**If yes, which material do you recycle the most?**	
	Paper & Cardboard	
	Metal	
	Glass	
	Plastic	
	Battery	
	Organic (Food waste)	
Q20	**Are you familiar with the European Commission's European Green Deal?**	
	Yes	
	No	
Q21	**On a scale from 1 – 8, which is the most important provision of the European Green Deal? (1 – least important, 8 – most important)**	
	Fresh air, clean water, healthy soil and biodiversity	
	Energy-efficient building	
	Healthy and affordable food	
	More public transport	
	Cleaner energy	
	Longer lasting products that can be recycled and re-used	
	Future-proof jobs and skills training for the transition	
	Globally competitive and resilient industry	
Q22	**Do you believe that the European Green Deal's goal to reduce net greenhouse gas emissions by at least 55% by 2030 is attainable?**	
	Strongly disagree	
	Disagree	
	Somewhat disagree	
	Neither agree nor disagree	
	Somewhat agree	
	Agree	

Q23	**Do you believe that Europe will become the first climate-neutral continent by 2050?**
	Strongly disagree
	Disagree
	Somewhat disagree
	Neither agree nor disagree
	Somewhat agree
	Agree
	Don't want to answer
Q24	**How serious do you think is the problem of climate change?**
	Very serious
	Serious
	Fairly serious
	Not serious
Q25	**Which of the following actors do you think is more responsible for tackling climate change within the EU?**
	National governments
	The European Union institutions
	Regional and local authorities
	Business and Industry
	You personally
	Environmental groups
Q26	**Have you personally taken any action to fight climate change over the past six months**
	Yes
	No
	Don't know
Q27	**Which of the following actions, if any, apply to you?**
	I try to reduce my waste and I regularly separate it for recycling.
	I try to cut down on my consumption of disposable items whenever I can (e.g. supermarket plastic bags, excessive packaging).
	When buying a new household appliance (e.g. fridge, TV) consumption is an important factor in my choice.
	I buy and eat more organic food.
	I buy and eat less meat.
	I have installed solar panels in my home.
	I have a low-energy home.
	I have bought an electric car
	None of the above
Q28	**Which environmentally-friendly alternative do you use instead of your private car?**
	Walking
	Cycling
	Taking public transport
	Car-sharing
Q29	**Do you consider the carbon footprint of your transport when planning your holiday and other longer distance travel and adapt your plans accordingly?**
	Yes
	No

Game materials for visually impaired





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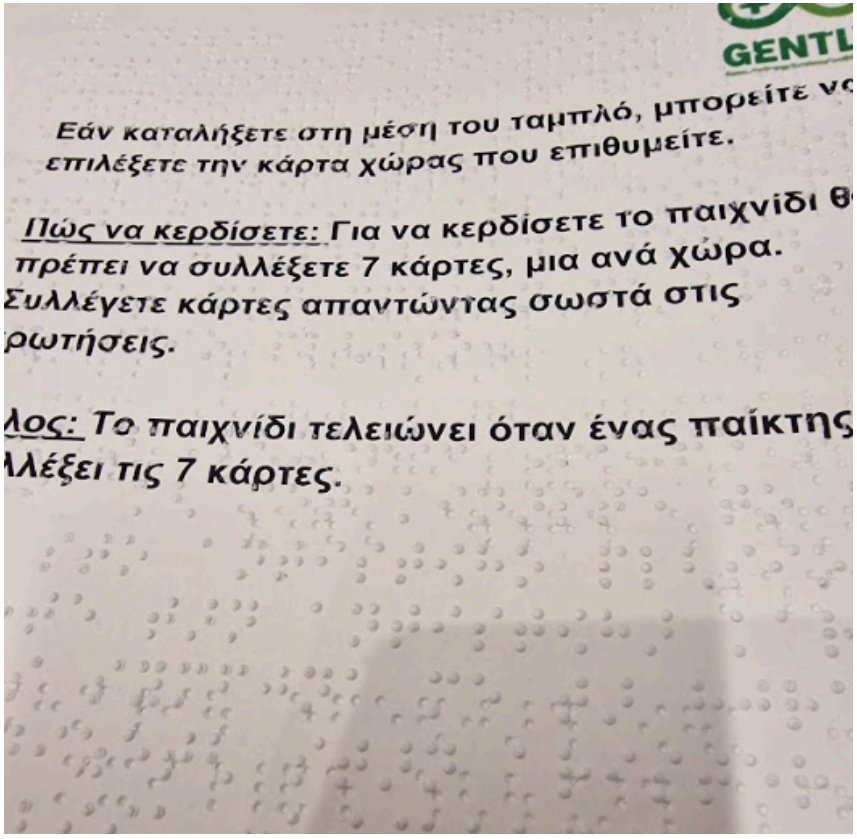

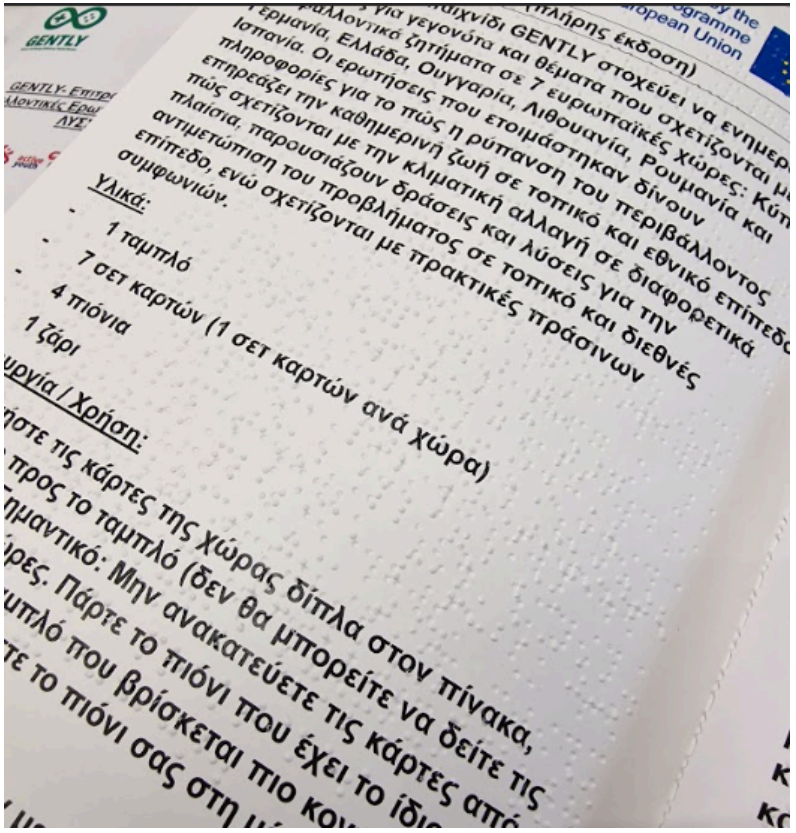


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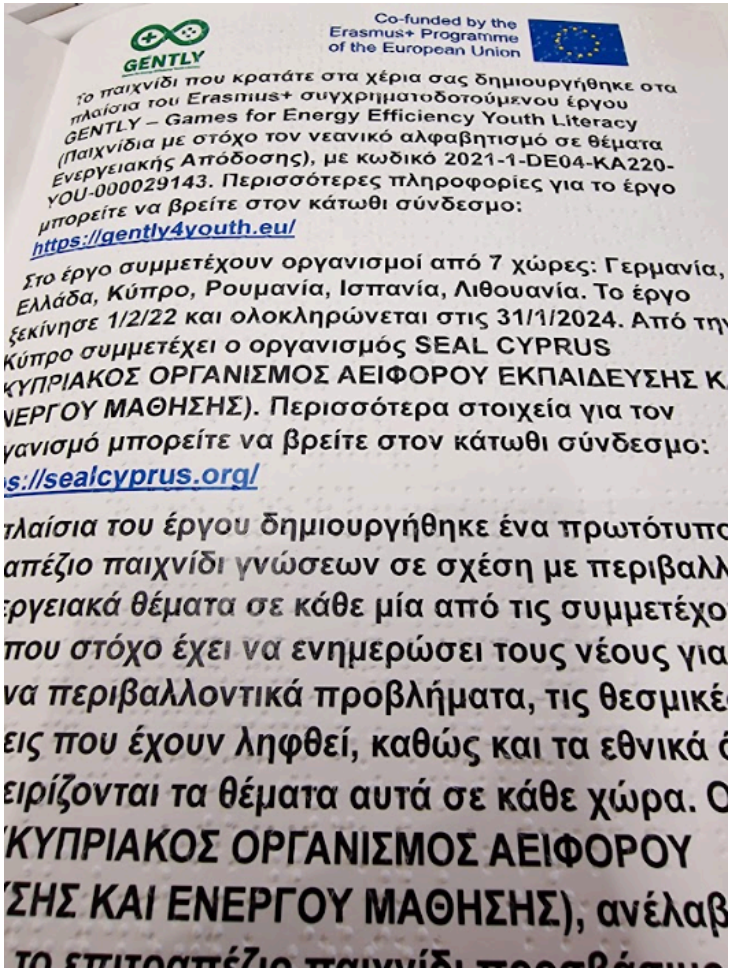

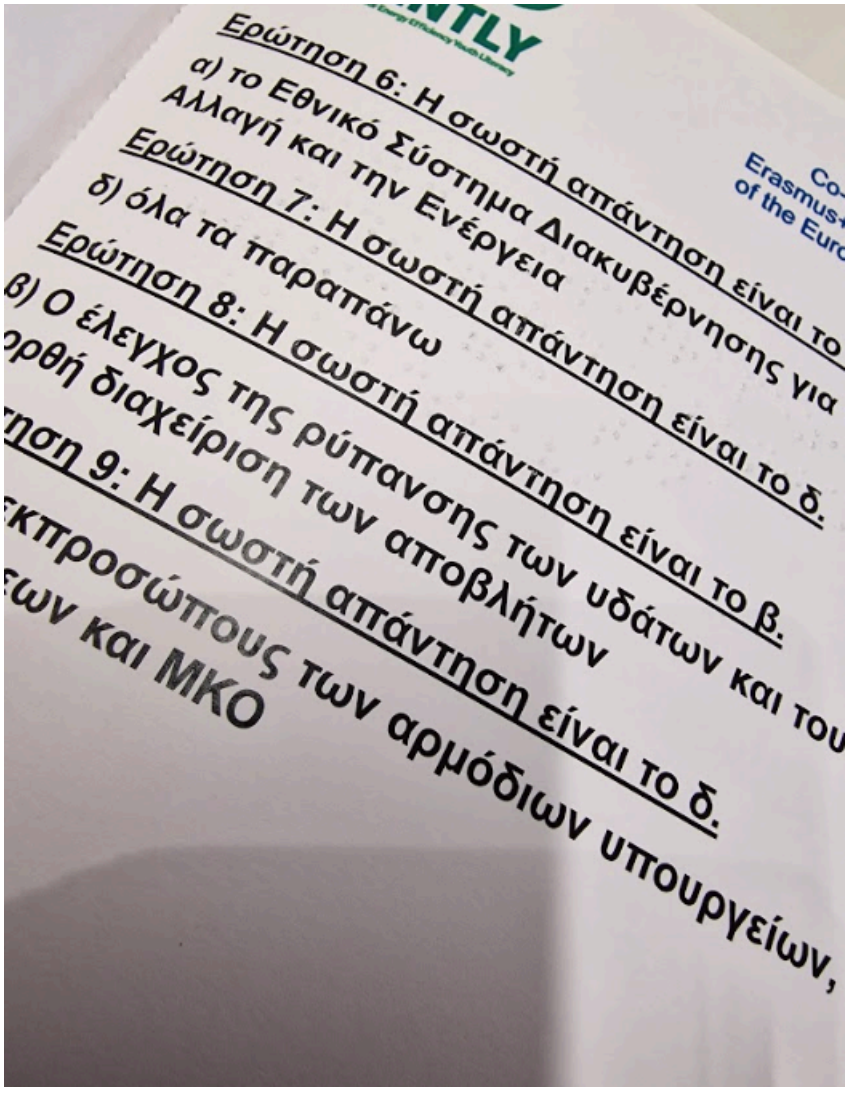
Ερώτηση 6: Η σωστή απάντηση είναι το
α) το Εθνικό Σύστημα Διακυβέρνησης για
Αλλαγή και την Ενέργεια
Ερώτηση 7: Η σωστή απάντηση είναι το δ.
δ) όλα τα παραπάνω
Ερώτηση 8: Η σωστή απάντηση είναι το β.
β) Ο έλεγχος της ρύπανσης των υδάτων και του
ορθή διαχείριση των αποβλήτων
ηση 9: Η σωστή απάντηση είναι το δ.
κπροσώπους των αρμόδιων υπουργείων,
ων και ΜΚΟ