CECIL GUIDE

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CECIL

CECIL GUIDE This guide is edited in the frame of the Erasmus+ KA2-coorperation Partnership for adult educatoin - Circular economy education for the social inclusion of Women- CECIL (2021-1-PT01-KA220-000026125) by Mine Vaganti NGO.

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Introduction

1.1. The Project

CECIL – "Circular economy education for the social inclusion of Women" is a 24-month cooperation partnership project funded by the EU Commission in the framework of the Erasmus+ Programme. The project is thought to promote Circular Economy and Sustainability among women at risk of exclusion, by fostering a greater interaction between the European Green Deal and the EU Gender Equality Strategy 2020-2025. In particular, the project aims to provide Adult Educators and trainers with skills, competencies, and tools to engage women at risk of exclusion (35-45) and/or who did not complete their studies in order to create upskilling pathways for them, increasing their take-up of new adult education opportunities in the field of circular economy and sustainability.

In order to reach its core aim, the project has identified the following **specific objectives**:
- providing Adult Educators and trainers with skills, competences and tools to engage women at risk of exclusion (35-45) and / or who did not complete their studies;
- creating upskilling pathways for women at risk of exclusion (35-45) and / or who did not complete their studies, and increase their take-up of new adult education opportunities in the field of circular economy and sustainability.

As stated in the European Skills Agenda, the green and digital transitions are reshaping the way we live, work and interact. The EU's move to a resource-efficient, circular, digitised and climate neutral economy are expected to create new jobs, while other jobs will change or even disappear. For these reasons, it calls for actions that support the twin transitions and that ensure that people have the right skills for jobs. At the same time, as the EU Gender Equality underlines, "gender equality brings more jobs and higher productivity – a potential which needs to be realised as we embrace the green and digital transitions and face up to our demographic challenges". In addition, the situation of women in the labour market is far from homogenous and inequalities are even wider amongst groups of women in disadvantaged or vulnerable situations. In this context, a greater promotion is needed of the positive social impacts that Circular Economy (CE) can have on Adults at risk of exclusion, and on women in particular. In fact, CE can foster not only employability but also social inclusion, by promoting a greater sense of social justice and social equity within the greater framework of sustainable development, satisfying the needs of present and future generations (Padilla-Rivera, 2020).

Partners are expecting a set of tangible and intangible result to have matured by the end of the 24 months of the present cooperation.

Tangible results:
1. **R1 – CECIL Guide**, a practical resource for Adult Educators and Adult Education Institutions regarding tools and methodologies to foster Circular Economy and Sustainability within their organisations and in their work with the target group and beyond. A Training Format employing the tinkering methodology in

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synergy with NFE methods will be included, as a practical resource for direct application of said methods in future trainings or in the daily life of organisations. The TF will be based on the findings of a transnational research (which final report will be included in R1) identifying the needs and barriers, and societal exclusion factors of women at risk of exclusion, and the existing offer in the frame of Circular Economy Education and Plastic Craftwork.

2. **R2 - CECIL Interactive Toolkit,** developed through a co-design process between the Adult Educators involved in the C1 and partner organizations, as a set of guidelines, workshops and video tutorials on tinkering and Non-Formal education activities fostering Circular Economy.

3. **R3 - CECIL Practitioners Network**, developed around a web-platform, conceived as a comprehensive tool to foster Plastic Circular Economy through Recycled art/Craftwork and comprising a resources section for users approaching the field of Circular Economy and re-cycled art/craftworks, and a forum section where users / practitioners can exchange tutorials for Plastic Craftwork including information on the amount of waste avoided.

The innovative elements put forth by the project pertain mainly to the mix of methodologies and approaches employed to address the needs of the target groups with regard to the project topics. CECIL foresees the production of a comprehensive format based on a pedagogical learning process made by joining efficient and practical methodologies such as the innovative tinkering methodology and NFE methods to transfer to the target group competences and knowledge on Circular Economy Education and Plastic Craftwork, As stated by Sarsam article on EPALEand "Tinkering EU: Addressing the Adults" (Harris et al., 2020), tinkering is an innovative approach to learning increasingly adopted within informal learning settings to engage people with STEM learning. It is a hands-on, minds-on approach in which the learner takes control of their own learning and is given time, space and opportunity to think with their hands, and to design and test ideas in an iterative way. Additionally, the co-design approach in the development of the project results enables participants to make a creative contribution to the formulation and solution of a problem. This approach goes beyond consultation by building and deepening equal collaboration between citizens attempting to resolve a particular challenge.

According to the European Parliament, circular economy is "a model of production and consumption, which involves sharing, leasing, reusing, repairing, refurbishing and recycling existing materials and products as long as possible. In this way, the life cycle of products is extended. In practice, it implies reducing waste to a minimum. When a product reaches the end of its life, its materials are kept within the economy wherever possible. These can be productively used again and again, thereby creating further value. This is a departure from the traditional, linear economic model, which is based on a take-make-consume-throw away pattern." Always according to the EU parliament, this business and consumption model has great benefits regarding, both the environment and the economy. In fact, circular economy measures (which can be related to waste prevention, ecodesign and re-use) have impacts on EU companies savings and on the reduction of total annual greenhouse gas emissions (giving that the production of materials we use every day account for 45% of the global CO2 emissions).

According to the European Commission, one of the policy activities outlined in the European Green Deal as a catalyst to encourage learning about environmental sustainability in the European Union is the creation of an "European sustainability competence framework". To support students in acquiring information, skills, and attitudes that encourage ways to think, plan, and act with empathy, responsibility, and care for our planet and for public health, GreenComp specifies a set of sustainable competences to feed into educational programs. The competences GreenComp aims to indicate to European citizens to oppose to climate change

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are in the areas of: embodying sustainable values, embracing complexity in sustainability, envisioning sustainable future, acting for sustainability. The first area deals with the reflection on personal values, identifying and explaining how different cultural values can be align with sustainability values and promoting the respect of nature. The second area of the GreenComp encourage people to reflect on the complexity of sustainability in order to think it in a critical way, finding feasible solutions. The third part is the capability to see alternative sustainable futures by imagining and developing alternative scenarios, identifying the steps needed to achieve a sustainable future. This consciousness has a vital importance in thinking about adaptable ways of living and in finding new solutions from synergies. The last part of GreenComp deals with undertaking practical actions in our every-day life to live in a more sustainable way such as, doing advocacy actions, finding responsibilities and ask for changes.

21st Century skills are 12 abilities that today's people need to succeed in their careers, especially in the digital area. They are: Critical thinking, Creativity, Collaboration, Communication (learning skills), Information literacy, Media literacy, Technology literacy (literacy skills), flexibility, Leadership, Initiative, Productivity and social skills (life skills). Generally speaking, 21st century skills can be applied in all academic subject areas, and in all educational, career, and civic settings throughout a student's life. It should be noted that the term "21st century talents" refers to a broad collection of information and abilities that are difficult to describe and that have not been formally codified or organized.

21st century skills	Opportunities that Tinkering experiences provide for developing these skills
Creativity and divergent thinking	• Using a wide range of idea creation techniques e.g. planning, sketching, brainstorming. • Developing unique strategies, tools, objects or outcomes. • Creating new ways to use materials or tools. • Setting personal long and short-term goals and planning ways to achieve these.
Ingenuity, inventiveness, innovativeness	• Using or modifying others' ideas or strategies to create something new. • Demonstrating originality and inventiveness. • Understanding and experiencing real world limits to new ideas and goals. • Coming up with novel solutions and possibilities when faced with problems or obstacles.

Figure 2 [illegible] **nework**

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1.2. The Guide

The **CECIL Guide** is a guide created for adult educators and organizations working with adult education. It encompasses practical resources, i.e. tools and methodologies on how to foster Circular Economy and Sustainability within their institutions, the work with women at risk of social exclusion and beyond.

The CECIL guide is supposed to depict an instrument of general applicability across countries and sectors, to be integrated in existing programmes of educational/social support to women at risk of exclusion.

The CECIL guide will include the following aspects with the following structure:

1. **Transnational research**, which
    a. shows maps of field stakeholders at partners national level
    b. identifies educational needs and barriers (regarding skills and struggles to be overcome) as well as social exclusion factors of women at risk of exclusion (35-45)
    c. analyses existing offers and good practices at national and European level regarding tinkering methodology, circular economy education and plastic craftwork methodologies, and other non-formal education methodologies
    d. detailed explanation of the identified methodologies and their replicability in activities involving the target group
    e. will be presented in a final report
2. **Training Format** which is based on the findings of transnational research and includes a tinkering methodology in synergy with non formal education methods as a practical resource for direct application of the methods in future training/ daily life of organization.

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PART I: Transnational Research

A. Survey

a. Methodology of survey on stakeholders and women

The objective of the CECIL survey was to identify educational needs and barriers regarding skills and struggles to be overcome as well as factors of social exclusion for women at risk of it, thereby providing a base for the Training Format to be developed. The survey was conducted with stakeholders as well as women at risk of exclusion (women at the age of 35-45 years and/or who have not completed their studies). Additionally, it took into account that some characteristics (e.g., ethnicity, immigration status, disability) can intersect and interact and put women at a higher risk of social exclusion as per intersectional theory[1], which is why these factors were considered in the questionnaire.

The questionnaires were distributed during March/April 2022 through existing networks, platforms and contacts of the partner organisation. The survey was conducted online through a questionnaire due to the easier data processing of online results as well as the situation of the COVID-19 pandemic. To ensure the possibility of country comparisons, all countries used the same questionnaires, which were firstly created in English but for the data collection translated into the respective languages. The quality of the questionnaire was confirmed through a feedback process by all partners before submitting the final version to the target groups. It consisted of mainly closed-ended questions (using a scale from 1-not at all to 5-completely), and only included some open-ended questions for the specification of key questions. This methodology ensured a valid and feasible data analysis throughout the different countries facilitating their comparison. The fact that none of the questions in the questionnaire was mandatory to answer for the participants, in some parts/countries, there is data missing.

Considering the two different target groups, two different questionnaires were developed helping to assess the needs, barriers and factors both from an individual as well as a professional level. Their specifics are described in the following table. The full questionnaires can be found in the annex.

	Questionnaire 1	**Questionnaire 2**

[1]See for example Kantola, J., & Nousiainen, K. (2009). Institutionalising Intersectionality in Europe. *International Feminist Journal of Politics*, *11*(4), 459-477. DOI: 10.1080/14616740903237426

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Target group	**Women** at risk of social exclusion (i.e. women between the ages of 35-45 and/or who have not completed their (compulsory or higher qualification) studies)	**Stakeholders** (i.e. adult educators, adult education providers and education and training providers) working with the target group
Total n° of questions	36 questions	22 questions
Blocks	**Socio-demographics (9 questions)**: assessing the participant's background and reasons (factors) of being at risk of social exclusion through info on person, educational background and employment situation	**Information about stakeholder (8 questions)**: assessing type of work/organisation and their offer
	Previous educational experiences, barriers, perceptions (15 questions): assessing accessibility of information about courses, motivation and interests in it, perception of usefulness/relevance and barriers (external and internal) and relevant skills	**Educational needs and barriers for women (6 questions)**: assessing educational needs and barriers of women and solutions/measures to solve these
	Questions around CECIL thematic and course (12 questions): assessing knowledge and interest in CECIL topics (sustainability, circular economy, crafting, co-design) and in CECIL course	**Questions around the CECIL thematic and course (8 questions)**: assessing applicability and relevance of CECIL topics and course
Participants	**Total: 81** Greece: 21 Italy: 20 Portugal: 20 Sweden: 20	**Total 81** Greece: 20 Italy: 20 Portugal: 21 Sweden: 20

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b. Results and analysis of the survey

i. Results of womens' survey

The following text will present the results of the survey conducted with women. Each aspect includes a summary of the result in a cross-consortium approach, comparing the four partnership countries Greece, Portugal, Sweden and Italy, followed by short separate analysis per country.

Socio-demographics of the women's survey

Cross-consortium - With regards to the first questionnaire directed at women themselves, data was collected from four different countries, resulting in 81 European participants. Their age ranged from 14-51 years, with the overall average being 36 years. While in Italy the majority of respondents did belong to a disadvantaged group, in the rest of the countries the majority indicated not to. Moreover, in most of the countries, besides Greece, the majority of women lived with their parents/siblings. The majority of participants were working (in a permanent or temporary contract), but some of the participants also indicated to be unemployed or students. Overall, the vast majority of the survey's participants had finished at least secondary education or university, with the lowest levels of educational background being present in the Greek sample. In terms of experiences with VET, it varied between countries, being particularly high in Italy, followed by Greece and Portugal and non-existent in Sweden.

In **Greece**, women who participated in the survey had an average age of 39 years, ranging from 35-45. They were mostly located in the region of Larisa and Volos, some in Athens, Thessaloniki, Ioannina and Patras. Most of respondents had indicated to be unmarried (48%), 24% as married. With the great majority of the respondents being married, interestingly a small percentage of 19% has children and 10% prefer not to answer. Most of the women who responded to the questionnaire live alone (29%) or with their children or with their partner (24% each). A smaller percentage live with their parents while 4% prefer not to answer. In terms of educational background,19% of the women have a University degree while only 10% have finished their primary education, 38% the secondary education and another 33% indicated to have not completed university studies. These data are displaying the low percentage of women in accomplishing and finalising all educational levels (university degree etc.), Moverover, the data showed that most of the women did not participate in any training while only 20% participated in adult education courses. Some of the courses that were done in the last 5 years were on Digital Marketing, Photography, Computers, Creative writing (Poetry), and Management-Women Entrepreneurship. The majority of the women who participated in the survey were either unemployed or working part time.

In **Italy**, the age range of the participants went from 28 to 51 with an average of 39 and with participants from different regions of Italy, but most of them were from Sardinia (38%). 45% of respondents were in a relationship, 20% were single, 15% were married, 15% had children and the remaining 5% preferred

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not to reply to this question. The majority of respondents (35%) live with partners/siblings, 30% with their children and only 15% of respondents live alone. The great majority of respondents (60%) belonged to a disadvantaged group. Regarding the education levels, 35% of women who responded had finished secondary education and 20% finished the education at a University level. On the other hand, the women that did not finish secondary education or university education were respectively 10% and 20%. 5% of respondents stated they finished an educational level through adult education opportunities and 65% had participated in VET. As concerns the working situation, nearly half (45%) of the participants said they are working on a temporary job, while the rest stated they are working without a permanent contract (25%), are not employed (15%) or are helping with the family business (15%). The rest of the participants were housewives, "working with a contract", studying, or self-employed.

In **Portugal**, the average age of participants was 39 years ranging from 35-45. The majority of participants lived in Viseu (70%) and 55% of the participants were married; 35% indicated to have children. 55% lived with their children and the same percentage lived with their partner. 70% didn't belong to a disadvantaged group, however, 15% did – 2 being Romani and the other unemployed, without any type of financial support. Regarding educational and professional information, 55% of respondents reported having a permanent contract and 30% were unemployed. 35% had higher education (50% of the participants have attended higher education for more than 4 years), 30% had secondary education and 15% had incomplete primary/basic education. 80% did not obtain schooling through adult education opportunities; 63% did not participate in any form of vocational education/training and 26% participated. 30% of women who reported having undergone professional training spent more than 2 years in total. The most identified training courses in the last 5 years were: Excel, Word, PowerPoint, and English.

In **Sweden**, the age range went from 14 to 50 and the average was 35 years. All Swedish participants were from the Skåne region but only some lived in Lund (47%). More than half (55%) of them were single, another 38.9% were married and the remaining 5.6% preferred not to reply to this question. Subsequently, most of the women lived with partners/siblings (57.9%), only 15.8% alone and 31.6% the people lived with the partner. Whilst none stated belonging to any disadvantaged group, 30% preferred not to say. Of all participants, the educational background was at least a started secondary education. In particular, 10% finished secondary education and 45% finished the education at a University level. On the other hand, the women that did not finish secondary education or university education were respectively 20% and 30%. None had finished an educational level through adult education opportunities and had not participated in any VET either. 15% of the participants indicated to have studied 4 years at University. No participant had taken any course in the past 5 years. In terms of the working situation, half (50%) of the participants were students, while the rest of the majority was working with a permanent contract (30%), 10% of the participants were self-employed. The rest of the participants were "working in temporary employment", or "Helping with the family business", or "have no contract", or "are unemployed", or "are unfit for working/retired", respectively 5% per each category.

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Accessibility and information about training and courses

Cross-consortium - Regarding the accessibility and information about training courses offered in the different countries, a clear picture that was similar in all countries could be identified

- the vast majority of participants found it difficult to find information about training offers;
- most of the survey participants lacked awareness on the training courses available in their region (in all countries but Sweden);
- the access and enrollment to courses was perceived as rather easy in Portugal and Sweden, but rather difficult in Greece and Italy;
- the existing offer was perceived as sufficient and adequate only by most Swedish participants, half of Italian participants and only few Portuguese participants;
- most courses are offered during a normal working day in each country;
- the most common modality is a blended learning approach.

In **Greece**, the big majority of the women are not at all aware about the available training courses in their region (90%) and found it difficult to find information about courses and training offers. Half of them as well perceived it difficult to enrol in a course. Moreover, the vast majority of courses were indicated to be offered through a blended approach.

In **Italy**, half of the participants felt sufficiently informed about courses in their region, while the other half was not so sure. The majority indicated to find it difficult to find information on courses, and half and half perceived the offer as sufficient. Applying for and accessing courses however was mostly perceived as difficult instead of easy. The majority of women perceived it as difficult to apply and access courses. Most participants did not know when courses were usually held or they were held during the normal working day. The most common modality was blended.

In the **Portuguese** survey, there was little awareness regarding available training courses, and only half of the participants found it easy to find information. The majority of participants did not perceive the training offer as adequate, however it seemed to be rather easy for them to enrol and access a course. Most participants did not know the time of the majority of courses offered, but 40% responded that it is during a normal working day. The usual modality of the courses was not known to the majority of participants.

In **Sweden**, the majority of participants indicated to be sufficiently informed about training courses in their area, but on the other hand 65% of the respondents did not find it easy to find information on the courses. The existing offer was perceived as sufficient by the big majority of participants as well as most of the respondents found it at least somewhat easy to access courses. Regarding the frame of the courses, the vast majority of them took place during the 'normal' working day and were offered in a blended modality.

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Interest and motivation in courses and training

Cross-consortium - In all countries, the main driver for attending courses was of a professional nature, i.e. to improve qualification and skills and/or to get a job. Personal interest in the topic was also a factor but most often not as important. Other factors like occupying free time or socialising with other people were less common motivations for courses. In terms of interest and willingness to take part in courses, it could be identified that answers varied between countries: while in Portugal women were rather not interested and only 45% willing to take a course, in Italy and Sweden the big majority of participants was both interested and willing to attend training courses (no data available for Greece).

In **Greece** the main motivation of participants to attend courses was to improve their qualifications and skills (48%), to socialise with other people (28%) and to help themselves to get a job (24%).

In **Italy**, most participants were rather interested in the offered courses, but nonetheless 31.2% did indicate not (really) to be so. Regarding the willingness to attend the course even if it was not feasible 80% replied that they were willing to do it. The most common motivation to start or continue the training was to find a job, while 30% did so to improve their employment opportunities while 70% replied negatively to the same question.

In **Portugal**, in terms of interest and motivation, the majority of women who answered the questionnaire were rather uninterested in the offered training courses, nor willing to do training courses regardless of its feasibility - nevertheless, 45% were. Most women's motivation to start/continue education/training was getting a job or improving qualifications and skills. For half of the participants, interest was also a main factor.

In **Sweden**, the big majority of participants was rather interested in the offered courses with 85% of them willing to attend a course regardless of its feasibility. The motivation to start or continue a training was most often to improve my qualifications and skills, but also interest, and to get a job or to occupy free time were common reasons. 78,9% of the respondents had enrolled in some courses to improve their employment opportunities.

Perception of relevance/usefulness/barriers of training and courses

Cross-consortium - In the four partner countries where the surveys were conducted, there was an overlap in terms of barriers women indicated to face when attending training and courses. Most often, a lack of information about the courses as well as their costs were hindering women to participate in them. In Greece and Italy, the inconvenient location of the courses were another important barrier that could be identified, while in Portugal and Sweden, the incompatibility of the training schedule with their own professional activity was mentioned often. Only in Sweden, language and communication issues were mentioned often as a barrier to attend courses. In terms of the topics of courses that women had attended already, the most common area was the one of

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Business, Administration and Tourism. In all examined countries but Sweden, most women however did not very much perceive that the courses they had attended helped them to find a job afterwards.

In **Greece**, the main barrier that women at risk of exclusion encountered when wanting to enrol to a course was the lack of information about the courses (24%) and their cost (27%). In addition, the existence of excessive levels of bureaucracy (20%) and inconvenient locations constitute factors that have been repeatedly reported from out targeted audiences (too far from home, etc.) (17%). Regarding preferred areas of thematics of courses, Tourism and Business and Administration were most common (24% each). This is due to their correlation and boom in Greece, given its geographical location (especially tourism). Other responses centred on Business Management, Technology, Clerk, Sales and Customer Service as well as Information Management. Regarding the perception of efficacy of courses, women did not feel like the courses helped them find a job as they were not adapted to the modern requirements and they were not very specialised.

In **Italy**, the main barriers for the participation in the courses offered was a lack of information about the courses available, followed by the inconvenient location of the courses and the costs to attend them. While the most participants did not yet attend any course, those who had indicated them to be mainly in the field of Tourism, followed by courses on Office work. 53% of participants however did not perceive these courses had helped the participants obtain a better job, while 47% did so.

In **Portugal**, the main barriers identified by the participants were lack of information about training (32%) and the incompatibility of training calendar/time with their professional activity (26%). Women who had already taken courses, these were mostly in the area of teaching professionals or child education and care. About 70% of participants indicated that the training courses did not help to improve or to get a job, and only 30% indicated that it did. People who responded that it didn't help, justified that they did not feel impact or change.

The **Swedish** participants indicated that the main barriers for attending training was the incompatibility of training calendar/time with their professional activity (70%), while language and communication issues were also pertinent (60%). Other common reasons were the inconvenience of the location of the course or their inappropriateness to the participants' needs (55% each) (this finding contradicts the earlier results that the offer is highly appropriate, but may be explained by the fact that participants meant inappropriate in a way of not being necessary for them as they do not need it or as inappropriate due to the incompatibility with their calendar). For half of the participants, taking part in a course went along with too much bureaucracy and with too high costs.

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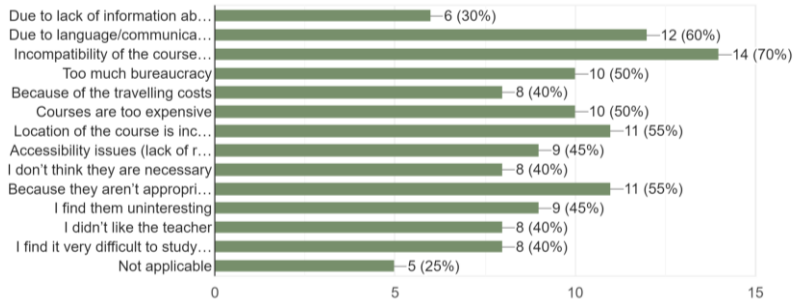

(Sweden) Which barriers did you encounter preventing you from participating in a course?

In terms of the topics of courses that participants had already attended, the majority responded with Business and administration. Other courses, which were however less popular (26.3%), were Business management, Technology, Manufacturing industry and Agriculture, farming and fishing. When asked whether attending such courses helped the participants obtain a better job 95% gave a positive answer.

Previously addressed skills

Cross-consortium - The skills mostly addressed in the previous educational path of the participants varied strongly between countries. While the Ability to adapt to new situations was present in all countries, only in Greece and Portugal the skills of innovation and creativity were mentioned often. Critical thinking was highly relevant in Greece and Sweden, but not in the other countries. At the same time, only in Italy the skill of Oral and Written Communication was most often mentioned in Italy and also pertinent in Sweden, but only very scarcely perceived to be addressed in Greece and Portugal. Only in Sweden, Conflict management was indicated to be focused on often, while only in Portugal, Innovation and creativity achieved high numbers of answers. It could further be identified that just in Sweden, participants indicated that skills related to the digital and technological era like IT skills or Information management were addressed in women's educational path. None of the countries had high levels of answers in the skills of Autonomous learning, Self-confidence, and Decision management.

In **Greece**, the skills that women perceived to be mostly tackled throughout their educational paths were the ones of mostly Critical Thinking and Responsibility (48% each) as well as Teamwork (38%), Planning and time management, and the Ability to adapt to new situations (29% each).

In the **Italian** sample, participants indicated that mainly Oral and written communication (50%) was addressed as a skill in the educational path, followed by Responsibility (30%).

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In **Portugal,** the skills most addressed by training and education were the Ability to adapt to new situations, and Innovation and creativity (both 66,7%), followed by Teamwork, Responsibility and Self-confidence (33.3% each).

In **Sweden**, the skills that were acquired in the past course were centred around Conflict management (75%), Critical thinking, IT skills and the Ability to adapt to new situations (70% each), as well as Information Management (65%). Oral and written communication, Initiative and entrepreneurship, and Teamwork also depicted skills that were often tackled (60% each).

Questions around CECIL thematic and course offer

Interest/knowledge in CECIL topics (sustainability, circular economy, crafting, co-design)

Cross-consortium - The knowledge and interest in the different topics addressed by CECIL varied among participants. Most participants indicated to be interested in the topics of circular economy and sustainability as well as in crafting. While in Italy interest was higher in the latter, in all other countries the opposite pattern occurred. In both Greece and Portugal, the methodologies of tinkering and co/design were rather unknown, but the interest in such courses was also rather low. This stood in contrast with the data from Sweden and Italy, where participants were rather familiar with both methodologies. However, a strong interest in attending courses on these two topics was only present in Italy, while in both Sweden and Italy there was more interest in co-design than in tinkering and in Portugal no interest in either due to the lack of knowledge of what it was. In terms of previous knowledge in the topics, sustainability and crafting was highly present in all countries, while it could be noticed that especially the aspects of circular economy, how circular economy businesses work and which examples there are for such businesses were rather low across countries. Nonetheless, there were differences in terms of the applicability of sustainability in everyday life, which was very high in Italy and Sweden, but rather low in Portugal and Greece. Taking into consideration the present data, it could be concluded that both the Swedish and Italian participants showed higher knowledge and understanding of the CECIL topics than did the participants from Greece and Portugal. Finally, in all countries, the majority of participants had at least somewhat previous experiences crafting with different materials, including plastic.

In **Greece**, 48% of the participants were completely interested in the topic of sustainability and circular economy, and 38% were interested in learning about crafting. While none of the women was familiar with the topic of tinkering, only 20% were familiar with the concept of co-design. In terms of specific aspects of such courses, it could be observed that women were mainly familiar with what circular economy and sustainability is, with recycling and upcycling processes as well as with composting. Less was known how to include sustainability in everyday life or examples of circular economy business.

In **Italy**, 90% of the participants replied that they were rather interested in the topic of sustainability as much as in crafting (95%). Recycling and upcycling processes were highly familiar among the Italian participants, while also the inclusion of sustainability in everyday life and what it is were known by the majority of women. Less familiar topics were those of examples of circular economy businesses and how circular economy businesses work, as well as the concept of composting. The most common material that women indicated to be familiar crafting with was plastic (45%), followed by paper/cardboard. While the concept

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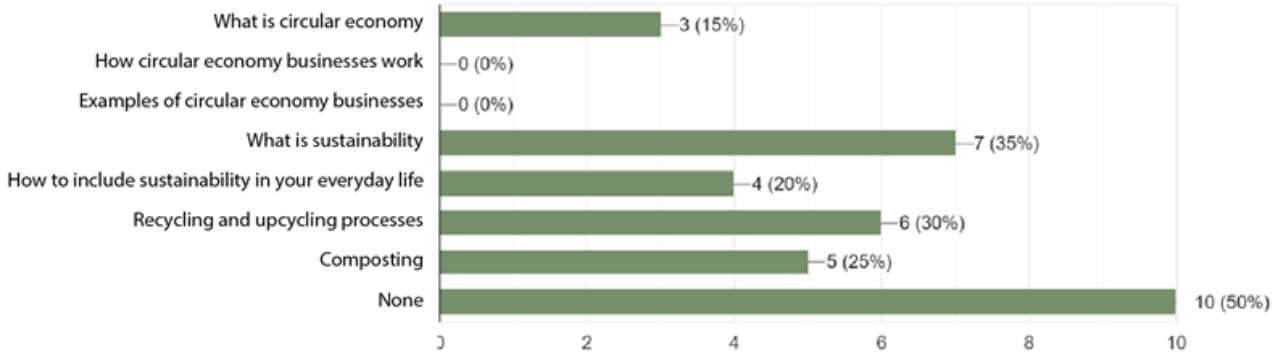
of tinkering was not very known among many of the participants (75%), only 10% really knew about it. 85% participants indicated to be likely interested in a course about this concept. In contrast to that, the concept of co-design was rather clear for the majority of women who participated, however still 40% were not so familiar with it. Therefore 75% of the women replied to be interested in a course on it.

In **Portugal**, the majority of participants were interested in topics of sustainability and circular economy as well as in learning something about crafting. Half of the participants however were not familiar with any aspect of circular economy and sustainability, 35% knew what sustainability is, and only 15% knew what circular economy is while none of them knew about how circular economy businesses work or examples of such. In terms of previous experiences with crafting, fabric materials were mostly mentioned, followed by plastic.



Regarding the concept and methodology of tinkering and co-design, similar patterns could be identified for both topics: the vast majority of respondents was not familiar with the concepts, did not know what it is and was also not interested in a course that would apply such methodologies.

In **Sweden**, the big majority of participants replied to be rather interested in the topic of sustainability and circular economy (84%), while the topic of crafting did not elicit strong interest in many participants (75% not so interested). Most women who answered the questionnaire indicated to be familiar with examples of circular economy and the concept of sustainability, as well as how to include it into their everyday lives. Still more than half of the sample also knew about recycling and upcycling processes. Composting, circular economy business and the concept of circular economy however were only known by few participants.

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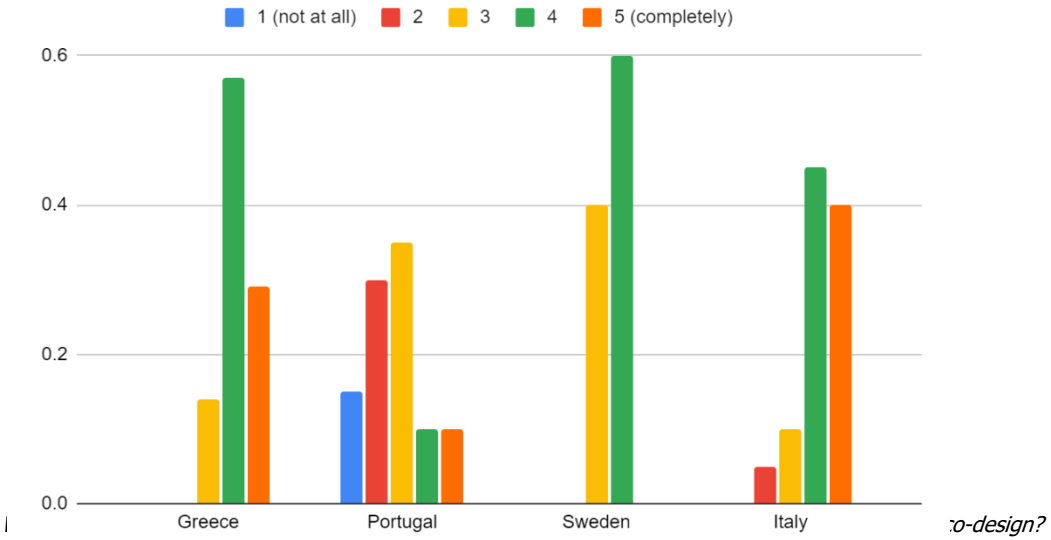
When asked what materials they had been crafting, each material (plastic, fabric, metal, wood, paper/cardboard) was indicated to be familiar by more than 80%. For both co-design and tinkering methodologies, the majority of participants (75%) was at least somewhat knowledgeable about these concepts, with only 10% vaguely familiar with tinkering and 20% with co-design. In terms of interest in courses on these approaches, however, only 30% would be interested in tinkering and 55% in co-design.

Interest in CECIL course

Cross-consortium - The final question concerned the interest in and relevance of the CECIL course on sustainability, circular economy, crafting and co-design and which skills such a course should focus on. While in Greece, Italy and Sweden, such a course was perceived as relevant, the Portuguese participants were less convinced about that. Nonetheless, in all countries besides Portugal, there was a very high willingness of the majority of participating women to attend such a course. There was further consensus of all countries participants on the fact that such a course should focus on Initiative and entrepreneurship skills, but also other skills like Teamwork and Innovation and creativity were highlighted.



:o-design?

In the **Greek** survey, the vast majority of women (86%) indicated to be completely or likely willing to attend a course in the area of sustainability, circular economy, crafting and co-design. The skills that they would like to be focused on were Teamwork, Innovation and creativity, Initiative and entrepreneurship,

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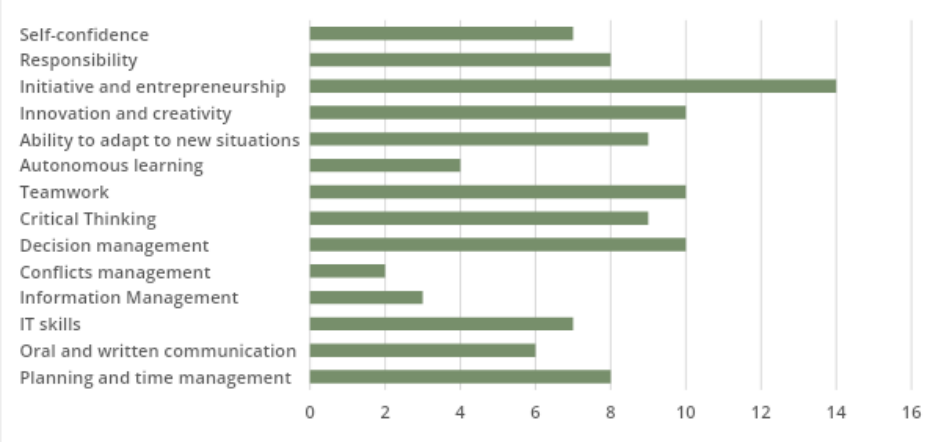
Responsibility, Critical Thinking and Ability to adapt to new situations. The main expectations mentioned were to provide a balance between theoretical and practical contents.

In **Italy**, when asked if they would deem relevant to do a course in sustainability, circular economy, crafting and co-design, in order to improve their employment opportunities, 70% of the participating women replied that they would consider it rather relevant and 30% replied they would probably think about it. 95% of the participants indicated that they would think to join and only 5% would prefer to not. Regarding their expectations on which skills such a training should focus on, the majority mentioned the skills of Initiative and entrepreneurship (70%), followed by Innovation and creativity, Teamwork and Decision management (50% each). Most women answered that they would expect such training to help them ameliorate their skills and thus their job chances.



In **Portugal**, 55% of women affirmed a training course in the area of sustainability, circular economy, crafts, and co-design is at least somewhat relevant. Those who didn't consider those topics relevant, indicated the reasons not to see advantages for such a course or to perceive it as not relevant. Nonetheless, 45% did assume that such a training would not at all or only a little improve their employability. Therefore, 45% of participants would not at all or only very little be willing to attend a course on these topics.

The participants described the following expectations if they were attending a training course of this type:

- Learn more about the topic
- Have the opportunity to apply knowledge
- Everyday usefulness

Moreover, regarding the skills that should be the focus of the training, main focus was laid on Innovation and creativity, Initiative and entrepreneurship, Teamwork and Ability to adapt to new situations.

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In the **Swedish** sample of participants, 55% of them replied that they would perceive a course on sustainability, circular economy, crafting and co-design to be rather relevant and 45% replied to take it into consideration. Similarly, 60% would likely attend such a course while 40% would think about it. In terms of expected skills to be tackled, the most important skills mentioned were Decision management (85%), Information management (80%), Ability to adapt to a new situation and Initiative and entrepreneurship (75%).

ii. Results of stakeholder survey

The following text will present the results of the survey conducted with stakeholders. Each aspect includes a summary of the result in a cross-consortium approach, comparing the four partnership countries Greece, Portugal, Sweden and Italy, followed by short separate analysis per country.

Socio-demographics of the stakeholder's survey

Cross-consortium - With regards to the second questionnaire directed at the stakeholders, the majority of participants in all four countries worked in an organisation that provides training or in non-profit organisations. While in Sweden these stakeholders were mostly public, in all other countries the majority were private bodies. In all countries, the majority of institutions worked with women who had not completed their higher qualification as well as with women aged 35-45 years old. Regarding the personal professional background of participants answering the questionnaire, the Portuguese respondents were most experienced working with the target group with the majority of them indicating more than 5 years, while in Greece 2-5 years were most common and in Italy and Sweden the majority of them had been working with the target group for 0-2 years.

In **Greece**, data analysis demonstrates that 20% were working in an adult education institution, 25% non-profit organisation, 45% training provider and 10% other. Most of the organisations were private and only 23% public. The survey illustrated that the organisations that participated in the survey addressed women between 35-45 years and some of them women who have not completed their higher qualification studies (such as apprenticeship, university etc.). The majority of stakeholders who answered the questionnaire had an average of 2-5 years of experience working with this target group.

In **Italy**, the examined stakeholders were, for the majority, non-profit organisations (73,7%) and training providers (57,9%). Most of the respondents were trainers (10%) and coaches, with other working positions represented such as social researcher, and volunteering positions. Respondents stated that their organisations/companies worked mainly with women who have not completed their higher qualification studies (55%), but also women aged 35-45 (50%) and people at risk of exclusion (youth, migrants, or women victims of abuse). In terms of years of experience with their target groups, 50% have worked with their

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target for between 0 and 2 years, 35% have been working with the target between 2 and 5 years and the remaining 15% have been working with it for more than 5 years.

In **Portugal**, the type of company/organisation in which participants worked ranged from the majority of the participants (47.6%) being employed in a training entity, to 38.1% of the sample in a non-profit organisation, to 14.3% in a adult education institution, 9.5% in the city council and finally 4.8% in a consultancy entity. The vast majority of these workplaces were private institutions (70%) in oppose to 25% of public bodies. 66.7% of the workplaces focus on women at the age of 35-45 in their work, and 52.4% each on women who did not finish either their obligatory or higher degree qualification/education. Other target groups that were mentioned to be in the centre of the workplaces were the general public, various groups of different sex/genders, persons in vulnerable situation or people of all ages. Regarding the participants themselves, their job titles ranged from mostly (pedagogic) coordinators or project managers to senior technicians and trainers, with the vast majority of them having experiences with the target group for more than 5 years (90.5%) or at least 2-5 years (9.5%).

The **Swedish** sample of stakeholders consisted a majority of them working for non-profit organisations (73,7%) and training providers (57,9%) and the rest in the private sector (1%) and recrutement (1%). Of these organisations 60% are public and the other 40% are private ones. 85% of the organisations worked with women who have not completed their higher educational studies, while 75% worked with those who didn't complete their compulsory studies and 65% with women aged between 35-45 years. When it comes to years of experience with these target groups, 42,1% have worked with their target for between 0 and 2 years, 31,6% have been working with the target between 2 and 5 years and the remaining 26,3% have been working with it for more than 5 years.

Information about the course/training/educational offer

Cross-consortium - The existing offers of courses varied strongly between countries, with Greece's focus on Business and Tourism, Portugal's main offer in the Social and Health sector, Sweden's courses centering on ICT training and finally Italy's offer in Sustainability and Social activities. In all countries, courses on Crafting and/or Tinkering were however rather underrepresented. The differences in course offers among countries as well reflected themselves in the competencies that were mainly addressed being more focused in Management and Communication aspects in Greece, IT skills in Sweden, soft skills like Teamwork and Initiative taking in Portugal and finally transversal skills like Critical thinking and Self-confidence in Italy. In terms of an awareness and sensitivity of trainers and educators towards the specific need and barriers of women at risk of social exclusion, in those countries where data was available, there was consensus on the fact that it is rather high (Portugal and Italy), while only in Sweden there was a polarisation of answers for it to be either very high or non-existing.

In **Greece**, currently offered courses of the stakeholders examined were mainly focused in the areas of Tourism (60%), Business Management (55%), Business and administration (50%), but also Technology (30%). With these courses, the attendees develop some competences, which the stakeholders indicated to be

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specifically centering around Planning and time management (45%), Conflict management, Oral and written communication, and Innovation and creativity (40% each) as well as Information management, Critical Thinking, Responsibility and Self-confidence (35% each).

In **Italy**, the interviewed stakeholders offer a variety of courses in different areas with a specifically present offer in the field of Sustainability (65%) and Social activities (55%). Other areas that were often mentioned were the Teaching professionals (45%) and Office work (40%). The offered courses were mostly focused on the development of competences such as Critical thinking (70%), Self-confidence (65%) and Teamwork (65%), but also the Ability to adapt to change (55%), Innovation and creativity (55%) and Initiative and entrepreneurship (55%). In terms of the sensitivity towards women's needs and barriers, the big majority (85%) perceived trainers and adult educators to be fully sensitised, arguing with their high empathy, compassion and awareness.

In **Portugal**, in terms of the courses currently offered by the participants' workplaces, the offer was rather diverse, often covering several topics within one organisation. The most common areas centred on Social science (57.1%), Health, Information and communication (47.6% each) as well as Tourism, Social activities, Technology, and Business management and Administration (42.9% each). Only very few participants indicated to offer courses on Handcraft/craftwork/tinkering (9.5%), topics covered by the CECIL project. Within these courses, the development of competencies mainly focused on the following competencies: Teamwork, and Initiative and entrepreneurship (66.7% each), but also competencies like Planning and time management, Conflict management, Critical thinking, Autonomous learning, Ability to adapt to new situations, Innovation and creativity as well as Responsibility (57.1% each) were addressed. Regarding trainers and adult educators sensitivity working with women at risk of social exclusion, the majority indicated to be sensitised to an at least somewhat but most often above that level. Most participants indicated that their workplaces take special care when choosing the workforce focusing on the skills, experiences and awareness required to work with the target group, therefore ensuring a high level of sensitivity.

In **Sweden**, the organisations offer courses in different areas, mainly present in areas of Information and communication (55%), Technology (50%) as well as Social activities and office work (45% each). The competences addressed by the majority of such courses thus were IT skills (55%), but also Information management (35%) and Innovation and creativity (30%). The replies for the question "Do trainers and adult educators working with women at risk of social exclusion are sensitised to their specific needs and barriers?" come very discordant. Infact, 40% of stakeholders thought they were fully sensitised, while 45% thought they were not sensitised at all and the remaining 15% were neutral about it or did not know. The justifications of the answers were ranging from diversified offers, training and organisations to practising equality.

Educational needs and barriers for women

Cross-consortium - The majority of stakeholders across countries considered getting a job and improving skills and qualifications as main drivers for women to attend a training course. However, actually applying for a course was often hindered by the fact that they were too expensive. This factor was particularly pertinent in Italy and Sweden, while Greek stakeholders assumed the high level of bureaucracy to be an essential barrier and Portuguese ones the lack of information about the courses. Both in Portugal and in Sweden, a lack of interest or perception of added value played a role as well. However, only in Portugal and Italy examined stakeholders were convinced about their workplaces initiation of measures in order to overcome these barriers and gave. In line with the

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barriers and measures, each country focused on different aspects of what to improve in organisation to become more attractive for women to attend courses, being most often a decrease of costs, a better marketing and communication about the course, as well as adapting in terms of location and time of the courses offered. Regarding the skills and competencies of women attending such courses, in all countries IT skills were found to be one of the, if not the most lacking competences in women who sign up for courses. Nonetheless, there was also transnational concondence on the fact that exactly these skills belong to the most important one for the employability in the job market.

In **Greece**, the majority of stakeholders agreed that women to attend a course are to get a job (42%) and improve their qualifications and skills (29%). On the contrary, the main reason preventing women from applying to a course was too much bureaucracy (28%) as well as their high cost (23%). This fact is verified nationally by the extreme bureaucratic procedures that are dominant in most fields. However, 30% of participants answered not to apply any measures to overcome these barriers. Those who did mentioned measures like publicity, the simplification of procedures through electronic platforms or lessons free of charge. In terms of the own improvement of the stakeholders to encourage more women to sign up, low cost/free course offers (19%), a better marketing/communication about course offer (15%) and less bureaucracy during registration etc. (16%) were the ones indicated the most. Regarding the skills that are the most lacking in the women signed up for courses, the majority of stakeholders agreed on Oral and written communication and IT skills (60% each), as well as Critical thinking (45%) and Decision management (35%). The skills that are the most relevant for the employability of the women in the job market were indicated to be mostly IT skills (70%), Information Management (55%) and Conflict management (50%).

In **Italy**, the desire to get a job (80%) and to improve their qualification and skills (80%) were considered most often as drivers for women to attend courses. It is interesting to note also how the desire for social life seems to be an important driver too (40%), possibly because of the social restrictions of the past years due to the Covid-19 pandemic. As regards the barriers that prevent women from applying or attending a course, the most given reason was the cost of the courses (65%), the travelling costs (45%), language or communication barriers (45%) and the lack of information about the courses (40%). The majority of respondents (75%) indicated to apply some measures, to make the courses affordable (lower prices or free courses), flexible (online or blended courses) and interesting (giving more information about the benefits that these courses can give). For what concerns the possible improvements that can be made to attract women to sign up for the different courses, respondents stated that courses should have more flexibility regarding timing and offer (60%) and have lower costs or be free (60%). It would be important also to communicate and advertise better the courses (45%), as well as offer better accessibility to the courses in terms of languages and physical barriers for people with disabilities (55%). When asked about which skills were more lacking in the women that signed up in their courses, most respondents mentioned IT Skills (45%), Critical thinking, Initiative and entrepreneurship, Planning and time management and Decision management (40% each). Some of these skills, such as IT skills and Responsibility (70% each) and Decision management (75%) were considered most relevant for the women's employability, after the Ability to adapt to new situations (80%).

In **Portugal**, regarding the reasons why women choose to participate or attend in a training course, the majority of the stakeholders assumed that getting a job or improving qualification and skills were the most common reasons (76.2%), while socialisation (47.6%) was also rated as important. When asked what

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they perceive as the main reasons preventing women from applying/attending a course, the majority agreed that there is a lack of information about the courses (61.9%) and that women do not see any added value through their participation (57.1%). Other reasons preventing attendance centred on more organisational issues, such as the incompatibility of the course hours with a job (47.6%) and the travel expenses and inconvenient location (each 38.1%). Gladly, 85% of the respondents indicated to apply specific measures to facilitate and prevent these reasons. Such strategies were:

- (periodic) needs survey (also in beginning of training) to meet the needs
- agree on the necessary logistics and organise the trainings in places closer/more convenient to the potential trainees (for instance in host locations and in several different locations)
- communicate, inform, raise awareness and advertise trainings properly (for instance in social networks, website, email marketing)
- articulate and collaborate with partners/host entities and create synergies with those who know the target audience best and work with them on the ground
- motivate and explain the purpose of each training, showing its value
- schedule flexibility and adapt training to the group's pace, difficulties, barriers.

Asked about possible areas of improvements in the stakeholder's workplaces in order to promote women to sign up for offered courses, the majority indicated that a better marketing/communication about the offer would be useful (70%), but also more flexibility regarding the modality and the timing of the offer (55% and 50%) as well as transport offers for learners coming from afar (50%).

In terms of the extent and level of competencies of women attending their courses, stakeholders perceived that specifically Initiative and entrepreneurship skills are lacking (68.4%), as well as IT skills and Self-confidence (47.4%). The majority of stakeholders considered competencies as core to the employability of these women to be the ability to adapt to new situations and teamwork (71.4% each), Initiative & entrepreneurship skills and Critical thinking (66.7% each), as well as IT skills and Innovation and creativity competencies (61.9% each). Other relevant skills were Oral and written communication (57.1%), Planning and time management as well as Responsibility (52.4% each).

In **Sweden**, the most commonly assumed drivers for women to apply to courses was to get a job (85%), followed by occupying their free time (40%). The barriers to actually applying for a course were centering on finding them uninteresting (45%), that they were too expensive (40%) and that they were not appropriate with their needs (35%). Only 35% of the stakeholders replied positively when asked if they apply specific measures to prevent these barriers, giving examples like

- Information distribution
- By providing equal opportunity to all
- By providing free courses.
- Possible improvements indicated by the stakeholders to attract more women to sign up for courses were centred around offering a better/more spreaded location (45%) and decreasing/eliminating the costs (40%).

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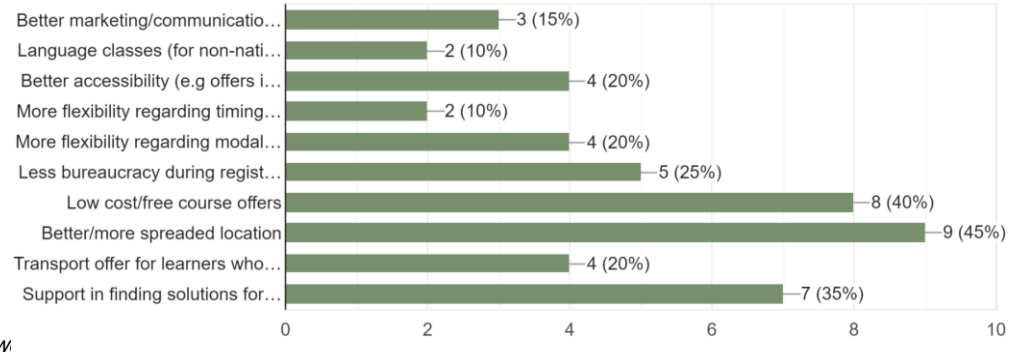

(Sw *e courses offered?*

Regarding the skills that were most lacking in the women that signed up in the courses at their organisations, Innovation and creativity as well as IT skills (30% each) were mentioned most often. However, it was also those two skills that were considered most relevant for these women's employability in the job market (IT skills 35%; Innovation and creativity 30%).

Questions around the CECIL thematic and course offer

Cross-consortium - Relating the existing course offers on the thematics of CECIL (sustainability, circular economy, crafting, co-design principles and tinkering methodology), for the majority of workplaces in all countries besides Greece, there was an existing offer on sustainability and circular economy. In Sweden, this was also the case for crafting, while not so in Portugal and Italy, and not at all in Greece. Also in terms of the application of the tinkering and co-design methodology, the Swedish stakeholders were highly familiar with these concepts, applying them in their organisations, while the Greek participants found themselves on the other side of the spectrum. In all countries, however, the stakeholders indicated an interest in the topics and methodologies of the CECIL guide. Similarly, the majority of stakeholders across countries were certain that a course on sustainability, crafting and circular economy applying co-design and tinkering methodology was relevant for women's employability and that the target group would be willing to attend it. In Italy, Portugal and Sweden, this went along with a rather high likelihood that the organisations would make use of free resources/courses on sustainability and circular economy catered specifically to the needs of women. Only in Greece, this was not the case. IT skills, Critical thinking, Innovation and and the Ability to adapt were the skills that were mentioned most often as important when designing such a course.

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In **Greece**, half of the organisations offered courses on circular economy and sustainability (though none of them completely), while the other half was rather unfamiliar or completely unfamiliar with it. Half of the stakeholders indicated that their organisation does not offer any courses on crafting, and only 25% offered it somewhat or mostly. In terms of both co-design and tinkering, a big majority (80% and 70% respectively) did not at all or only little apply this methodology, but more than half of it would be somewhat or mostly interested in doing so. The majority of respondents was mostly confident that a course on the CECIL topics would be relevant (45%), but another 35% was only little sure about that. Regarding women's willingness to attend such a course, the majority (60%) was completely or mostly sure that women would like to participate. However, none of the stakeholders was completely sure that they would use a free resource on a course on these topics, rather than that, half of them were not at all or only little likely to actually include it in their organisation, explaining it with the lack of resources to do so. If the organisations were designing such a course, the skills that they would focus on were mainly IT skills and Critical Thinking (60% each), the Ability to adapt to new situations (55%), as well as Teamwork (50%).

In **Italy**, the majority of interviewed stakeholder (75%) already offers sustainability and circular economy courses, while 45% offer courses about crafting. A little lower is the percentage of respondents already applying co-design principles and tinkering methodology (35%). The majority of stakeholders interviewed showed an interest in using the resources produced by the CECIL project. Most interest was shown in courses that apply the co-design methodology (85%), but also courses applying the tinkering methodology were considered interesting to apply (60%). Moreover, 47.4% of the stakeholders replied positively in terms of the relevance for such a course and 42.1% said they were almost sure about it. Half of them were further absolutely positive that women would attend such a course. Hence, the majority of examined stakeholders (65%) said they would use free resources with this kind of topics as the CECIL ones, highlighting that in order to have courses that help a considerable number of women, these have to be free and accessible for them. Circular economy and crafts were also mentioned as new and innovative business ideas which can support the professional growth of women at risk of exclusion. Regarding the skills it should focus on when designing such courses, most of the respondents put emphasis on Critical thinking (75%), Innovation and creativity (65%) and the Ability to adapt to changes (60%).

In **Portugal**, the topic of sustainability and circular economy and the topic of co-design tended to be present in the organisations' course offers (66.7% and 60% respectively), but courses on crafting and those applying a tinkering methodology appeared to be more scarce (47.6% and 38.1% respectively). Nevertheless, the majority of participants indicated to be interested in applying these approaches in their organisations, in particular the co-design approach. 42.9% of the respondents were fully convinced that their workplace would make use of the free resources produced by the CECIL project, while 28.6% were mostly convinced, claiming their companies openness and adaptation to new opportunities and offers. The majority of stakeholders who answered the questionnaire completely agreed that offering a training course in the areas covered by the CECIL project may improve the employment opportunities for women (57.1%), while the expected willingness to attend it was also high (75%). The most agreed expected focus of such a course laid on following competencies: Initiative and entrepreneurship (85%), Innovation and creativity (75%), Critical thinking (70%), Teamwork, Autonomous learning, Ability to adapt to new situations, and Planning and time management (60% each).

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In **Sweden**, 73.7% of the examined stakeholders replied to offer sustainability and circular economy courses in their organisation, but 25,3% do not or are not sure. Similarly, 65% indicated to offer courses about crafting and 35% did not. In addition to this, the big majority indicated to apply sufficiently or absolutely enough co-design as well as tinkering principles, while for only very few organisations applied it only little or not at all. Therefore, when asked whether they would offer courses in these methodologies, the majority (60%) replied completely positively for co-design as well as for tinkering (63.2%). Most stakeholders (70%) considered a course in the area of sustainability, circular economy, crafting and co-design highly relevant and were very assertive that women would be willing to attend it (80%). Therefore, the vast majority (80%) would also be completely positive that their organisation would use free resources to reach the aims of the courses and the topics and, overall, the needs of the women. The skills mentioned to be most relevant to focus on were IT skills (25%).

c. Discussion as basis for the Training Format

The survey was conducted with 81 stakeholders as well as 81 women at risk of exclusion (women at the age of 35-45 years and/or who have not completed their studies) in four different countries: Greece, Portugal, Sweden and Italy, in order to identify educational needs, barriers and factors for women at risk of social exclusion in adult education.

In terms of the status quo of existing offers in the different countries, courses were most often offered in a blended learning approach (possibly also due to COVID) and during the "normal" day time, i.e. working time. It could be noted that the offer varied strongly transnationally in terms of topics, but that in all countries, courses on Crafting, Co-design and Tinkering were rather underrepresented. However, in all countries but Greece, there was an indication that offers on sustainability and circular economy do exist. These findings underline the importance and relevance of the CECIL project, filling a gap in the partnership countries in terms of offers and resources specifically on the topics of Crafting, Tinkering and Co-design.

With regards to the interest and knowledge about the CECIL topics, it can be summarised that there was an overall interest by the women in all topics, which was particularly higher in Sweden and Italy than in Greece and Portugal. Taking into consideration the present data, both the Swedish and Italian participants also showed higher knowledge and understanding of the CECIL topics than did the participants from Greece and Portugal. This divergence of knowledge between countries has to be addressed in the CECIL resources, for instance by offering the opportunity to select only specific parts of the training depending on the trainees levels. A structure in which the modules build up on each other would facilitate this approach. The most common aspects of circular economy and sustainability across countries that women were less familiar with were aspects of circular economy businesses (examples, what it is, how they work), making it pertinent to dwell specifically on these aspects in the CECIL resources. Particular attention should as well be paid to increase the willingness of women in Portugal to participate in such courses, as it was lowest across all countries. Regarding the stakeholders, the Swedish ones showed the highest levels of knowledge and interest in all topics (sustainability, circular economy, tinkering and co-design), followed by respondents from Italy and Portugal, who both were highly interested in the concepts of co-design and tinkering though not being too familiar with it. In all countries, most stakeholders agreed on the relevance of a CECIL course to improve the employability of women, and considered it likely to include and use them in their work. Only in Greece, this was not the case, which was partly explained due to a lack of resources to actually conduct such a course. Therefore, it may be crucial to adjust the produced Training Format in a way that it also includes parts which can be accessed and used by the trainees themselves, enabling them to do so at any preferred time and setting rather

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than depending on the offer of a training institute. Creating an outcome that is highly flexible and adaptive will enrich the existing landscape and accommodate women's needs. Another aspect that should be taken into consideration when designing the CECIL resources is the skills and competences that will be addressed. According to the stakeholders responses, in all countries IT skills were found to be one of the, if not the, most lacking competences in women who sign up for courses. At the same time, there was also transnational concondence on the fact that exactly these skills belong to the most important one for the employability in the job market. Hence, the CECIL project should strive to include aspects that foster IT skills. Other than that, participating women indicated that specifically the skills of Initiative and entrepreneurship, but also Teamwork and Innovation and creativity should be set into focus in a training on the CECIL topics, while for stakeholders also Critical thinking and the Ability to adapt were considered important.

Regarding women's barriers and struggles, it was notable that in Sweden, the offer and accessibility of courses and training was perceived as most positive, while in all other countries, barriers and struggles seemed more crucial. The most common barrier across countries (including Sweden), as results from both stakeholders and women indicate, were the high cost of courses offered, highlighting the benefit of CECIL to be a resource and tool offered freely and accessible. Other barriers that were found was the lack of awareness on available training courses as well as the difficulty to find information, which was particularly often mentioned by the women who answered the survey. This finding is interesting for the CECIL project, emphasising the necessity to (support stakeholders to) properly disseminate, advertise and communicate the results while facilitating their access in a most convenient, easily accessible way. Besides these barriers that were transnationally shared, there were also rather country-specific barriers, as well as differences between the answers of stakeholders and the answers of women. For women in Greece and Italy, the inconvenient location of the courses were another important barrier that could be identified, while in Portugal and Sweden, the incompatibility of the training schedule with their own professional activity was mentioned often. However, stakeholders in Greece highlighted the extensive bureaucracy to apply for a course as a crucial barrier, while Swedish and Portuguese stakeholder's pointed out a lack of interest/perception of added value of courses. The CECIL project thus will have to take into consideration these different barriers that are specific for each country, striving to avoid and prevent them where possible. Ideas on how to do so can be inspired by the answers of the stakeholders in terms of measures implemented to attract more women in their training offers. According to the results of the stakeholder's survey, the majority of stakeholders agreed transnationally, that decreasing the costs of courses would be an aspect to focus on in order to improve the organisation to become more attractive for women to attend courses. Moreover, better marketing and communication about the course, as well as adapting in terms of location and time of the courses offered were ideas that were at least somewhat present in all countries. The CECIL project may help to facilitate these improvements as mentioned earlier.

Identifying the main reasons for women to attend courses, it was confirmed by both stakeholders and women themselves and was similar across the different countries of the survey that the improvement of the employability, skills and qualifications were the most common driver. Therefore, the CECIL project should lay focus on creating resources that have an actual applicability and relevance in the job market. Through combining both theoretical and practical approaches to learning, this can be achieved as well as through providing a kind of certificate upon finalisation of the training. Including and encouraging possible employers in acknowledging the qualifications achieved through attending the CECIL course would also be of great benefit. Other motivations like the social aspect or interest were transnationally found to be less important for attending a course, hence also in advertising the CECIL resources, these preferences should be taken into consideration.

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B. Desk research on good practices and existing offers

a. Methodology of desk research

The desk research aimed at identifying good practices and already existing offers in the countries of the partnership regarding tinkering methodology, circular economy education and plastic craftwork methodologies, and other non-formal education methodologies. These topics depict the basis of the CECIL project and its prospective outcomes, which is why investigating them was crucial. To ensure a profound basis for the development of the Training Format, a total of **43 good practices** and **24 existing offers**, with 11 good practices and 7 existing offers on each tinkering and circular economy education, 9 good practices and 5 existing offers on plastic craftwork and finally, 12 good practices and 5 existing offers on non-formal education (including at least 2 good practices and 1 existing offer per country for each of the 4 topics). In addition and to widen the scope of the results, good practices and existing offers in other countries than the partner ones were researched.

The desk research was conducted online. Sources for information reached from institutional websites, blog posts of organisations to press/opinion articles and project websites. To facilitate the process, an excel sheet including information on the data to be collected was created, in which general information (title, country, type, topic, source/provider, target group) as well as detailed information (summary, aims/objectives, actions carried out/process of implementation, achieved results/outcomes, success factors, constraints) for each good practice and existing offer were elaborated.

b. Results and analysis of desk research

During the desk research across countries, it could be observed that some topics were more present in the different countries than others. In particular tinkering as a methodology to learn 21. century skills and STEAM subjects were rather scarce in all countries, implying that this approach is novel and not very well established. On the contrary, circular economy education seemed to be more highly represented across countries, making it easy to find resources and information about this concept. Nonetheless, in all countries, the desk research of good practices and existing offers depicted itself as rather difficult. The main reason found for this was the fact that entities and institutions did not publicate, advertise or communicate the activities in a very extensive way - partly because of a lack of funding for it. Therefore, finding information about them on the internet requires a lot of time and effort, which in most cases the target group of such courses cannot necessarily spend. Another possible reason for the lack of information can further be that informal, offline communication on offers and practices are preferred over wide online publications. In those companies, in particular larger ones, where vast online communication is present, it is often to label and announce their new carbon-free practices and sustainable approaches, while detailed information is often not mentioned in that context. Even less so were the information on CECIL topics in an educational format like training or courses present. Additionally, it is also worth mentioning that some of the good practices and offers were within previously and currently funded transnational projects, of which many were, like CECIL, Erasmus+ projects, thus including

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multiple European countries in their development and implementation. Most often, these projects resulted in resources and digital tools that will depict valuable guidance and support for the CECIL project.

In terms of the specific topics, in some countries (Portugal, Italy) the **tinkering methodology** was often used for activities with children, neglecting the fact that this methodology has high upskilling potential for all ages. Most of the providers of tinkering were museums, libraries and/or science centres applying the methodology in their work with STEAM topics and offering workshops/educational programs to teachers, educators and educational staff. This observation also highlighted the fact that when applying tinkering methodologies, the presence and access to tools, work stations and other materialistic requirements is rather crucial, making it difficult to provide this approach in poorly equipped contexts. In addition, it becomes clear that it is mainly offered in cultural institutions, providing space for improvement and extension to use this methodologies in other, less cultivated areas, as it has been done for instance in Portugal through the reconstruction of a bus into a workstation which travelled to rural, less accessible areas.

With regards to **circular economy education**, it could be found that both scope and approach of this type of education was quite varying between countries. While some practices focused on a more theoretical presentation of the concept of circular economy, others centred around a more practical approach for instance by offering the creation of repair cafés. In many cases, most attention was paid to one of the circular economy aspects, which were the R's like recycling or reusing. At the same time, practices targeted sometimes big scopes like whole companies, and sometimes individuals and smaller scopes like school classes. Also in terms of modality, the offers ranged from university courses to online courses, covering a wide range of different ways of learning and transferring knowledge on circular economy. The attempt to include and engage the whole community in the project seems to be a success factor for many of these practices.

When it comes to a **plastic craftwork methodology**, most countries focus on using plastic for the production of art or functional products, thereby recycling waste. It is striking that almost all activities include in their practice the part of promoting environmental awareness as an additional outcome to the product itself. In many cases, the plastic used for the activities is first collected from beaches or the city, enhancing a sense of environmentalism while at the same time cleaning the environment. In some of the practices, the created products and arts serve are being sold, hence providing an opportunity for income and employability. Moreover, the majority of practices are designed in a way that the educational aspect of learning to craft with plastic can be replicated and multiplied beyond the project, thereby promoting these activities to be continued in private.

Regarding existing offers and good practices in the **non-formal education**, in the majority of countries, finding good practices was particularly difficult because in most cases, the usage of this type of education is either rare, or not explicitly labelled as such. Non-formal education can include a large variety of activities, as was found in the present desk research where practices like (video) games, exploring local landscapes, painting, panel discussions or dancing depicted the frame to learn about different topics. The playful, exciting and inspiring approach of non-formal education helps the learner to really understand, apply and transform the experience into a learning outcome. Moreover, it can be highlighted that in most practices, non-formal education allowed the tailoring and accostoming of the activities to the learners, thereby increasing their success.

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Overall, it is notable that there are existing practices and offers all over Europe centering on the topics of CECIL. In many cases, these topics do in fact overlap, which means for instance, that often tinkering practices are within the scope of a sustainable and/or circular economy approach or plastic craftwork methodologies make use of recycled materials. Uniting all four topics however is not present yet, highlighting the innovative approach of CECIL. It could further be understood that there is a lack of information and communication about existing offers and practices in all countries, underlining the importance for an effective, vast dissemination strategy to actually reach target groups. This observation aligns with the results from the survey on course offers for women at risk of social exclusion, who mentioned a lack of access to information as one of the main barriers to enter a course/training. The lack of information could also partly be explained by the lack of funding, which was mentioned to be the reason why activities and practices often could not be offered in a long lasting way. Unfortunately, this lack of detailed information and in particular the lack of reflection on success factors and constraints of the practices limited possible learning outcomes for the CECIL project. Moreover, the desk research showed that applying and including circular economy, tinkering, plastic craftwork and non-formal education approaches in a context with vulnerable groups, in particular women at risk of social exclusion, is not common. It can be concluded that the offer created through the CECIL course thus depicts a highly relevant, innovative approach that unites the benefits of various different dimensions in one. The course will be informed and inspired by the identified good practices and offers, thereby providing high quality and relevance while counteracting potential constraints. It is finally noteworthy to mention that this desk research is by no means comprehensive, but rather depicts an excerpt of European good practices and offers.

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GOOD PRACTICES

Tinkering

Greece 

(1) Bridges; 26th and 29th Acharnes Primary Schools; 5th grade students[2]

Summary

The Bridges action was implemented within the schools' action series titled "Small Engineers Large Buildings". It was a nine hour workshop in which students worked in groups of five or six elements and learned about bridges and experimented building their own within a tinkering methodology.

Objectives

This action aimed to promote STEAM (i.e., Science, Technology, Arts, and Mathematics[3]) among 5th grade students of the 26th and 29th Acharnes Primary Schools. Considering the high percentage of children in these schools who are diagnosed with learning disabilities, this action also aimed to help them improve their self-confidence and self-image and also change how they are perceived by others.

Actions and implementation

This action started with a learning module titled "Constructions" in which students learned about different bridges, their impact and usefulness for human societies, materials used in their construction, particularly stone, and how they are designed in a way to ensure maximum stability (e.g., being arched). After this first introductory module, there were three phases in which school children were to create their bridges with an increasing degree of difficulty.

For the first practical phase, titled phase A, students were to build a durable cardboard bridge using the least possible amount of cardboard. Different groups of students came up with different approaches and were generally successful in this activity. Additionally, despite children working in groups they also interacted with the other groups.

During phase B, students were now to create an opening bridge so tall ships could pass. For this task, students were to use materials within *TechCard kits*. These materials were pre-drilled cardboard, fasteners, shafts, thread, pulleys, syringes, electric motors, tires, and more. By including wheels, axles, and more, school children were allowed to start experimenting with machines and be able to create more elaborate structures such as pulley systems or using syringes to

[2] http://1dim-olympic.att.sch.gr/?p=751

[3] See why STEAM is important for STEM education here: https://www.forbes.com/sites/bernardmarr/2020/01/15/we-need-steam-not-stem-education-to-prepare-our-kids-for-the-4th-industrial-revolution/?sh=64a0425655fb

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create hydraulic systems. Once again, different groups of students came up with different mechanisms to move the pavement and open the bridges, some used the aforementioned syringe system, some used winches and/or electric motors and simple electrical circuits.

For the final phase, phase C, students were now challenged to use *Arduino* (which they designed/programmed with Scratch 4 *Arduino* or *mBlock*) towards having lights on the bridge stating whether passage was permitted. This last phase was a continuation of the previous phase, and these lights were implemented in the previously designed opening bridges.

Success factors

Bridges allowed students to acquire skills both in STEM but also soft skills such as collaboration, communication, and self-regulation by solving semi-open type problems. The fact that students worked in groups ensured that everyone was bringing something to the table and that whenever a student faced a difficulty, the others supported them and tried to help them solve it, with minimal teacher intervention. Additionally, it is worth mentioning that 1/3rd of the students who participated in Bridges had learning difficulties and whilst they usually experienced frustration and reduced self-esteem when facing difficulties when learning, within the Bridges workshop, these students actually took very active roles in their groups and ended up changing their self-perception in a positive way as well as changing how others perceived them. These success factors were confirmed by researchers who accompanied this workshop and later published an article mentioning why it was a success[4]. This further confirms it as a good practice.

Constraints

This was only available to 5th grade students of these schools.

(2) STEM Education; Students, teachers and educators, and schools[5]

Summary

STEM Education develops integrated educational programs in STEM, often within a tinkering framework, aimed at all levels of the educational system: students, teachers and educators, and schools. These programs are catered to specific ages (pre-school, primary school, and high school/lyceum). Their educational content is based on programs from prestigious universities such as MIT and Carnegie Mellon. These are adapted to the greek school context by the teachers and educators that make up their team.

Objectives

[4] Patrinopoulos, M. & Iatrou, P. (2019). Implementation of STEM tinkering approaches in primary school education in Greece. *Sino-US English Teaching, 16*(12). 510-516. DOI: 10.1080/14616740903237426

[5] https://stem.edu.gr/

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This organisation aims to promote STEM subjects and foster soft skills such as creativity and collaboration through their training programs.

Actions and implementation

As aforementioned, this organisation creates content for different ages of school students, for educators and teachers, and for the schools themselves. Often these training programs aiming to promote STEM are created using a tinkering methodology, for example, between June, 16 and July, 29 of 2022, they have a Summer Camp for children between the ages of 4-15 years. There, participants will launch rockets, create space robots, build submarines, learn electronic physics and travel through time, all within a tinkering framework and by using Scratch, Microbit and Python. Some of the themes/activities covered in the summer camp are:

- Construction of buildings, with LEGO DUPLO bricks, consumables etc.;
- Electrical circuit with plasticine;
- Robot Floor Programming;
- Theatrical and musical-kinetic play;
- Topographic design;
- Smart transport and vehicles;
- Programming / Algorithmic thinking;
- Physical computing;
- Sustainable development goals;
- Renewable and non-renewable energy sources;
- Architectural design;
- Electric systems;
- Home automation;
- Space Science - Solar System;
- Mechanical design and optimization;
- Telecommunications;
- Automation.

Those participating in this summer camp work in small groups when tackling the topics/activities and through them develop skills required for 21st century living such as problem solving, creative thinking, innovation, collaboration, effective communication, adaptability, effective resource management, environmental / climate literacy, and learn to use some cutting-edge technologies.

Success factors

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This organisation can be called a good practice because it keeps innovating and creating different educational programs in STEM. By offering a wide variety of programs and even topics offered within one certain program (e.g., the aforementioned Summer Camp includes programming and electrical engineering, but also environmental education and urban planning) within a tinkering framework where they can cooperate and collaborate to solve problems and to create their own project. By having so many options, there ought to be one for everyone, thus leaving nobody behind.

Constraints

The vast majority of their educational offer is paid and not free. Also, with the exception of their online programs, the rest imply that people live in certain areas and/or can go to certain areas to attend these programs.

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Italy 

(1) Tinkering EU: Contemporary Education for the Innovators of Tomorrow; Erasmus+ Project; Students between the ages of 12-18, adults as both learners and teachers and educators[6]

Summary

"Tinkering EU: Contemporary Education for the Innovators of Tomorrow" is an Erasmus+ project uniting partners from Italy (the coordinators of the project), United Kingdom, Germany, Hungary, and Netherlands. This project intended to introduce Tinkering methodology in Europe. Tinkering, following the experience of San Francisco's Exploratorium[7], has been proven to be a powerful tool contributing for the successful improvement of core skills and competencies and connecting science knowledge and skills with what is demanded by today's job market. The project created an European network of practitioners towards encouraging expertise and practice exchange between formal and informal learning institutions.

Objectives

This Erasmus+ project had the following objectives:

- Contribute to developing 21st century skills through the enrichment of STEM skills and competences;
- Use tinkering to promote a learner-centred pedagogical approach;
- Improve the perception and foster the desire to learn STEM subjects among adults and students;
- Aid the implementation of tinkering methodology throughout Europe both in schools and outside of them;
- Create a Europe-wide network encouraging tinkering;
- Encourage expertise and practice exchange between professionals and formal and informal learning institutions.

Actions and implementation

To achieve its objectives this 3 year project developed a methodological framework of tinkering, tinkering activities for adult learners and schools including pedagogical materials related to said activities which served to help practitioners implement this methodology whilst also aiding their professional development, workshops for adult learners and school educators, and multiplier events and dissemination of the project and its results. The project's results were "Tinkering:

[6] http://www.museoscienza.it/tinkering-eu/

[7] https://www.exploratorium.edu/

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A Practitioner Guide For Developing And Implementing Tinkering Activities", "Tinkering Activity Plan", and "Professional Development Guidelines" and its reflection tool.

Success factors

What made this a good practice was the cooperation between formal and informal learning institutions in school education and/or adult education. Being an Erasmus+ project it also had detailed activity plans with different developmental phases, pilot testing, evaluation and fine-tuning. This allowed for the creation of content that is both sustainable and transferable. Additionally the project's structure also encouraged the creation of local institutional networks and during the project's lifespan European Science museums showed interest in being trained in tinkering and adapting the project's materials for their use. This further establishes it as a good practice.

(2) Tinkering EU 2: Building Science Capital for ALL; Erasmus+ Project; Students between the ages of 8-14, particularly disadvantaged ones, teachers and museum staff[8]

Summary

"Tinkering EU2: Building Science Capital for ALL" is an Erasmus+ project uniting partners from Italy (the coordinators of the project), United Kingdom, Netherlands, Ireland, Spain, Austria, and Greece. This project builds upon the aforementioned "Tinkering EU: Contemporary Education for Innovators of Tomorrow" and intends to expand and promote tinkering for the development of science capital (i.e., all the knowledge, attitudes, experiences, and resources related to science that a person develops throughout their life) among students, particularly those from a disadvantaged background, and teachers and educators.

Objectives

This Erasmus+ project aimed to be an answer to the contemporary societal demands and challenges by fostering the required knowledges, skills, and competencies for 21st century living (e.g., creativity, innovation, entrepreneurship), fight xenophobia and economic disparity through promoting the social inclusion of disadvantaged students, highlight the importance of science for active citizenship, and help change how disadvantaged students perceive and

[8] http://www.museoscienza.it/tinkering-eu2/

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interact with STEM subject. To this end the project promoted tinkering methodology within a student-centred learning approach and encouraged the practice and expertise exchange between formal and informal learning institutions by creating a Europe-wide community for using tinkering in STEM education.

Actions and implementation

As previously mentioned, this 3 year project started in 2017 and built upon "Tinkering EU: Contemporary Education for the Innovators of Tomorrow" but this time its focus was particularly on disadvantaged students, both those from a minority background and those from poorer socioeconomic backgrounds. To this end, it promoted tinkering actions in museums and classrooms; created a series of seminars for teachers and museum staff; further developed the methodological framework of tinkering from the first project (i.e., the first project result titled "Tinkering and Science Capital: Theoretical and Methodological Framework"); created a manual with tinkering activities for students, particularly disadvantaged ones, (i.e., the second project result titled "Bringing Tinkering to School: Ideas for activities"); and published a report on the project's implementation and experience and the conclusions that could be made from it (i.e., the third project result titled "Tinkering as an inclusive approach for building STEM identity and supporting students facing disadvantage or with low science capital: Considerations from a reflective practice experience with teachers").

Success factors

The teachers' evaluation of tinkering with students highlighted the positive impact of tinkering for STEM education among students, particularly disadvantaged ones, as tinkering values previously existing skills, interests, and talents, thereby providing different pathways to success as well as motivation and self-confidence. It also helped teachers reflect upon their practice and learn a new way to teach science. This means, the project resulted in long-term benefits for social inclusion and social capital among educational institutions thus promoting a society based on scientific citizenship, equity, and democracy.

(3) Tinkering EU 3: Addressing The Adults; Erasmus+ Project; Adults, particularly disadvantaged ones, and sector leaders in adult education[9]

Summary

This project continues the work of "Tinkering EU: Contemporary Education for Innovators of Tomorrow" and "Tinkering EU 2: Building Science Capital for ALL". Whilst it builds upon the two previous projects, its focus is promoting tinkering and STEM among adults, particularly disadvantaged ones, who are often left behind when it comes to this particular methodology, and thus contributing to their socio-educational and personal development. Similar to the two previous

[9] http://www.museoscienza.it/tinkering-eu3/

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projects, it is also coordinated by an Italian organisation but this time a different one, and it unites partners from the United Kingdom, Austria, France, and Poland.

Objectives

The project aims to promote adults' socio-educational and personal development in addition to their participation in civic and social life through a stronger science engagement, the fostering of skills and competencies for 21st century living (e.g., self-directed learning, self-management, personal responsibility, effective communication, and everyday problem solving), and the promotion of science capital among adults. This is due to the fact that whilst younger generations are growing up immersed in Science and Technology, adults are often neglected, particularly disadvantaged adults. This gains particular relevance as international surveys have revealed disaffection and poor engagement in science among European adults, which is often even more striking among disadvantaged adults (e.g., ethnic minorities, adults with learning difficulties, etc).

Actions and implementation

This project is developing workshops, dissemination events, and resources for adults towards supporting them in their self-confidence, promoting lifelong learning and contributing for the development of core skills for 21st century living, improving their science capital, but also encouraging expertise and practice exchange across the sectors of community development and informal learning. The project already developed and published the following materials: "A Theoretical and Methodological Framework", "Tinkering Activity Plans", and "Adult Learning Through Tinkering: A toolkit for informal science learning educators working with disadvantaged and underserved communities". Furthermore, it is also creating a guide for science engagement organisations.

Success factors

This project identified an often neglected target group: adults, particularly vulnerable ones. It also partnered with community sector leaders already working with the project's target adult groups and by working with these community partners, their aim is to both learn from and support existing community sector practice, encouraging exchange of knowledge and expertise between the community development and informal learning sectors.

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Portugal

(1) 2 day professional Workshop; Wonderful Idea Co.; Professionals from the Ciência Viva Network[10]

Summary

2 day professional workshop on tinkering by Wonderful Idea Co. at *Ciência Viva Lagos* where professionals with some previous experience with tinkering were invited to get out of their comfort zone and try some new experiences.

Objectives

The workshop aimed to promote tinkering and playful learning. It also intended to help people that were already somewhat experienced with tinkering to get out of their comfort zone.

Actions and implementation

During the first day, participants started by trying to figure out what was inside a singing and dancing toy and then were invited to "dissect" it and see whether they were right. This was followed by working on a giant collaborative chain reaction machine. As for the second day, participants started by creating an art machine using *DAGU* motors, and the workshop ended with participants building paper circuits and programming them with the *Chibitronics chibi* chip.

Success factors

What made this a good practice was that it promoted teamwork, thinking outside the box, made participants (which already had some previous experience with tinkering) get out of their comfort zone and tinker/experiment with new materials (e.g., *DAGU* motors) to create new things. Moreover, the process was documented via video, making it easy and interesting to revisit and gain interest in the topic.

Constraints

[10] https://wonderfulidea.co/blog/2018/4/26/spring-tinkering-in-europe-part-2?rq=portugal

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Unfortunately this was only a 2-day event. Now it is up to the participants from the *Ciência Viva* Network to implement and use what they gained from this workshop on their offer. Nevertheless, this organisation provides free access to an online guide with four ideas on how to tinker at home[11]. It is also noteworthy to mention that this organisation is not based in Portugal but in the United States and only came to Portugal within the scope of their tinkering world tour.

(2) TINKERclube; Centro Ciência Viva of the Pavilhão do Conhecimento; Children/Teens (10-17yo)[12]

Summary

Tasks aimed at children and teens aged 10-17 that allowed them to learn about physics, electronics, programming, electrical circuits, 3D printing, and even building robots. These tasks were split among 3 different themes: Space, Science and technology, and Christmas.

Objectives

Promote tinkering and STEM to children and teens by making it fun and engaging.

Actions and implementation

As previously said, this event was made of different tasks split among 3 themes: Space, Science and technology, and Christmas. There were 2 days in the Space theme. One in which participants made an electric portable planetary and used it to learn about space and constellations. As for the other day, participants were challenged to program a Raspberry Pi for space exploration. Similarly, Science and Technology also had two thematic days. The first was themed around music and had participants making a Beat Box and becoming a DJ by recording and mixing sounds, it also had a task where participants were invited to make drums out of cutlery or fruit and use Makey Makey. The second day had participants learning to weld and create a cube. However, it is unclear whether this cube was to "catch a rainbow" or whether that was another task available during this day. Finally, for the Christmas theme participants were invited to use Arduino to program Christmas lights to "dance" to a Christmas song. Participants could just sign up for a single day/task or buy packs of tasks.

Success factors

[11] See https://wonderfulidea.co/blog/2020/4/9/wicohome-four-ideas-for-tinkering-at-home

[12] https://www.pavconhecimento.pt/tinkering/

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This practice was successful as it made STEM fun by using tinkering and not just focusing on STEM but rather STEAM by including music in the Science and Technology theme. This showed the diversity of how tinkering can be used and applied. Additionally, moving from STEM into STEAM can help promote gender equality in STEM.[13]

Constraints

Unfortunately this was a limited event in the autumn/winter of 2020. However, the *Ciência Viva* Centre tends to have many educational events such as this, so it is likely that there will be similar tinkering events in the future.

[13] See for instance http://nafme.org/how-music-education-powers-the-steam-movement/

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Sweden

(1) Wonderful Idea Co. tinkering tour in Sweden; Strawbees, Wonderful Idea Co., and Tekniska Museet; Professionals and interested parties[14]

Summary

Wonderful Idea Co. travelled to Sweden to learn more tinkering activities from the creative Strawbees team, promote their mapping, data and paper circuits activity they are developing with Nexmap, learn about what the Tekniska Museet is doing with tinkering, and, finally, trying to establish a Stockholm maker educator meetup (SMEM) towards implementing tinkering in Stockholm's schools and libraries.

Objectives

The objectives of this trip was for Wonderful Idea Co. to learn from relevant players in Sweden when it comes to tinkering methodology, as well as to promote the work they are doing, and generally promote tinkering in Sweden.

Actions and implementation

Firstly, the Wonderful Idea Co. team went to Gothenburg to do a mini residency with the *Strawbees* team. There, they were able to learn about and try to implement straw construction techniques and programming said straw constructions by using the *Strawbees* starter sets, classroom kits, and the projects incorporating computation with a quirkbot microcontroller. Then, on their train trip to Stockholm, they did an impromptu tinkering activity in the train using their mapping, data and paper circuits activity which they are developing with Nexmap. Upon arriving in Stockholm, they visited the *Tekniska Museet* which gave them a tour of their exhibitions and workshop spaces and presented what they were currently doing: a mobile makerspace. To finish the Swedish part of their European tour, they met with Stockholm locals and started helping establish the Stockholm Maker Educator Meetup (SMEM) towards promoting the incorporation of making and tinkering in local schools and libraries.

Success factors

There was a lot of knowledge and practice exchange between the Swedish organisations and participants (i.e., *Strawbees, Tekniska Museet,* the then newly-created SMEM) and the American organisation (Wonderful Idea Co.). The fact that this also aided the establishment of the SMEM is also a success factor as

[14] https://wonderfulidea.co/blog/2018/4/25/spring-tinkering-in-europe-part-1

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these local actors were already attempting to implement tinkering and STEAM into Stockholm's schools and libraries and by working together it is more likely that they will achieve this.

Constraints

Unfortunately this was a short-term event and it only covered the cities of Gothenburg and Stockholm. Now it is up to the organisations and to SMEM to use what they learned from this knowledge and practice exchange.

(2) Zero City; Tekniska Museet; Museum visitors[15]

Summary

Tekniska Museet is a technology museum and thus it often has programs using tinkering, where visitors are faced with solving the great challenges of the future often with the goal of achieving zero emissions. One such example is the Zero City where visitors can take a ride in a self-driving bus, help pack the cargo container, crawl through a sewer tunnel and solve difficult challenges around energy supply, transport and urban planning.

Objectives

Have the museum visitors work together and develop their creativity, collaboration, environmental education, citizenship, and STEM skills and knowledge through their interaction with the exhibition and with one another.

Actions and implementation

Tekniska Museet converted their 1,200 square metres machine hall into an interactive and challenging urban environment named Zero City where visitors are invited to work together towards planning the transport of people and goods to create tomorrow's fossil-free city that can meet the climate goals. There, visitors can explore a shopping street, the city square, the harbour, power plants, and the city's sewage system. Throughout the exhibit visitors are faced with novel innovations and interactive assignments towards creating a city where fossil-fuelled cars are non-existent and where people can get everything they need by using public transportation, by ride-sharing or using self-driving electric cars, walking, and cycling. This way visitors are to create a city that is not only safer but also cleaner and quieter and where spaces that used to be for cars are converted into something else.

Success factors

[15] https://www.tekniskamuseet.se/en/discover/exhibitions/zero-city/

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This exhibition is a good practice as it is open for all museum visitors regardless of their age and allows them to be innovative and creative whilst also fostering their environmental education, active citizenship, and STEM skills and knowledge.

Constraints

This is likely a temporary exhibition. However considering this is a technology museum it is likely that they will have other exhibitions on similar topics and using a tinkering methodology.

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Other countries

(1) Tinkering World Tours; Various countries/online; Wonderful Idea Co.; Artists, educators, designers[16]

Summary

This practice describes two tinkering "world tours" of a length of several weeks in various countries around the world as well as online, in which experiences, ideas and space was shared to explore tinkering in different ways.

Objectives

The main goal of the Tinkering World Tours is to be an inspiration to identify common tinkering elements all over the world and get a sense of specific materials/projects/ideas unique to different locations.

Actions and implementation

The tinkering world tours lasted between four to five week, happening once in different countries and once online, with workshops and sessions of different contents. They started with some presentations and (virtual) behind-the-scenes tours visiting makerspaces, followed by time to engage with materials and try and explore. Therefore, the information explained in the presentations was set into practice, building "handmade faces, pulley systems, mars habitats and investigating everyday materials".

Success factors

The workshops connected and united people all around the world to inspire one another with their unique materials and practices. This made it possible to learn and explore together, benefiting and enriching from the diversity of appliances of tinkering. The workshops were supposed to happen in person, but were then adapted to happen online due to COVID-19. In 2021, the world tour consisted of 10 sessions including makerspaces and museums in Berlin, Nairobi, Kathmandu, Sao Paulo and even on Mars (simulated in San Francisco), reaching more than 150 participants.

Constraints

[16] https://wonderfulidea.co/blog/2021/12/28/a-tinkering-world-tour-season-two and https://wonderfulidea.co/blog/2021/4/1/new-tinkering-world-tour-workshop?rq=worldtou

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While there is some video documentation of the world tours and its outcomes, no educational material or guidelines are provided, making it difficult to multiply or benefit more from the world tours results.

(2) At Home with Makerspaces; Online; NAEYC; Families with children[17]

Summary

This proposal of simple home Makerspaces by NAEYC promotes tinkering with what one has around the house as a form of enrichment for children and towards boosting their creativity and promoting hands-on learning.

Objectives

This proposal intends to help parents come up with a makerspace at home with both everyday and unexpected materials as a form of child enrichment. This proposal aims to foster creativity, imagination and hands-on learning by interacting with textiles, arts and crafts supplies, legos, and even broken technological items.

Actions and implementation

Firstly, the makerspace ought to be a screen-free area where children can tinker, invent, and build as much as they want. Some of the suggestions alert parents to keep close supervision, particularly when dealing with younger children (e.g., using a glue gun or a screwdriver). To this end they give the following suggestions to parents:

- Collecting discarded cardboard items around the house. Boxes, toilet paper and paper towel cylinders, egg cartons, and more can be used in the makerspace. Additionally, they can also collect moulded styrofoam and shaped acrylic foam packaging. With a little tape, these things can be transformed into fun items.
- Collecting fabric scraps, felt, mesh, ribbon, yarn, and strings laying around the house. A needle and thread or a glue gun can be used with these.
- Collecting paints, paintbrushes, wire, buttons, scissors, paper, old magazines, and other odds and ends that can be used as arts and crafts supplies.
- Using Legos and even using wood scraps and some basic construction tools (like screwdrivers, pliers, etc).
- Collecting broken technological items in the home. These can be disassembled and kids can try to figure out how they work and even use their parts in their own projects.

Success factors

[17] https://www.naeyc.org/our-work/families/creating-makerspace-at-home

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What makes this practice successful and effective is that parents can transform their home into a Makerspace using items they already have.

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Greece

(1) Tinkering – I make and learn; NOESIS Library; Children between the ages of 7-12 and their parents/guardians[18]

Summary

An opportunity for children between the ages of 7-12 to to develop the practice of tinkering by exploring materials, tools and methods and developing skills that create real connections with STEM together with their parents/guardians.

Objectives

The objective of this workshop is to promote STEM among children whilst also allowing them to develop soft skills such as collaboration, creativity, etc., all within a tinkering methodology. As parents and guardians also participate in this workshop, they also get to experiment with the same tinkering methodology and develop the same soft skills as well as perhaps change their own perception/interest in STEM.

Actions and implementation

This two hour workshop challenges families to explore balance and stability by using ordinary objects in unusual layouts in their constructions. Each family is assigned a table where they can explore tinkering and learn new methods, how to better use certain materials and tools, and STEM topics. By tinkering, the family members are also developing their soft skills such as collaboration, creativity, etc.

Constraints

The participation had a cost of 6 or 8€ per family member, it was also a limited event on the 7th of May of 2022. But people that would like to participate in the event and were unable to, can register themselves in the NOESIS list of recipients to be informed of similar events or even other editions of this event.

[18] https://www.noesis.edu.gr/en/tinkering-i-make-and-learn/

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Italy

(1) Tinkering Zone; Museo Nazionale della Scienza e della Tecnologia Leonardo da Vinci; Museum visitors[19]

Summary

The Tinkering Zone laboratory of the *Museo Nazionale della Scienza e della Tecnologia Leonardo da Vinci* goes beyond the traditional Makerspace and FabLab. There, they join tinkering to making and designing as educational approaches towards learning new methods to investigate and understand science, technology, and, more broadly, the world itself.

Objectives

The aim is to promote STEM within a STEAM approach as this goes beyond the more traditional tinkering and making approaches and also includes design. By integrating these three different modalities, different people with different interests and degrees of experience should be more interested in exploring science-related concepts, practices and phenomena.

Actions and implementation

Visitors are invited to experiment with tinkering, making, and designing in this laboratory. There they have access to different materials and information and can test themselves and work at their own pace to develop their STEAM knowledge and soft skills.

Constraints

Considering this is a laboratory in a museum, those that wish to participate must purchase tickets which cost 7.5 or 10€ and depending on how many people are interested in the Tinkering Zone, they might have to wait.

[19] https://www.museoscienza.org/en/education/tinkering

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Portugal 

(1) Creactivity; Fundação "la Caixa"; Children/teens (6-16yo) as well as family/educators accompanying them[20]

Summary

90 minutes training session in a bus driving to various locations in Portugal, in which tinkering with everyday material in different working stations and with different levels of tools is offered to children/teens as well as families.

Objectives

The goal of *Creactivity* is to provide a space for children and teenagers where they can playfully discover their ingenuity, creativity and dexterity, thereby motivating them to develop and design innovative and improvised solutions to simple problems. The games encourage children to feel comfortable in facing challenges and adapt to changes.

Actions and implementation

The space offered in the frame of *Creactivity* is a bus that has been transformed to a working station, designed in a way that it can be accessed by people with reduced mobility. The bus includes benches, work tables and various tools, hence different areas to explore different skills, such as the Mechanics area to explore gears, marbles, mechanisms and pinball machines; the Electricity area; the Wind area with wind tubes; and the Light area with a "stop-motion" system. By offering open and interdisciplinary proposals to the learners that incorporate engineering, maths, art, technology and science, the learners are enabled to tinker, plan and design through and with various materials, mechanisms and functions. On a more transversal level, the learners further improve their self-knowledge for learning, their cooperative skills and the comfort to create and realise projects. One session takes approx. 90 minutes and is guided by a monitor.

Constraints

This offer is only available in the regions of Centre, Lisbon and Tagus Valley, and Alentejo. Therefore the regions of North, Algarve, Autonomous region of the Azores, and the Autonomous Region of Madeira are not covered. Additionally, it is unclear whether there will be other editions.

[20] https://fundacaolacaixa.pt/pt/educacao-bolsas/outras-atividades-educativas/creactivity

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(2) Recursos Ciência Viva; Academia Ciência Viva; Children/Teens[21]

Summary

The training centre offers a broad range of activities, training, working tools and resources for educators to integrate inquiry-based learning, i.e. tinkering methodologies, into their lessons with preschool to highschool children. Thereby it promotes their professional and personal enrichment while also facilitating their educational decision making.

Objectives

The goal of the Ciência Viva Academy is to promote educators to enable children to think critically, reflective, collaborative and creative, as these are the 21.st century competencies. By making use of the provided resources, the children are thus expected to be able to extract meaning from scientific evidence as well as to develop a general interest in learning.

Actions and implementation

The Training centre, which has been in place since 2007, has already trained around 7000 educators and teachers. Most of the courses are free. The facilitators are experienced with developing and using interactive modules, model making, exhibits and both formal and non-formal learning. They offer long (around 25h) and short term (mostly some hours/half day) courses centering including the following qualities and focus:

- usage of inquiry-based science education methodology
- learning outside the classroom
- strengthening experimental and laboratory work and experiences
- application of pedagogical practices of information and communication technologies
- participating in national and international projects
- open and flexible training with e-learning support

Within the website, there is as well free access to a wide range of online resources, covering various topics, addressing various levels of schools/age and including methods such as videos, experimental protocols, tutorials, challenges, investigation activities and guides/manuals.

[21] https://academia.cienciaviva.pt

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Sweden

(1) Online lessons and building kits; Strawbees; Teachers and educators, parents, and children[22]

Summary

Strawbees is a Swedish company offering building kits combining straws and other materials and often coding with the use of *micro:bit* towards promoting STEAM skills and soft skills among those interested (but mostly geared towards children between the ages of 8-14) using tinkering.

Objectives

Encourage the design, creativity, science and development of original solutions to simple problems within a tinkering methodology, this way promoting STEAM and soft skills.

Actions and implementation

This company offers many different building kits, activities and ideas for anyone that is interested in using tinkering to promote STEAM among children. Characterised by its playful, ingenious and collaborative component, the building kits allow for research with various materials, planning, the creation of new designs, the use of common materials, and the use of new functions, through open and interdisciplinary proposals that encompass science, technology, engineering, art, and mathematics. Furthermore, they also have the Strawbees classroom where teachers and educators, and even parents, can learn some ideas and tips on how to better implement said kits.

Constraints

This is a company therefore most of these resources are not free. Their building kits start at around 19€ (Outlet Maker kit) and go up to around 2000€ (STEAM classroom robotics – micro:bit). The Strawbees classroom costs 20€ per month. Nevertheless, Strawbees CODE, School of Ridiculous Inventions, and general webinars are free.

[22] https://strawbees.com/

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Other countries

(1) The art of tinkering; USA/online; Exploratorium; Museum visitors and people interested in tinkering[23]

Summary

The exploratorium is credited with the creation of tinkering as a pedagogical methodology and collaborates both at the national level (e.g., they often collaborate with MIT) and international level (e.g., they were advisors in the aforementioned Tinkering EU projects). Whilst they often have some events/exhibitions with a tinkering methodology, "The art of tinkering" is an event they have created for the months of June to September 2022. During this event, museum visitors are invited to tinker with artworks and contraptions, including sculpting with light and shadow, build circuits, and use junk to compose music. Additionally, visitors can also see tinkering creations by people such as Natasha Dzurny and Junior Fritz Jacquet.

Objectives

The objective of this event is to promote STEAM subjects among the museum visitors by making them exciting and fun by using a tinkering methodology allied to the arts.

Actions and implementation

The museum has collected interesting and unusual creations by different people which will be exhibited during this period, as well as developed tasks such as sculpting with light and shadow, building circuits, and using junk to compose music towards making STEAM fun and interesting to visitors. Additionally, the museum also offers events during this time including family workshops, adult-only After Dark workshops, ideas for people to tinker at home which they share every Thursday on their Twitter, and purchasable tinkering books and kits.

Constraints

Visiting the Exploratorium costs between $19.95 (children between the ages of 4-12) and $29.95 (regular adult day ticket), however their tinkering at home is free and accessible online[24].

[23] https://www.exploratorium.edu/tinker

[24] https://www.exploratorium.edu/explore/tinkering-at-home

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(2) Save Make Reinvent; UK; Institute of Imagination; Teachers and schoolchildren[25]

Summary

This program consists of a six weeks interdisciplinary learning journey with creative learning resources, live broadcast workshops, and support for teaching staff and is offered in Newham, UK.

Objectives

Teachers are given an imagination toolbox with items and trained in the methodologies of the program so they can later guide their students in creating natural inks, creating a junkbot, creating stop animation, and code and build their own eco machines.

Actions and implementation

Currently schools are able to sign up for the summer term of 2021/2022. The materials are sent to the schools and the teachers are given online workshops to prepare to then implement the proposed activities with their students. Total time of the program is 6 weeks: first the toolkit and teacher training for all activities is provided, then the work with the classes starts, in which the topic is introduced and materials that will be used are collected. This is followed by a 90min creative workshop and a curriculum extender, explainers and other resources for educators to facilitate the integration of themes and activities in the class. In the final week, the whole school is getting involved. The program includes the creation of natural inks, junkbot, a stop animation, and building eco machines.

Constraints

This practice is only available in Newham even though the course is online.

[25] https://ioi.london/schools/ and https://ioi.london/wp-content/uploads/2022/03/Schools-PDF-Explainer_V5.pdf

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Circular economy education

Good practices

Greece

(1) *#allazoumesinithies*; AB Vassilopoulos; Students and children[26]

Summary

Since 2018 and in the frame of the *#allazoumesinithies* campaign, a bus that depicts an environmental educational centre travels through Greece to convey the message of recycling and environmental protection to students and children.

Objectives

The goal is to raise awareness among young people and convey the idea and message of recycling and environmental protection in a playful, innovative way, encouraging them to change their habits and protect the environment.

Actions and implementation

A modern double-decker bus was transformed to become a centre for environmental education and recycling. The bus travels through Greece and stops in different locations. Then, on the first level of the bus they give practical environmental training on recycling, for which they also use automatic recycling machines for materials like metal and plastic packaging. On the second bus level, audiovisual educational resources are provided through which learners gain knowledge about environment protection and recycling.

Success factors

Through the mobility provided in a bus, many people in different areas can be reached. Moreover, the educational aspects are designed in an interactive, playful and experimental eway, encouraging learners to get engaged.

Constraints

[26] https://allazoumesinithies.ab.gr/anakyklosi/kentro-perivallontikis-ekpaideysi/?cli_action=1652961101.307

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Any constraints are related to the maintenance and working costs of the bus.

(2) CICLO; Erasmus+ project; People seeking job qualifications[27]

Summary

The CICLO project developed an interactive, needs-oriented online Circular Economy labour market ecosystem, mapping skills and providing a training package for employed and unemployed persons to provide them with basic circular economy jobs skills related to reuse and remanufacturing opportunities, recycling management as well as servitization (services instead of products) development. It was a consortium of 8 partners from 7 European countries including Greece.

Objectives

The aim was to

- combat low levels of circular economy skills among long-term unemployed and low-skilled workers
- empowering workers/unemployed people to become active in their career via the circular economy market
- maximise employability opportunities
- enhance the development of critical media literacy skills and competences in VET
- provide innovative VET pedagogical methods, best practice guidelines, and strategies towards the use of digital tools and innovative learning environments

Actions and implementation

Five main outcomes were created:

- Circular Economy Skills Ecosystem and Methodological Framework; ➢
- CICLO Curriculum and VET Toolbox of Key Skills Acquisition Resources; ➢
- Multifunctional and Interactive Platform; ➢
- Skills Assessment, Validation and Recognition Tools; ➢
- Adaption and Policy Package.

[27] https://ciclo-project.eu/

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Success factors

CICLO offers a platform in various languages (English, Italian, Greek, Portuguese, Spanish and Slovak), where learners can register for free to learn in their own space, pace and time. It consists of 8 training modules on basic concepts of the circular economy, for which after completion a certification can be acquired.

Constraints

Any constraints are related to the project's exploitation after its lifecycle.

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Italy

(1) Proposte Per L'educazione Alla Sostenibilità; Municipality of Padua Environment and Territory sector; Educators, teachers and schools[28]

Summary

The present workshops/project was an educational program provided by the Municipality of Padua, with the purpose of supporting and facilitating the implementation of environmental education topics in schools and to educators. The offer is broad, interdisciplinary and supposed to be easily adaptable to different educational curriculums. The workshops are summarised with all relevant information on how to implement them in class in a single document.

Objectives

The offer aimed to serve as a resource and tool for educators and students to become involved in activities that question and reflect upon sustainability, environmental responsibility and the perception of the environment as a public good. Through the provision of support and materials, the project strived to be easily and flexibly integratable in already existing curricular lessons, thereby facilitating to include these topics in the education.

Actions and implementation

The aforementioned publication of educational projects and workshops in digital format. This way it can be easily accessible by everyone including schools and educators and, as it collects all these projects and workshops in a single publication, it allows them to better plan their school year and times/classes where they will discuss environmental education. The topics covered by the different workshops range from water, energy and air to food, biodiversity, waste and recycling as well as sustainability.

Success factors

What makes this a good practice is the fact that during the implementation of the workshop, educators received a lot of support by the team and the participation was for free. The flexible approach to educating about these topics makes it easier to be implemented. Moreover, even after the offer of the course, the material including the info and tools for each workshop is available digitally (see https://www.padovanet.it/sites/default/files/attachment/Opuscolo%202020-21_WEB.pdf).

[28] https://www.padovanet.it/informazione/proposte-leducazione-alla-sostenibilit%C3%A0-202021

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Constraints

Whilst the materials are available online, this course was only available in 2020/2021 and was limited to the Padua municipality.

(2) Cycle: the project to integrate the circular economy into adult education; Erasmus+ project; Adults[29]

Summary

The project is a Erasmus+ funded project cooperation partnership of Italy, Spain, Austria, Poland, Belgium and UK during the time of 2017-2019. It intends to create tools, guidance and resources through an online platform/hub, which facilitates the development and expansion of skills for circular economy in adult education. This helps foster transversal competencies in adult education, while promoting active citizenship and sustainable attitudes and behaviours.

Objectives

The aim of the project was to create a set of tools to support the introduction of circular economy skills in adult education towards deepening and developing professional and educational competencies within this area.

Actions and implementation

- Identification of skills and competences related to the circular economy;
- Development of training materials;
- Creation of an e-learning platform providing training content tailored to educational needs;
- Six events - one in each of the six partnership countries - to help promote the results of the project and in particular the use of the platform.

Success factors

The development of digitally and freely available tools to support the introduction of circular economy skills into adult education in six languages.

[29] https://cycle-project.eu/

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Constraints

Constraints are related to the project's exploitation after its lifecycle. Whether it was widely disseminated and the materials easy enough to find so that, even after the project has ended, people are still using them.

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Portugal 

(1) Projeto Reparar; Circular Economy Portugal and CascaisAmbiente; Adults[30]

Summary

This project aimed to promote repairing as a core practice of Circular Economy. Whilst some of the other Rs - such as recycling - are well-known and people are aware of their importance, repairing is often overlooked or perceived as too much work/too expensive. To this end, Reparar was created, not only to raise awareness and promote a discussion about the value of repairing, but also to acknowledge and give visibility to small repair shops as they are circular economy businesses, and foster community repairing through the creation of a repair café.

Objectives

This project aimed to promote and prove that repairing can and should be promoted through different pathways (i.e., small repair shops and community repairing) and with its success encourage its replication throughout the country.

Actions and implementation

The project applied a questionnaire to understand the public's degree of awareness regarding repairing and the circular economy; created a Repair Café in Cascais where people were invited to bring their broken electronics and repair them, thereby promoting community repairing; it created a website to raise awareness among consumers through articles and contents related with repairing and the circular economy; promoted and gave visibility to local/traditional repairing business by mapping their locations and making this information available to consumers; encouraged discussion regarding the importance of repairing to the circular economy through a public debate; and created a manual on how to organise/create a Repair Café so others could replicate its experience.

Success factors

This project is a good practice as it was able to endorse repairing not only by raising awareness with the general public, but also by promoting and giving visibility to repairing services, and even promoting community repairing through a repair café. This multilevel approach was the core of the project's success and due to said success the project also encouraged its replication throughout Portugal.

[30] https://projeto-reparar.pt

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Constraints

The project only had a duration of 3 months (September to November 2021) and the Repair Café Cascais was only a temporary pop-up. Nonetheless, the project did create the aforementioned manual to promote and aid the organisation/creation of Repair Cafés (see https://projeto-reparar.pt/wp-content/uploads/2021/11/RepairCafe_manual_final_WEB.pdf).

(2) Urjalândia a circular; União de Freguesias de Vilela, Seramil e Paredes Secas, Câmara Municipal de Amares, and Escola Superior de Educação Paula Frassinetti; Mostly children and teens[31]

Summary

Urjalândia a circular rehabilitated a vacant primary school building in a low density territory into a circular economy space. This space is made up of 2 areas for implementing the circular economy: one area is the "Recycling Atelier" where children are invited to use its 4 "Precious Plastic" machines to recycle and reuse plastic to create new objects through take-back, reuse and remanufacture avoiding the end of the cycle by promoting creative reuse (upcycling). The second area is the "*Charcas Biológicas - Água a Circular*" (Organic Ponds - Circulating Water), which responds to the challenge of reusing water by purifying rainwater and then using it to flush the toilet and clean the space.

Objectives

This environmental education centre aims to foster the reuse, remanufacture, and upcycling of plastics, as well as encourage a better use of potable water by saving and purifying rainwater and then using it to clean the space and flush the toilet. The centre also aimed to promote volunteering and communitarianism, as well as contribute to the region's development at the social, environmental, and touristic levels.

Actions and implementation

The centre started by finding an adequate space (a vacant primary school) and planning its conversion and rehabilitation into a circular economy space. Then, they had to identify which machines were the most appropriate to recycle and reuse plastic and acquire them. They also had to research and identify which plants, native to Portugal (towards avoiding any negative environmental impacts on the region), would be adequate for rainwater treatment so it could be used to flush and keep the place clean, and set up the "*Charcas Biológicas - Água a Circular*" to conduct said treatment. After this, the centre started to receive visitors and created a manual on circular economy and presenting its work for children/educators and anyone else that might be interested. Additionally, the centre also has a yearly event named "Sustainable Christmas Village" where all the 20 inhabitants of the village decorate the area for Christmas by reusing

[31] https://urjalandiaacircular.pt/

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recyclables and using natural materials. Whilst with the pandemic this event was cancelled, the centre has instead decided to install a swing with a panoramic view as an alternative towards promoting tourism to the region.

Success factors

The centre is a good practice considering it rehabilitated a vacant primary school building into its headquarters which aligns with the principles of the circular economy. Furthermore, by allowing children and teens (and occasionally adults) to experiment and transform plastic themselves, it raises awareness and promotes the take-back/reuse/remanufacture/upcycle of plastic. It is also a good practice because of its use of rainwater (after using indigenous plants to treat it) to clean the space and flush, thus saving this precious natural resource. Finally, by having a yearly event where the whole population of the area participates, it makes sure they believe in and support the centre.

Constraints

Any potential constraints are likely related to its maintenance.

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Sweden 

(1) *Biodolomer* for LIFE; LIFE programme of the European Union; Mostly companies and the government[32]

Summary

This is a EU-sponsored project within the LIFE programme and was jointly run by Gaia BioMaterials AB, Båstad Municipality, and the NSR. In this project they developed and promoted a material that is innovative, new and sustainable, while also providing education to companies and the government on circular economy.

Objectives

The goal of this company was to show and find a way how instead of energy intensive and environmentally-destroying materials one can use renewable, biodegradable and sustainable materials as a substitute.

Actions and implementation

The main approach was trying to replace popular materials with newer biomaterials. Therefore, the Biodolomer company strived to ameliorate their offer into an even more innovative material which is based on biomass is material that is fully biodegradable, renewable, combustible to renewable energies and compostable. With this project, the company created and tested 101 recipes for material and came up with a reliable, patented and permitted replacement for plastic material. This material consists mostly of renewable sources, particularly dolomite and vegetable substances. The project was disseminated through the website and online media as well as events and exhibitions, reaching a vast amount of people.

Success factors

This company/project promoted the creation of alternatives to plastic, reusing and finding sources that are renewable, sustainable and recyclable. The final version of *biodolomer* is fossil-fuel free, made up of 90% recyclables, is renewable, biodegradable, compostable, convertible into bioenergy, and, when incinerated, emits significantly less CO2-emissions in comparison to plastic and paper. Despite other biomaterials also having some of these characteristics, *biodolomer* is particularly innovative in the regard that it has all of them and thus is more versatile.

Constraints

[32] https://biodolomerforlife.se/

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The final outcome is not 100% renewable, making it evident that there is still room for improvements.

(2) Boosting Circular Economy; *Cradlenet;* Companies and government[33]

Summary

Cradlenet supports companies and organisations with the transition to circular economy by offering their members weekly theme meetings, advisory services, knowledge and information sharing, education, studies, seminars, and networking opportunities on a local, national and among scandinavian countries. It is one of the oldest circular finance networks in the world.

Objectives

The practice aims to accelerate Sweden's transition to a circular economy and is Sweden's platform for knowledge and networking in the circular economy. It is its goal that 70 percent of Swedish companies will have set circular economy goals by 2025. The emphasis lies on a holistic, wholesome approach of transitioning whole business models, infrastructures and economy designs into circular economy models, instead of focusing "only" on the last steps of waste management and recycling.

Actions and implementation

Cradlenet offers free and open seminars on circular economy online and in-person, but also offers paid membership. The network works on several levels, both educational and political, thereby hoping to speed up the transition to a circular economy. They provide latest news, projects, campaigns and information online, on their social media, website and through seminars. In these seminars, knowledge and information about circular economy is offered, shared and debate is prompted.

Success factors

The network works at various levels and has a wide range of offers.

Constraints

[33] https://www.cradlenet.se

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While there are also some events and seminars offered for free, the full access and support of the network can only be achieved through a paid membership starting at SEK 2,500 per year (micro-organisations) and going up to SEK 50,000 per year (macro-organisations).

(3) Making furniture out of waste; Malmö Upcycling Service; All[34]

Summary

This design studio uses recycled and repurposed waste materials to make types of furniture or homeware. They take leftover materials from manufacturers and create new products out of them.

Objectives

To rethink sustainability methods and create different designs by using what already exists and putting it again to a fruitful use. Thus, it is aimed to challenge designers and furniture industry to scrutinise its sustainability production methods by reducing and recycling waste and working toward a more circular economy.

Actions and implementation

The studio works together with manufacturers from Sweden, whose "garbage" materials they use to design new furniture. They take materials from different industries and unite them in their products. While doing so, they also try to minimise waste produced in their own design process. Moreover, in their homeware, they pay attention to design their products in a way that they can be easily separated for reuse or recycling.

Success factors

By reusing and upcycling materials from manufacturers, the studio contributes to a circular economy. The idea encourages other designers to reflect about their sustainable responsibilities and creates pathways for a more sustainable design industry.

[34] https://www.malmoupcyclingservice.com/about

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Other countries

(1) VeryNile; Egypt; Local community of the Qursaya island on the Nile river[35]

Summary

Since 2018, VeryNile uses sustainable means to clean the Nile, recycles and upcycles the collected solid waste through partnerships with local stakeholders and citizens, and promotes awareness on environmental issues, particularly plastic.

Objectives

VeryNile's main objective is it to tackle to waste problem in the Nile while creating eco-friendly communities by applying innovative, social empowerment approaches.

Actions and implementation

VeryNile has four main activities that help them achieve their goals. These are firstly the cleaning of the river involving fisher-people who are as well being paid for this activity, thereby promoting their empowerment, awareness and participation. Besides their participation in the collecting of recyclables and trash, the project further runs a Nile cleaning boat, which collects the waste through a basket and offers space to segregate it directly on the boat. This boat can take up to 500kg of waste per week, and works 5 days/week. Their third activity is the recycling and upcycling of the collected waste - a process in which eight local women were trained for creating new products such as reusable eco-friendly bags that are produced out of collected plastic bags. Fourthly, VeryNile increases waste and environmental awareness through engaging volunteers in cleanup activities and other activities such as the production of a film about the impact of a plastic bag in the ocean. Finally, VeryNile works to develop social waste management solutions for residents encouraging them to apply these in their households.

Success factors

VeryNile is a good practice due to their diverse approach to tackle the waste issue in the Nile, including stakeholders as well as locals. They point out that the engagement of the community through fisherpeople and citizens is crucial, while also the cooperation with the government was necessary to get an allowance for the activities. The combination of cleaning activities, a cleaning boat, awareness campaigns, job opportunities and the offer of waste management systems that are appropriate and convenient for the users is highly effective. The inclusion of job opportunities for women is particularly great, as it further promotes women empowerment specifically.

[35] http://www.verynile.org/

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Constraints

The challenges that are mentioned are the lack of infrastructure to compress and process the amount of collected waste; the lack of recycling entities; the lack of funding that would allow the project to be expanded; and the lack of awareness in the community.

(2) Girls go Circular; Online, European project; EIT Raw Materials; School girls 14-19 years, teachers and interested individuals[36]

Summary

The Girls Go Circular project is a project that aims to support learners to find sustainable solutions learning about circular economy while at the same time developing and fostering their digital and leadership skills. Their special focus is on girls. At the core of the project stands an online learning platform.

Objectives

The project strives to provide 40000 school girls between 14-19 years with skills on digitalization and entrepreneurship by offering an online learning platform about circular economy.

Actions and implementation

Within the project, an online learning platform was developed which applies a learning-by-doing approach, thereby promoting students to take on different activities like exercises, role-plays and research. It provides the opportunity to learn about the circular economy, how to create businesses in this field, to ameliorate entrepreneurial and digital skills, and promote finding solutions for today's challenges. Modules include topics like e-waste, robotics, food or climate change. The platform is freely open for anyone and specifically directed to teachers, school students (girls) and independent users - depending on the role, the course instructions differ.

Success factors

So far, more than 11000 girls and 4000 boys are claimed to be empowered and trained. The Girls Go Circular has supported more than 700 schools in different countries, providing the platform in 9 different languages. Through the narrow, intensive support of the educators and schools and the learning-by-doing approach of the modules, the project is replicated and used in many different countries and contexts.

[36] https://eit-girlsgocircular.eu/about/

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Existing offers

Greece

(1) Bachelor of Science in Environmental Studies; DEREE - The American College of Greece; Undergraduate students[37]

Summary

The program is a 4 years Bachelor degree offered in Athens which combines interdisciplinary knowledge, information and approaches to provide students with a better understanding and tackling of the complex nature of environmental problems.

Objectives

The program's objective is the development of students' comprehension of the roots, causes and dimensions of environmental issues from a social, ecological, economic and political perspective while providing and finding solutions to address them in an effective way, one such way being sustainability and the circular economy.

Action and implementation

In the four years degree, students attend different courses for instance on environmental science, general ecology, and geology, making them comprehend the structure and functioning of nature, life and humans. They deal with topics like the relationship between these systems, while gaining knowledge and ideas on identifying, managing and solving problems from different angles, like policy, practically, economically or socially. One of the potential solutions discussed within this Bachelor degree is the implementation of circular economy models towards promoting environmental sustainability. When finalising the program, the students become environmentally informed and socially responsible citizens.

Constraints

Considering this is a Bachelor's degree, there are costs relating to tuition and fees. These are around 5520€ per semester for full-time students taking 16 credits.

(2) Recycling Christmas trees: No more Christmas trees in landfills; Aristotle University of Thessaloniki; all[38]

[37] https://www.acg.edu/undergraduate/undergraduate-programs/school-of-liberal-arts-sciences/liberal-arts-sciences-majors/environmental-studies/

[38] https://circulareconomy.europa.eu/platform/en/good-practices/recycling-christmas-trees-no-more-christmas-trees-landfills

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Summary

The Regional Association of Solid Waste Management Agencies of Central Macedonia and the Hellenic Ministry of Environment and Energy worked together to do the project, in which discarded christmas trees are recycled in order to make pellets, chipboards, biofuels or organic waste for composting. They are collected in the municipal disposal points and in collaboration with landfill operators who banned the Christmas tree disposal from their landfills.

Objectives

The project aims to decrease the amount of Christmas trees wasted in landfills and instead promotes their usage and recycling into other products. At the same time, it aims to create a sense of environmental protection and engagement in the community.

Actions and implementation

The project involves members of the public taking part in the process as they help collect Christmas trees by going from door to door, volunteer in activities and therefore protect the environment together. In 2019, 2800 (3 tonnes) of Christmas trees were collected and chips scattered across forested areas. In 2020, they are produced to become pellets.

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Italy

(1) The circular economy; un/lab; Teachers and students of primary and secondary schools[39]

Summary

The circular economy set of courses is aimed at teachers and students of primary and secondary schools towards promoting education for an ethical future; good practices for the protection of the Earth; and becoming more aware and responsible citizens. Following the guidelines of the 2030 Agenda for Sustainable Development, this set of courses addresses topics such as "Towards the circular economy. Regenerate, share, safeguard." (Course 1), "Sustainability and digital education for civic education at school" (Course 2); and "the role of agri-food production in the management and education of the circular economy" (Course 3). Of the three modules, the second one is the only course exclusive to educators.

Objectives

- Introduction to the concepts of circular economy and sustainable development as the pathway for a more ethical future, to the protection of the Earth and to the formation of more aware and responsible citizens.
- Providing teachers with ideas and content to enable them to address these issues within the school curriculum by developing educational content promoting ethics, responsibility, respect for the environment, the rules and how to transition to a circular economic system.
- Providing students with fundamental information regarding biodiversity, environmental resources, pollution as well as educating them on sustainability and sustainable development.

Actions and implementation

This Circular Economy is divided into the three aforementioned courses: "Towards the circular economy. Regenerate, share, safeguard.", "Sustainability and digital education for civic education at school"; and "the role of agri-food production in the management and education of the circular economy". Each course has a different lecturer with extensive knowledge on the topic. The first course aimed to provide an introduction and the fundamentals of the circular economy to both teachers and students and why the circular economy is the pathway for a more sustainable future but it actually has different contents for students and teachers. For instance, whilst for teachers there is more focus on the different models of economy, and why the circular economy is the preferable one, for students there is a greater focus on biodiversity. Additionally, whilst this first course has a 12 hour duration for students and is split into 5 classes, it has a 10 hour duration for teachers and can be done either face-to-face or online. The second course is exclusive to educators and aims to guide them in the creation of educational contents towards promoting global and responsible citizenship among their students, it has a duration of 25 hours of which 10 are in synchronous

[39] https://www.un-lab.it/economia-circolare/

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sessions, 12 are for studying the provided materials independently, and 3 are for the development of a project. Finally, the third course has the same contents both for teachers and students and aims to promote a better and more environmentally-friendly diet. This last course has a duration of 15 hours of which 12 are to learn the materials, and 3 are to develop a project.

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Portugal

(1) Economia Circular na Gestão de Resíduos; Academia Lipor; Professionals that are interested in the thematic, particularly engineers[40]

Summary

This is an 8h online course with one synchronous session on the topic of circular economy and waste management. It is aimed at professionals, particularly engineers considering its accreditation of continuing education for engineers.

Objectives

The course is aimed for professionals and defined the following objectives to be achieved: learning and understanding the concept of the Circular Economy and its tenets; being able to identify the need for integration of the Circular Economy; understanding the legal framework relating to the Circular Economy; and, lastly, being able to recognize the new model of economic development and the new business models.

Actions and implementation

This e-Learning course has a total of 8h of which 7 are asynchronous in Moodle and 1 is synchronous through MS Teams. The course consists of modules covering the topics of: Environmental condition; Introduction to the concept of circular economy; Introduction of the principles of circular economy; Waste package - Policies, regulations, and challenges; and Circular business models. Participants that complete 90% of the course contents will get a certificate.

Constraints

It has a cost of 20€ but some participants classify for reduced or even zero cost.

Other notes

It is noteworthy to mention that this Academy further has another project called *CREW*[41], which aims to empower the community with tools, knowledge and experiences to "repair the world", hence engaging people for electronic and electrical equipment repair, and thereby for circularity and sustainability.

[40] https://www.lipor.pt/pt/academia-online/curso/economia-circular-na-gestao-de-residuos/

[41] https://crew.lipor.pt/sobre-nos/

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(2) CAIS RECICLA; CAIS; Adults in situations of vulnerability[42]

Summary

CAIS RECICLA is a workshop that aims to transform lives, products and companies and is directed to people in a situation of social vulnerability. The training provides not only an income, but the creation of unique pieces from waste, thereby developing motivation, self-esteem and dignity. These pieces are further sold to companies/institutions, who promote environmental responsibility with their purchase. The project holds a showroom, which displays the products and is to be visited by customers.

Objectives

Through *CAIS RECICLA*, social inclusion of the people living in social vulnerability or exclusion is fostered, as they are provided access to training methods that facilitate their return to the labour market while at the same time increasing their self-esteem, skills and perception of dignity.

Actions and implementation

Firstly, waste is collected, for which designers then create graphic line products in line with the vision of the clients. The artisans, who are adults in vulnerable situations, then manually materialise these waste products into ecological, high quality, creative and functional products. By doing so, three aspects are covered: the artisans regain skills, self-esteem and motivation as well as an income; the handmade products are 100% recycled, unique and innovative; and the companies purchasing the products contribute to and strengthen their social and ecological impact.

[42] https://www.cais.pt/cais-recicla/

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Sweden

(1) GRUDE – Green Rural Economy; Interreg Nord Project; Businesses and municipalities from the northern areas of Finland, Sweden, and Norway[43]

Summary

The GRUDE project is an Interreg Nord Project involving the countries of Finland, Sweden, and Norway. This project promotes communication and sharing of information regarding the northern sparsely populated areas of these countries towards aiding businesses and municipalities of these areas in their decision-making. The project included the creation of a green economy network, workshops, both at the regional and international levels, and information campaigns.

Objectives

The GRUDE project aims to promote networking, sharing of knowledge and information, and greenovation on the topics of sustainable societies, blue economy, and arctic bioeconomy, resulting in saving natural resources and creating employment and growth by recognizing the particularities of Northern communities' circular economy.

Actions and implementation

Throughout its lifecycle, it has implemented various Greenovation camps, workshops, and information campaigns. Additionally, it also published different reports on the different regions covered by the project, a manual on how to create Greenovation camps, and a collection of good practices on the Blue economy, Arctic bioenergy, and Sustainable societies.

Constraints

Constraints are related to the project's exploitation after its lifecycle. Nevertheless, the manual on Greenovation camps is likely to ensure the project's work has an impact and is used long after it has ended (see https://www.grudeproject.eu/resources-reports/).

[43] https://www.grudeproject.eu/

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Other countries

(1) UNITAR online course on waste management and circular economy; Online; [44]

Summary

This free online course is offered by the training institute of the UN with approx. 6 hours of learning content, presented in 5 modules (Waste Basics; Municipal solid waste collection systems and disposal; Policy instruments on waste management; Circular economy; Biowaste composting) aiming to give an introduction to the challenges of waste and the concept of circular economy. It is directed at persons working in the local government or waste management programmes, but also to other stakeholders like NGOs or students.

Objectives

The course aims to

- give insight into the importance of sound waste management, biowaste management in relation to the SDGs and for the reduction of poverty as well as its contribution to economic growth
- provide tools and policy instruments that can be used on effective planning for waste management;
- promote the discussion on how to enhance effective governance of waste among key stakeholders and how circular economy can be supporting

Constraints

Even though the course is for free, it is a rather short online training that only provides an introduction to the topic without going deeper. Given that it is online and self-paced, learners have to be self-motivated to actually keep up with the course.

[44] https://www.unitar.org/event/full-catalog/waste-management-and-circular-economy-1

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Plastic craftwork

Good practices

Greece

(1) By(e) Plastic; Electra Energy Solidarity Now, Precious Plastic Greece, Almasar NGO; everyone[45]

Summary

The By(e) plastic project was a 3-months educational program designed by several Greek organisations in 2018, that resulted in a lab in Athens, in which workshops and seminars on recycling were offered. This lab included the processing and recycling of different plastic materials through the creation and usage of so-called Precious Plastic machines.

Objectives

The project aimed to support and enhance skills and exchange between unemployed and/or motivated persons and startups, while promoting people to reduce and reuse plastic. It aimed to provide the learners with the skills and competencies to build, train and use precious plastic machines themselves, thereby encouraging them to create their own follow-up projects.

Actions and implementation

The lab trained people between June and September 2018 through workshops on how to build three different kinds of recycling machines, how to use these as well as how to train other people in this process. These machines are: a plastic shredder, a melter injector and an oven of the final production. Therefore, participants' skills and tools on up- and recycling were fostered, as much as they were empowered for taking their own initiatives beyond the project. Given that the offer was for free and the machines can be built anywhere, it was expected that the initiative would be taken also after the end of the workshops. At the same time, during the program, participants created new products out of plastic, which could be sold. The program consisted of workshops happening twice a week with a duration of 2-3 hours during the time of 3 months, in which, presentations, videos and experimenting with the plastic materials were included.

Success factors

[45] https://electraenergy.coop/bye-plastic-project/

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This practice was offered to anyone interested and was for free. Due to the fact that it provided learners with the skills to actually build plastic recycling machines themselves with an open-source technology, the multiplication effect of this practice was very high, empowering people in terms of employability and taking initiative even after the project ended.

Constraints

There is no record on whether or not this practice actually resulted in new initiatives or programs.

(2) Precious Plastic Naxos, Everyone[46]

Summary

The Precious Plastic Naxos belongs to the Precious Plastic project, which is an open-source project to reduce and recycle plastic ways by creating new products out of it. This is done using a variety of machines for moulding the plastic into new objects. These products such as buttons, forms, phone cases etc. are offered in an online store.

Objectives

The Precious Plastic Naxos is a branch of the Precious Plastic project, created by Dave Hakkens, in the island of Naxos. It aims to reduce plastic and reuse its waste in the island whilst also raising awareness on plastic and waste as well as its management, and passing on the knowledge about it onto younger generations.

Actions and implementation

Within the project, Precious Plastic Naxos various machines were created for moulding the plastic in order to recreate new products. This technology is open-source and based on the project's motherbrand, AluMoulds, which applies a CNC technology, laser cutters and CAD software. The created products are being sold online, and include items like phone cases, baskets, toys and surfboard equipment. Moreover, the project collaborates with other initiatives (see first good practices) in order to multiply and exchange their knowledge. Once a week, they clean beaches in collaboration with the Laguna Beach Park windsurfing school and, any participants able to fill one bag with plastic waste, gets one recycled plastic product.

Success factors

[46] https://www.preciousplasticnaxos.com/

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This project is remarkable as it provides and shares the technology of how to build the machines and the products (i.e., open-source), highlighting their motivation to really promote change and empower young people to become more active and environmentally conscious. This can also be seen in the collaboration with other organisations, projects and initiatives.

Constraints

The project seems to be very localised and small (only covering the Greek island of Naxos), making it difficult to find more information about offers, activities and methods.

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Italy

(1) AlterEquo; Social cooperative T-Riciclo; Group of women environmental activists, and female artisan excluded from the labour market[47]

Summary

The project of Up-Cycling *AlterEquo* promotes a culture of sustainable consumption and production models that favour the quality of artistic and create products and the lives of workers. The project began in 2011, thanks to the support of an award from the 2010 first edition of the Regional Council of Lazio - *Città al Femminile*, and the economic contribution had with the call won by *Roma Provincia Creativa* (2011), the Cooperative has been able to further expand its business segment with the design, production and online marketing of the brand *AlterEquo*. As a project born in a cooperative, it makes use of the collaboration of many women recovered to productivity and is therefore able to aggregate profiles of professional artisans, united in the realisation of creative projects of eco design. Their action is based on the circular exploitation of waste, and collects about 400 bottles per month on the streets of the capital and the beaches of the Roman coast. These materials, such as PET plastic, are transformed into design objects, small toys, and soft toys, decorations for clothes and accessories for mothers and children, thanks to the recovery of manual craftworks.

Objectives

The objective of *AlterEquo* is to promote a culture of sustainable consumption and production models that privilege the quality of handicraft products as well as the life of women workers who, having left the world of work by choice, seniority or because they are "scapegoats" of a systemic crisis, still have creativity and productive energy to express. The desire is to implement a new commercial enterprise, aimed at the recovery, reinvention and marketing of products for mother and child. The activity is based on two fundamental pillars: the deconstruction of the already produced and the transformation into an object completely different and unique for its characteristics. The objectives can be summarised around the concept of up cycling, through the mechanism of the 5R: Recovery of materials; Recovery of female professionalism out of the productive world; Recovery of ancient crafts; Recovery of creativity; Recovery of a conscious relationship with the environment.

Actions and implementation

The cooperative has created a collection of prototypes on two strands of artistic craftsmanship: the line of accessories, women's jewellery and eco-furniture that uses the material of plastic bottles Pet which gives rise to the name of the line: "re-Pet and sin no more"; the line of clothing for children and mothers "pet

[47] https://www.altereguo.com/en/

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shop kids", with clothing items recovered and embellished with inserts and details made from toys and stuffed animals used. All made by the hands of women with the aid of a manual on ancient crafts. The raw material, a waste product, is attained at virtually zero cost and attained through the Cooperative's network. Once acquired, the material undergoes a selection process, followed by verification, sanitization and finally processing through the contribution of external artisans to whom the project work is contracted. In fact, the cooperative is currently unable to form an internal team on a permanent basis. The Cooperative was able to further expand its commercial segment with the design, production and online marketing of the *AlterEquo* brand. Towards the stabilisation of the commercial activity, there was the registration of the brand and design (at national level and later at European level) and the, currently underway, certification of offsetting of CO2 emissions in the production and distribution phase.

Success factors

The good practice is effective in at least three aspects: as an example of development of sustainable economy and "green" jobs for the younger generations; the employment offered to women artisans; the cleaning of streets and beaches around Rome, "not to accustom the eye to the environmental degradation that offends the earth".

Constraints

The budgets of the last year's show a slight positive sign, mainly thanks to the training/educational activities addressed to schools but also to adults (childhood educators) and to the activities of organisation of cultural/environmental events. There could be other improvements especially on the economic support level. At the moment there is no institutional or bank financing, and the cooperative proceeds on the line of self-financing, hence the implementation of the commercial segment *AlterEquo* that focuses mainly on e-commerce, a truly innovative and growing sector that caters to a virtually global audience of customers, thus helping to reduce the distribution chain, the impact on the environment and save resources, leaving intact the guarantee of the sale transaction.

(2) ReMade Community Lab; community foundation San Gennaro; All residents from the Sanità district of Naples [48]

Summary

ReMade Community Lab aims to spread green thinking and digital culture by implementing micro-production processes that include the recycling and digital manufacturing of urban waste. They strive to reduce the complexity of waste management by providing a single unit in which waste can be collected, recycled and produced. The lab offers services in three dimensions: research, design of products and processes, and raising awareness through workshops and training for enterprises.

[48] https://www.remadecommunitylab.it/

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Objectives

Through the main goals of social innovation, ecologic thinking and digital manufacturing, the ReMade Community Lab aims to create processes which enable an economy that takes into account the planet's limits and resources. Therefore, the project strives to enable and encourage individuals to become active with their ideas and stimulate social action; to enforce digital tools that make the waste management easier; and promote the knowledge and awareness about the environment, the planet and the boundaries that we have to respect with our way of living. The ambition is to spread this experimentation outside the boundaries of the Rione Sanità, allowing other Neapolitan districts to have their own recycling workshop at KM 0. In doing so, it will help to counter the dynamics related to the infiltration of the Camorra and the Mafia in the cycle of waste and related illegal disposals, highly harmful to both humans and the environment.

Actions and implementation

ReMade attempts to provide an answer to the various crises Naples has experienced, and is experiencing, in the area of waste management, by bringing plastics and metals back into play through low-impact treatments. Plastics are sorted by polymer and colour and used to create filaments for the 3D printer. They also collect metal parts from computers and cell phones that further weigh down the load of highly polluting waste, often diverted-after long trips-to Africa. The motherboards and connectors are recovered and inserted into a production process, through lost-wax casting, an ancient goldsmith's technique from the Neapolitan tradition. From the plastic collected, eco-sustainable merchandising is produced for tourist flows, tools for the needs of the most varied clients, and products to support local crafts. ReMade has also prototyped buttons for tailors, recycled plastic pins for glove makers, and vases for florists, all with a sense of belonging to the territory. The vases, for example, take the shape of the tufa quarries of the Catacombs of San Gennaro, one of the points of attraction that in recent years has given so much vitality to the Sanità district.

Success factors

In addition to the benefits obtained from the recovery of plastic, the practice works in a district that is trying to emerge from a moment marked by the strong presence of Camorra clans that have found fertile ground in school dropouts and unemployment. The benefits can also be seen in the community spirit, the value of human capital, and the power of young people willing to build and not destroy. In addition, during the COVID-19 pandemic, ReMade came together with manufacturing to support ailing hospitals by printing free valves for respirators and filter masks to protect doctors and nurses from infection.

Constraints

Currently only available to residents of Sanitá. However, ReMade hopes to extend its experimentation outside the boundaries of Sanità, allowing the other Neapolitan districts to have their own KM 0 recycling laboratory.

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Portugal 

(1) ZOURI; Everyone[49]

Summary

ZOURI is an eco-vegan footwear brand that uses plastic trash from the Portuguese coast together with ecologic and sustainable materials.

Objectives

Recycling plastic waste collected from the ocean into footwear, thereby cleaning beaches.

Actions and implementation

ZOURI is a Portuguese company that creates footwear made with plastic trash from the Ocean. Each pair of shoes reuses 6 bottles of plastic from the ocean and is vegan, sustainable & fairtrade as it is made with organic materials and recycled plastic waste. The shoes are 100% made in Portugal. The company gathered around 600 volunteers to collect the trash, resulting in freeing the beaches from more than a ton of plastic in just a year.

Success factors

The company claims to sell the most ecological and vegan sneakers ever made. Over the last two years, *ZOURI* worked and researched for the best eco-friendly and vegan materials. The plastic trash is being transformed into raw material, and then mixed with natural materials like organic cotton, natural rubber and a fabric made from pineapple leaves called pinatex.

Constraints

While the company is helping to remove plastic from the Portuguese coasts, their offer does not exceed a sales-perspective through training offers or workshops. Even though the website promises one can "join the movement", there seems to be no way for interested people to get involved or learn about *ZOURI*'s approach. However, it is also stated that the waste is collected through volunteers picking up the waste which appears to support the existence of community involvement.

[49] https://www.zouri-shoes.com/Home/About

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(2) Oiá Plast; Communities[50]

Summary

Oiá Plast intends to transform the perception of plastic among the public by promoting its recycling and upcycling into durable and sought-after items, thus preventing it from being incinerated, put in landfills, and/or polluting the environment. The project started in Cape Verde when the founders saw the plastic waste in the beaches which was not necessarily due to the locals, but due to sea currents bringing waste from elsewhere. It is currently located in Portugal and its focus is to change this perception of plastics as single use and as waste and change how the Portuguese people interact with plastics.

Objectives

Oiá Plast intends to reduce and prevent the 79% of plastics that end in landfills and lost in the environment from ending there in the first place. To this end, the company promotes the transformation and upcycling of plastics into durable and sought-after items. Additionally, the company also has sensibilisation and plastic transformation events geared towards the public towards promoting this change to their perception of plastics.

Actions and implementation

As aforementioned, this company originated in Cape Verde after seeing how plastics from around the world ended up there. This resulted in the identification of the need to change how people perceive and interact with plastics. The company offers services to people and organisations that want to create unique and innovative items and souvenirs tailored to their ideas and completely made of plastic waste, making them 100% recycled and 100% recyclable. It also has an online store area where the general public can buy articles for their home such as tables and wall hooks, and even tangram puzzles. Besides this, the company also promotes plastic transformation workshops with the general public (including children) which is not only a unique and fun experience, but also helps change the public perception of plastic and makes them rethink topics related to their interaction with plastic such as consumption, sustainability and circularity. Furthermore, by actively participating in plastic recycling/upcycling and by learning about various recycling techniques and processes, they also end up promoting competencies like creativity and innovation.

Success factors

[50] https://www.oiaplast.com

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This company is a good practice because not only does it offer innovative and durable products made up from plastic both to direct consumers and to organisations that want specially-made items and souvenirs, but it also alerts and sensitises the general public about recycling/upcycling plastic, thus promoting a change in the perception of plastics and preventing their end in landfills and the environment.

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Sweden

(1) Ocean Plastics; Röhsska Museum of Design and Craft; Museum visitors[51]

Summary

From June 2019 to January 2020, the Röhsska Museum presented the exhibition "Ocean plastics". The exhibition showcased a collection of design products that deal with the problem of plastic waste and/or depict ideas and strategies on how to tackle this problem.

Objectives

The goal of this exhibition was to highlight how the creative sector and design can contribute to become providers for solutions of the waste problem and environmental issues.

Actions and implementation

Through the exhibition of new designs which have emerged out of discarded plastics and designed with designers and artists to create unique products, the topic of plastic pollution was addressed. This happened through reflecting upon the relationship to the sea, experimenting with the merits of bio-plastics as well as strategies to clean the oceans or recycling plastic. On two floors, the exhibition included for example "a whale tooth sculpture made from plastics collected from the ocean, single use containers made from algae, fossils of the future where the plastic waste has intermingled with natural sediments, and artefacts where residual materials from the Swedish plastic industry is given new life".

Success factors

This exhibition contributed to give insights and inspiration on how to reuse plastic to create design products, while at the same time fostering a greater awareness of ocean and plastic pollution. Through offering the exploration of the topic from a design perspective, this could be reached.

Constraints

[51] https://rohsska.se/en/exhibitions/ocean-plastics/

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As far as it can be understood in the website, the exhibition was not accompanied through other educational activities or workshops about the topic, leaving it up to the visitors to become active themselves in trying and experimenting. Additionally, it was only temporary and it is unclear whether there will be similar exhibitions in the future.

(2) Pamex; Everyone[52]

Summary

Pamex is a Swedish company focused on manufacturing and delivering safe and custom recycled plastic products to interested consumers. Some of the areas they serve are plumbing, garden and forestry, shop fittings, automotive industry, and more. Their motto is "Without Plastic Life is Dull".

Objectives

Pamex aims to be a reference for Swedish-quality safe, sustainable, and recycled plastic products.

Actions and implementation

Pamex creates custom plastic products with the input of their customers throughout the whole process. To this end, they get plastic waste and/or plastic pellets from other Swedish companies which they then transform with their injection moulding machines. Their machine park's injection moulds have a capacity between 20-200 tons. Additionally, they have long-term collaborations in both the construction and the design industries with some notable partners being Ikea, Cylinda, and Saab-Scania.

Success factors

Throughout its history the company has tried to ensure its sustainability and invested in creating items from recycled plastics whilst ensuring their quality and safety to customers. Due to this it has a good rapport and has partnerships with big companies such as Ikea.

Constraints

Whilst the company promotes sustainability and recycles plastic to create their items, their offer does not exceed a sales-perspective.

[52] https://www.pamex.se/en-gb/

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Other countries

(1) Precious Plastic Academy; Online and locations all over the world; All[53]

Summary

The Precious Plastic Academy is an online educational tool in the form of a collection of tutorials, content and resources about how to transform plastic into something new, offered for free and open source by Precious Plastic. Precious Plastic is a project initiated by One Army, a global movement with the goal to protect and preserve lives and the earth.

Objectives

Through the offer of Precious Plastic, it is aimed to showcase the diverse opportunities that can be set into practice to reduce plastic and create new products out of it. The Academy strives to offer and exchange their lessons learnt, know-how, knowledge and tools to anyone interested in order to encourage and promote the re- and upcycling of plastic.

Actions and implementation

The Academy provides a vast amount of resources to change plastic waste into treasures, freely downloadable kits and templates. This includes open-source information about plastic as material itself, how to collect and separate it, designs for machines, mould and products, business models that can be adopted by the learners, as well as instructions to create one's own recycling workspace and to become active in the community. The starter kits for different parts enable the users to directly find what they are looking for and to be guided step by step. Moreover, the community can upload videos and ideas themselves to further feed the academy's content and share knowledge and ideas.
Since its initiation in 2013, over 500 recycling workspaces have emerged and 400 tons of plastic recycled.

Success factors

The open-source philosophy allows the maximisation of the resources and knowhow while also ensuring innovation and constant improvements. Moreover, the simple design of the academy with different formats of materials (text, videos, instructions) and its connection to other parts of the Precious Plastic Universe,

[53] https://community.preciousplastic.com/academy/intro.html

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such as discussion platforms or online marketplaces where recycled products can be sold, makes it easy for anyone to become immersed and motivated to get active. All materials are also appropriate to be used separately therefore enabling their usage, for instance, in schools or other educational contexts.

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Existing offers

Greece 

(1) Recycling and Environment Education Parks; Rewarding Recycling; Young people, students and families[54]

Summary

These parks (three in Greece) depict the first Recycling Parks in Europe and unite both a place where people can return their packaging material like glass, metal or plastic while at the same time attend and participate in educational activities on environment and recycling. Therefore, they are recycling multi-sites.

Objectives

The two main goals of these parks is to promote environmental education and awareness in Greek people, in particular younger ones, as much as to encourage and motivate the citizens to participate in the recycling process by providing a fast and easy way to do so.

Actions and implementation

There are three different parks in Greece which have been created in collaboration with the municipalities of Agioi Anargyroi-Kamatero, Lagkada and Ioannina, and which vary in their offer of activities. Generally, activities that are offer include:

- rewards for recycling, for instance through incentives and prizes
- an environmental games area to learn how to recycle packaging and why it is important for the environment
- environmental education courses for primary and secondary school students
- workshops of creative environmental education, in which products and art is created out of the recycled materials
- an amphitheatre in which events like music or theatre on the topic of environment and recycling take place
- a botanic garden with local plans and a lake

[54] https://www.antapodotiki.gr/en/recycling-and-environmental-education-parks

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Constraints

While there are three different parks with different offers, it is difficult to understand exact activities, schedules or offers, therefore the aspect of art and plastic crafting workshops in these parks remains unclear.

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Italy

(1) Creative Plastic Recycling; *CiaiaLab*; Adults and children[55]

Summary

Course to learn how to make small objects from reusing discarded plastic. The course provides for the issuance of a certificate of participation and is held at the *CiaiaLab - Laboratorio Urbano Fasano.*

Objectives

The course aims to transform plastic waste into small objects of various types. At the end of the course, participants will be able to make artistic creations with plastic that would otherwise be thrown away. Specifically, the course aims at

- teaching the technique of working with candles to recycle PET (the plastic bottles)
- the creation of objects and jewellery using the plastic bottles of hygienic products like shampoo, shower gel or detergent

Actions and implementation

Through frontal and practical lessons, the course, addressed to adults and children, provides knowledge and skills useful to reuse the plastic material for the realisation of small objects. The practice not only helps to recycle a part of the plastic waste, but it also serves to raise awareness of the course participants on the theme of reuse.

Constraints

Offerings could be enhanced through online classes. This would also contribute to plastic recycling in other territories far away from the location where the course is taught. Moreover, workshops of this type could also be introduced in elementary school, in order to sensitise children to have respectful and virtuous behaviours in the field of recycling and to stimulate their artistic spirit.

[55] https://ciaialab.it/corsi/corso-di-riciclo-creativo-plastica/

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Portugal

(1) ZeroP; Communities[56]

Summary

ZeroP is a network that develops activities and products to raise awareness and change unsustainable habits and that offers sustainable alternatives with the goal to help the planet. Besides these projects, they also have a store that unites various small-scale products created out of the plastic that ZeroP recycles in their facilities.

Objectives

It intends to reduce plastic waste through projects and initiatives such as *Plástico à Vista* and *A rua é Tua! Tu Decides!*, and also by changing the public's perception of plastic by creating and selling items made from upcycled plastic such as surfboard keels, jenga, coasters, notebooks, and more.

Actions and implementation

ZeroP raises the public's awareness regarding the issue of plastic waste, particularly plastic pollution of beaches and oceans through participation in projects, initiatives, products, and workshops that involve not only the collection of plastic waste from portuguese beaches and their transformation/upcycling in more sought-after items, but also through the promotion of alternatives to plastic such as a straw made of pasta.
With the project *Pástico à vista*, the company raised awareness about the abuse of single use plastics and their effect on marine sea life (in line with the 12th Sustainable Development Goal of the UN), and promoted the reuse and recycling/upcycling of plastics through eco-entrepreneurship. *Plástico à Vista* also included a 10-month travelling workshop (PAVan) in the municipality of Almada during the period it was financed by NoPlanet B. Additionally, whilst this project's financing by the NoPlanet B ended in 2019, PAVan still travels around, partially due to the cooperation and support of local initiatives and municipalities. The latest one, as of the time of the writing of this report, was during the month of November 2021 in which it visited schools in the municipality of Oeiras.
This also ties down with their initiative *A rua é tua! Tu Decides!* in which people volunteer to spend 3 hours learning about plastic waste and its environmental impact, collecting plastic, and then transforming it in the PAVan.
This network is made up by 5 different companies including its namesake (ZeroP), additionally it also is involved in the associations Youthcoop and *Associação Beatão*. Furthermore, organisations and municipalities can support them and become their partners. They also have a store in which they sell items made from

[56] https://www.zerop.pt/

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the collected and upcycled plastic and where anyone can also opt to support them through monthly contributions (4€/8€/18€) towards plastic collection/beach cleaning initiatives.

Constraints

Whilst the store and the possibility to partner with ZeroP are available at all times, the PAVan is only circulating at certain dates and places (e.g., the aforementioned municipalities of Almada and Oeiras).

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Sweden

(1) Plastic handicrafts initiative; National Museum of Science and Technology, Keep Sweden Tidy Foundation, and Hand in Hand; Schools and their students, museum visitors[57]

Summary

The Plastic handicrafts initiative is a joint endeavour by the National Science and Technology Museum, the Keep Sweden Tidy Foundation, and Hand in Hand to raise interest about environmental issues among students. Since 2021, it has collaborated with various schools in Stockholm, Linköping, Lund, Norrköping and Uppsala. Students get to collect plastic rubbish and create something new with the material collected with the possibility of their new creations being selected for display at the museum.

Objectives

The main goal is to encourage change, creativity, recycling, and bring awareness regarding the devastating effect of plastic waste and its related environmental concerns.

Actions and implementation

The plastic handcrafting lessons follow these steps:

1) collection of plastic waste;
2) lessons on plastic chemistry, plastic social studies, and plastic maths, for which the initiative provides various materials;
3) sorting the material;
4) produce new creations out of the material which are then exhibited at the school and/or in the museum after a selection process.

The currently selected product in exhibition at the museum is a whale that three 8-graders made, alluding to the fact that whales are one of the marine species highly endangered by plastics in the oceans.

Constraints

[57] https://sustainable.royaldjurgarden.se/en/2022/01/20/plastic-crafts-of-eighth-graders-to-be-exhibited-at-the-national-museum-of-science-and-technology/

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Currently it only involves schools and their pupils from Stockholm, Linköping, Lund, Norrköping and Uppsala.

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Other countries

(1) Recycled Plastic Crafts; Online; The Craft Train; Children[58]

Summary

This website offers a list of more than 30 practical ideas for children on what to craft out of recycled plastic bottles, containers, lids and trays as well as plastic bags in an easy Do-It-Yourself way. The links for each idea lead to more or less detailed instructions.

Objectives

The aim is to show the diverse and various ideas how to reuse recycled plastic to turn it into different new products.

Actions and implementation

The list is divided according to the different plastic objects to use, namely bottles, containers, lids and trays, and plastic bags. For each specific "topic", links to instructions to the specific ideas are provided, which lead to other organisations/websites that explain these ideas. The ideas reach from jewellery to decoration to plant pots or other functional products.

[58] https://www.thecrafttrain.com/recycled-plastic-crafts/

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Non-formal education

Good practices

Greece

(1) Learning for Integration; ELIX; Refugee and migrant children and their parents[59]

Summary

Learning for Integration is a project by ELIX with the support of Unicef and funded by the European commission (DG ECHO) which began in October 2017 and provides non-formal education and homework support for refugee and migrant children (ages 3-17) and their parents in the region of Attica.

Objectives

The project aims to aid the integration of refugee and migrant children into the Greek education system through the availability of non-formal education and homework support.

Actions and implementation

Learning for integration offers daily non-formal education for children aged 3-17 and daily homework support for children aged 6-15. Refugee and migrant children and their parents can access this offer in the ELIX Education Centre in Patison Street, and in two schools where it is being implemented under "Athens Open Schools" project: the 51st and the 99th.

Success factors

The fact that this is a free service offered to refugee and migrant children and their parents, as well as the fact that this project covers children from preschool/kindergarten age to highschool/lyceum.

[59] https://www.elix.org.gr/en/large-projects-of-elix/social-actions-to-support-vulnerable-groups-and-awareness/learning-4-integration-education-elix-en

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Constraints

Whilst it states it wants to cover the whole region of Attica, all the places mentioned where this is offered are in Athens. But, even if it covered the whole Attica region, it would still, nevertheless, be a localised project.

(2) OTHERNESS; Erasmus+ project; Teachers[60]

Summary

The OTHERNESS project aims to promote transversal skills related to social and civic competence, cultural awareness, and cultural expression through the creation of materials for teachers with activity proposals within a non-formal education methodology including role-playing games, simulation, and artistic creation. Through the implementation of the proposed activities, teachers will be able to help their students to overcome prejudices and become responsible citizens, as well as improve their digital integration by using digital contents/activities developed within the project. This project united partners from Bulgaria, Greece, Italy, and Portugal.

Objectives

The project aims to aid teachers in ensuring their students value diversity and become responsible citizens towards promoting a world where collaboration, assertiveness, integrity, and intercultural communication are paramount.

Actions and implementation

The OTHERNESS project started by researching how otherness was addressed in school books and materials and what was the students' and teachers' attitudes to those that are different from themselves. This was achieved through desk research followed by an opinion poll with students and teachers. The results from this desk research and polls were then published as the document "Living in a better world: Bringing up tolerant school-age young people to respect human rights, accept and value otherness, get actively involved in community life". This was followed by two short-term joint staff training events. Then, they started designing a training programme towards raising students' sensitivity to otherness and training activities for teachers. These were transformed into the Teacher's manual which was piloted during the school year of 2016/2017 and then edited accordingly. The training programme had its final implementation within the project's life cycle during the school year of 2017/2018 but the training materials are online in the format of the aforementioned Teacher's manual and a Digital Tool with different activity proposals.

Success factors

[60] http://othernessproject.eu/

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Besides the fact that considering the project aiming to promote diversity and thus it gaining from being a transnational project, it also gained from implementing digital tools which tend to enhance motivation and interest among students as well as including fun non-formal teaching methods such as role-playing games and artistic creation.

Constraints

Constraints are related to the project's exploitation after its lifecycle.

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Italy

(1) Environment Day: Clean up the World; Municipality of Sasso di Castalda and Legambiente; Primary school children

Summary

The project implemented included a non-formal education event dedicated to the care of the environment and raising awareness among children on the issue of respect for the landscape. The children have learned in a practical way suitable and safe methods for the cleaning of the landscape. Moreover, they were taught the typology of waste found and the correct way to dispose of it. Everyone participated enthusiastically in the activity, which for its non-formality, proved to be very effective. The initiative had a good media resonance, so much, so that it was taken up and shared by regional news programs.

Objectives

The specific objectives of the project implemented were:

- sensitising the new generations to respect the environment, which is not only by differentiating waste and having sustainable behaviours, but also by cleaning the landscape
- learning proper methods of waste collection and selection of the type of waste found through non-formal activities
- ensuring that the good practice of cleaning the landscape, thanks to non-formal education events like this one, become daily practices and repeated behaviours

Actions and implementation

The practical action carried out was to prepare the children for the work to be done, first by providing material suitable for waste collection and information needed to avoid problems. Then teachers and volunteers of Legambiente in a small forest where waste of all kinds is usually abandoned, accompanied the children. Here, the correct behaviours for waste collection and management were presented, all combined with explanations and information on recycling.

Success factors

The project became a good practice because through the practical action and non-formal education activity, the children were fully involved in the activity, without having lapses in attention or distraction. The practical activity will be forever remembered by the kids, who experienced it as a game, but understood the importance of the gesture they were doing. In addition, the enthusiasm shown in the activity and in telling their parents about their day served to raise awareness even among those who did not participate.

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Constraints

The activity could improve through the involvement of more people (for instance parents) and be extended to other age targets. It could be planned to repeat days of this type on a monthly basis, to clean up the landscape and raise awareness of respect for the environment.

(2) Change Game: Play with Earth; Melazeta; Smartphone owners[61]

Summary

This smartphone game aims to raise awareness about the environment. The practice of doing non-formal education through gaming is proving to be increasingly effective and forward-looking. Change Game is a video game created by the Euro-Mediterranean Center on Climate Change CMCC Foundation and realised by Melazeta srl, with the contribution of Climate Kic Eit. It is designed to make aware and provide insight on climate change and its relation with health, food, economy, energy and other dimensions.

Objectives

Change Game aims to stimulate a change of mentality through the levers of emotion, collaboration and the possibility to change point of view: players are able to collaborate or compete, pursuing different but interconnected goals, stimulating collaboration and increasing the emotional range. This smartphone game aims to raise awareness about the environment and to help people understand the multiplicity and complexity of factors that influence the earth's climate cross-sectorial with respect to climate-related elements such as human settlements, economic-productive activities and natural events. It is a game based on scientific data and models.

Actions and implementation

The Player must manage resources, industries, agriculture, energy and water. In addition, s/he must invest in research, education, and trade with other players. The player's choices determine whether the community will be rich or poor, healthy or sick, resilient or vulnerable. In essence, the player's actions decide the well-being of the planet. The higher the level of harmful emissions generated by players, the greater the challenges we will face. Underlying the game's script is a solid scientific basis. All scenarios have been created using purpose-built climate models and are based on data and assumptions produced by international scientific climate work and research. The focus of the objectives is based on virtuous actions of adaptation to be pursued to reduce CO2 levels within a certain time limit, in order not to incur in natural disasters: if the "green" objective is reached or if the temperature of the planet increases of +4°C, in fact, the game ends showing in real time the best cities in the game.

[61] https://www.changegame.org/

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Success factors

Currently, young people are very attracted to video games. This becomes a good practice because, through gaming, it provides non-formal education on environmental issues. In addition, its effectiveness is also determined by the fact that it is a completely free application for IOS and Android. In the modern world, where everyone has a smartphone, gaming can literally reach anyone. Moreover, the target audience is very wide.

Constraints

This type of non-formal education product could be very effective if adopted in schools as well. Video games are often demonised because they distract young people and take a lot of time away from learning. When they are aimed at education, however, they can be useful, and their use and diffusion should be intensified.

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Portugal

(1) WAKESEED; Teenagers at risk of social exclusion[62]

Summary

Wakeseed is an association that, in a cooperative spirit, works in an integral and inclusive way for sustainability and personal and community development based on three principles: taking care of nature, taking care of people and fair sharing.

Objectives

Wakeseed aims to be a reference in the non-formal education sector focusing in various areas of sustainability: health and life balance, human and personal development, sustainable development, sustainable horticulture, and citizenship. It wishes to promote sustainability and development for both the community and individuals.

Actions and implementation

Wakeseed informs, raises awareness and educates about: attitudes, behaviors and individual and community values; good health and wellness practices; active, positive and participatory citizenship; environmental protection and development and financial literacy, sustainable consumption and sustainable horticulture.

Success factors

They adapt programs already designed or tailored to the needs of the target audience in non-formal education contexts, adapted to reality and using active, experimental and experiential methodologies - "feel to understand, live to accept".

[62] http://wakeseed.org/

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(2) TRY: non formal learning approaches and self-management practices; Erasmus+ project; VET students, teachers, school directors, public authorities, trainers and staff [63]

Summary

The TRY project aimed to valorize non-formal education practices usually applied in different youth organisations to the school setting, thereby creating synergies and links between education, youth, and training, and thus promoting the quality of training, education, and youth work in Europe. It was coordinated by *Aventura Marão Clube* (Portugal) and united 9 organisations from three European countries (Portugal, Romania, Poland). The core of the project was the creation of a pedagogical resource that supports the development and systematisation of educational and training tools and methodologies to be integrated in the educational practice, aligning them with the target group's need and offering a holistic, customised learning climate.

Objectives

The project intended to

- create synergies and connection between education, training and youth in order to enhance the transfer of good practices and the creation of new innovative solutions
- promote an inclusive education and training through applying non-formal education methods in VET contexts
- provide self-sufficient school principles that help decrease the dependence on state fundings
- offer hands-on experiences for students to develop skills that match the labour market requirements
- give the opportunity for participants to learn from other good practice, methods and policies from all over the world

Actions and implementation

The project resulted in five deliverables: a study on VET teaching approaches and management practices; a documentary film; a pedagogical toolkit for non-formal education methods as well as non-formal educational games. The outcomes were created throughout the period of 39 months.

Success factors

The development of various NFE outcomes and guidelines to apply them in a VET context and based on the experiences of NFE providers as well as the actual needs assessment VET providers is special in this project. Through easy step-by-step explanations and games the resources are easy to understand and apply. Particularly the games, which are supposed to promote active learning and the ability to adapt to different situations and centre on different topics (e.g. tourism, agriculture, carpentry) are a great and innovative way to integrate NFE in the lessons.

[63] https://try-project.eu and https://epale.ec.europa.eu/sites/default/files/try_our_methods_-_digital_en.pdf

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Constraints

The games can be ordered online but are not available free of cost.

(3) *Em Raiz'Artes*; Municipality of *Grândola*; Communities[64]

Summary

Em Raiz'Artes is a project launched in 2018 by the municipality of Grândola. Within this project the municipality acts as the promoter of learning activities, but also as facilitator between youth, cultural, and sports associations, day centres, neighbourhood organisations, and citizens that are interested in the offered learning activities, this serves to optimise the project's action, as well as valorise the existing and identified knowledge. The non-formal learning activities offered always include education for citizenship and environmental education.

Objectives

Em Raiz'Artes aims to promote different non-formal learning activities in the municipality of Grândola towards everyone having some activities that they are interested in. Additionally as aforementioned, all the learning activities ought to be based upon education for citizenship and environmental education.

Actions and implementation

The project has been running since 2018 and has had different activities. Whilst it was impossible to find a comprehensive list in chronological order of all the developed activities, it was nevertheless possible to identify the following learning activities and events:

- *Sobr'arte – Concurso de Obras Escultóricas*: A sculpting competition which has already had 2 editions and in which participants must create their work out of cork-oak materials (cork, acorns, etc.)
- *Uma aventura com a Ludoteca* (Adventure with the playroom)*:* An event in which participants learned about the flora of the region and planted trees.
- *Tsuru* tutorial for children's day: The project invited children to create *tsuru origami* for peace as a form of celebrating children's day. To this end, they provided a video tutorial on YouTube.
- Collection of used t-shirts: The project promoted and requested locals to give them used t-shirts they no longer wanted towards recycling, reusing, and reducing the use of plastic as these t-shirts were then converted into reusable shopping bags.
- *Atelier de Taleigos e Trapologia* (Atelier for transforming fabric scraps): Atelier in which participants were invited to create *taleigos* (traditional bags from the region) from fabric scraps.

[64] https://www.cm-grandola.pt/noticia-73/municipio-de-grandola-lanca-projeto-de-educacao-nao-formal

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- *Pé ante pé à descoberta dos cogumelos da Serra de Grândola*: Mushroom collection activity in which the participants learned about what local mushrooms were edible or not and were invited to collect them and take them home.
- Action for the protection of local bird species: Aimed at small children, this activity had them learn about local bird species and why their protection is important, aid in the creation of safe areas for the nesting of said bird species, and help set up information boards and rope barriers around these nesting areas.
- And many more.

Success factors

One of the success factors of this good practice is the diversity of activities and actions offered. Additionally, this diversity and the fact that different activities and actions are included within this project's brand ensures its visibility and sustainability. Furthermore, as the local municipality is behind the project, it can not only use all the different areas within their organisation (e.g., schools, senior centres, etc.), but also have an easier time reaching and getting other organisations' participation in their initiatives.

Constraints

This is a localised project (Grândola).

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Sweden

(1) Electionville; StickyBeat; Everyone[65]

Summary

StickyBeat's Electionville is a browser game based on the Fable educational board game which aims to be a fun and accessible format for people to learn about how Swedish democracy works. Being a digital game, it helps being more easily accessible than its predecessor and, also, doesn't need space nor as much setting up. In it, participants will often have to compromise and make decisions such as whether it is acceptable to move part of the school budget for the year to fix a sewage leak. Keeping in mind that if they promised during their election that school would be a priority, that they might get very displeased voters protesting. At the end of the game session, participants will see a summary of what was done well and what could be improved.

Objectives

Being a fun and accessible way for people everywhere to learn about how a society is structured, balance of policy areas, budget allocations, and how Swedish democracy works.

Actions and implementation

As aforementioned, the Electionville digital game is based on the Fable Electionville board game, thus its general ideas and mechanisms are the same, except some have now been automated. With the original game being a role-playing board game, the game requires one participant to assume the part of the game director whose job is to lead and engage players to discuss and debate and perhaps come to a compromise on a certain issue. Within a game session, participants learn about how political leaders get elected, how voters are entitled to demand they deliver on what they promised during the elections, and what is needed to have a balanced and flourishing society. At the end of the game session participants will see how their decisions affect society and will know which areas they did remarkably well on and which areas they ought to improve and that democracy should ensure a "fair distribution of funds, power and place on the stage".

Success factors

Being a game, people tend to be more motivated and willing to participate in it and by being a browser game that doesn't require installation it allows it to be easily accessible throughout the world.

[65] https://stickybeat.se/case/electionville/ and http://electionville.se/

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Constraints

It still requires some setting up by the person assuming the role of game director such as choosing which areas will be in the game (e.g., education, healthcare, firefighting and disaster relief) and how many rounds it will last. The game director will also have to share a generated link with the people they want to play the game with and the game needs to have at least 3 players.

(2) Viking Summer; Swedish History Museum; Museum visitors[66]

Summary

Every Tuesday to Sunday between the 28th of June to the 28th of August 2022, Visitors to the Swedish History Museum are invited to become vikings for a day. During this period, the museum's courtyard has many activities for people of all ages. By participating in these activities, people learn about this period and people of Swedish History. Visitors are also advised to pair these activities with visiting The Viking World exhibition.

Objectives

Having museum visitors learn about Swedish history, particularly in regards to the age of the Vikings, in a fun and immersive way.

Actions and implementation

During the Summer months, visitors to the Swedish History Museum from Tuesday to Sunday are invited to become Vikings for a day and participate in different activities. They can bake Viking bread and then try it, thus tasting something that was eaten during the Viking age; try their hand at felting, jewellery-making and other Viking-era crafts (these depend on the day a person visits the museum); play different games such as testing one's balance on the islet walk or tug of war; try Viking-era clothes, shoot a bow and arrow, test their senses in a smell-and-feel challenge; or even just visiting the kitchen garden and relaxing on the grass under the large willow tree. Visitors are also advised to check the museum's permanent exhibition The Viking World and, if they decide for a guided tour, hear stories about Vikings and how they lived.

Success factors

By pairing the museum exhibition with this immersive experience for all ages, museum visitors are more motivated to learn about the Vikings and the Viking age. The learning from this role-playing as a Viking activity can be further boosted by visitors getting a guided tour to The Viking World exhibition where the

[66] https://historiska.se/events-and-programmes-spring-2022/

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guide will further explain Viking history and tell stories about Vikings. The guided tour can be in English which ensures tourists and immigrants that still aren't fluent in Swedish can participate.

Constraints

Whilst the museum entrance is free, guided tours are 80SEK and need booking in advance. Additionally, the museum is located in Stockholm and this is a limited event to the summer of 2022.

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Other countries

(1) The Girl Guide and Girl Scout educational method; Worldwide; World Association of Girl Guides and Girl Scouts; Girls and young women (5-25 years)[67]

Summary

The Girl Guide and Girl Scout educational method is the non-formal educational method implemented by the World Association of Girl Guides and Girl Scouts. It is based on the pillars of learning in small groups, everyone learning at their own pace, learning by doing, connecting with others and to the world. With it, they aim to "enable girls and young women to develop their fullest potential as responsible citizens of the world".

Objectives

Aid girls and young women to develop their potential and become the responsible citizens of tomorrow.

Actions and implementation

The Girl Guide and Girl Scout educational method is the method developed and implemented by the World Association of Girl Guides and Girl Scouts. As previously mentioned, it is a non-formal educational method based upon learning in small groups, everyone learning at their own pace, learning by doing, connecting with others and to the world. This allows girls and young women to develop their own values, that is, integrity, citizenship, and spirituality in the sense of acknowledging and developing their personal beliefs whatever those are. It also allows girls and young women to develop critical life skills for their future such as character, creativity, being active citizens, communication, collaboration, and commitment. Additionally, it empowers them to reach their full potential and take action to change the world. Some of the activities girl scouts and girl guides take part in within this learning methodology are climbing, flashmobs, raft building, team games, city exploration, orienteering, environment and community projects, and many more.

Success factors

This methodology has a very wide potential of application in many different activities that Girl Scouts associations throughout the world can adapt. Additionally, by empowering girls and young women and having them develop their potential whilst learning and becoming responsible and active citizens is a benefit not just to them, but to society as a whole.

[67] https://www.wagggs.org/en/what-we-do/Learn/prepared-learn-prepared-lead/our-non-formal-educational-method/

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(2) The Human Library; Worldwide; The Human Library Organisation; Older teenagers and adults[68]

Summary

The Human Library was created in Denmark in 2000 and its core idea is having people who volunteer their time to represent a group they belong to and that is often stigmatised - the books. The books can then be chosen by others - the readers - who will be able to ask them questions about their lived experiences as members of a stigmatised group and through this dialogue deconstruct stereotypes and prejudices one reader at a time.

Objectives

Deconstruct stereotypes and prejudices by having people meeting representatives of groups that are often stigmatised and through conversation realise how these stereotypes and prejudices are unfounded.

Actions and implementation

The Human Library started in Denmark in 2000 and was a four-day event (8 hours per day) with over 50 different books. This event was a success and since then there have been replications of the event in over 80 countries worldwide.

Success factors

The fact that the readers rent books for a time and can ask books questions they have about whatever stigmatised group the book belongs to, and through dialogue, come to understand the book is a person just like the reader. Additionally, whilst these conversations are one-on-one, the whole society has potential to be changed by one reader at a time.

Constraints

Whilst an enriching experience for the readers, this experience may have a psychological toll on the books, and despite the website mentioning there being people in the role of librarians who are there to ensure the well-being of the books, it is unclear whether these people have the adequate training to do so (e.g., being trained psychologists).

[68] https://humanlibrary.org/

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(3) Apollo's Moon Shot AR; Worldwide; Smithsonian; Older teenagers and adults[69]

Summary

To celebrate the 50 years of the moon landing and as a complement of the Smithsonian Channel Apollo Moon Shot 6-episode miniseries, the Smithsonian also launched an Augmented Reality (AR) app in which people learn about the historic mission, and everything that had to be done and come together to make it happen, over 400,000 people worked on the moon landing after all, in an immersive experience using their smartphones.

Objectives

Have people learn about the Apollo mission and all the different steps that were necessary for things to come together and make it a reality.

Actions and implementation

The Smithsonian released the Apollo Moon Shot AR a little after the same-named miniseries to celebrate the 50 years of the historical moon landing in 2019. To try to make the app as realistic and immersive as possible, developers used 3-D scans of Apollo 11's Lunar Command Module and Neil Armstrong's space suit. This allows the people who download the app to get a taste of the feeling and scale of the landing. In the app, they can launch their own Saturn V rocket, sit inside the Lunar Command Module, explore the lunar landscape, play two AR simulation games, take selfies on the moon whilst wearing their Apollo 11 spacesuit, get hourly notifications about the mission from liftoff to landing, and navigate an interactive timeline to learn more about the Space Age which includes quizzes, videos and facts about that time.

Success factors

One of the success factors is undoubtedly the fact that it was released just after the Smithsonian's miniseries and that both were released as a celebration of 50 years of the moon landing. The fact that it is an immersive experience and the work that was invested to make it as accurate and realistic as possible with 3-D scans also helps in getting people interested in trying out the app and consequently learn more about the landing.

[69] https://apps.apple.com/us/app/apollos-moon-shot-ar/id1465827204 and https://play.google.com/store/apps/details?id=com.sndigital.apolloar&gl=US

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Existing offers

Greece

(1) Painting and Self expression; E-Learning University of Athens; Adults[70]

Summary

In this course learners will learn how to express their feelings with painting. This program thus aims to serve as an introduction to painting whilst also highlighting painting's potential as a tool for psychological exploration. Throughout the course, participants thereby learn about painting and its history throughout the ages and why it is often used for psychological exploration and expression.

Objectives

Its objective is for learners to get acquainted with painting, its history and techniques, and why it is a prime tool for psychological exploration.

Actions and implementation

This course is made up of two modules: Introduction to Expressive Media, and Self-expression in Practice. The course has a duration of 2 months (30 hours) and it is conducted online. Throughout the course, learners will learn the basics of painting, its history to the present day, how to use different painting techniques, and will also explore painting's potential not only as a medium for self-expression but also for psychological exploration.

Success factors

Painting has long been associated both with self-expression, but also as a form for people to process and explore their feelings and get catharsis. Thus, in this course, not only do they learn about painting's potential as a tool, the course itself will likely result in a positive change to the learners' psychological well being.

Constraints

The course is not free and has a cost of 208€ to 298€ depending on whether the learner has to pay full price or if they classify for one of the discounted prices.

[70] https://elearningekpa.gr/courses/zografiki-kai-autoekfrasi

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Italy

(1) DROP'IN: PEER-TO-PEER TRAINING, TEACHERS TO ACTION!; Erasmus+ project; school teachers[71]

Summary

Within the DROP'IN project, on the 24th to 25th of February 2020, there was a peer to peer training between teachers in Palermo. This peer to peer training served so that those who had been involved in the training in Dax could introduce the others to and teach them how to use the non-formal education techniques in the EDUC'ACTION catalogue produced within the DROP'IN project. This served to test and then adapt the contents to better suit teachers' needs so that this catalogue can be more widely implemented.

Objectives

The objective of this training was double: firstly it served to introduce and train more teachers to use the EDUC'ACTION catalogue, and, secondly it served to further experiment with said catalogue and improve it.

Actions and implementation

The teachers and the Headmaster introduced some theoretical elements and definitions of formal, non-formal and informal education and conducted the peer-to-peer training covering the topics of:

- self-esteem,
- self-awareness and reflection;
- create your own personal environment and take responsibility for it;
- learn to say NO!;
- team building and feeling of equality

Constraints

[71] https://drop-in.eu/it/news/peer-to-peer-training-teachers-in-action/

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The research conducted did not reveal any future implementations of the course. However, the project did produce a course catalogue, which can certainly be reused in the future for face-to-face lectures or self-paced training. The action could be improved through video recording of the lectures. Seeing non-formal education in practice is a helpful method to learn this training system.

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Portugal

(1) YouthCoop - Cooperativa para o Desenvolvimento e Cidadania; youth aged 18-30 with focus on those with fewer opportunities[72]

Summary

YouthCoop is a non-profit cooperative that aims to empower and raise awareness in young people. The initiative focuses on areas like global citizenship, human rights, participation and youth work applying a non-formal and community-based approach to education. They are located in a public community centre close to Lisbon, in which most activities are carried out.

Objectives

It is their mission to empower youths by creating opportunities in which personal, cultural and social aspects can be developed while citizenship, interculturality and a community approach are promoted. Therefore, the three dimensions: capacity building, community development and European identity build the YouthCoops strategic pillars. Capacity building is reached through the offer of training, support sessions and programs that apply a Non Formal Education approach.

Actions and implementation

Only in 2019, their activities had more than 1.605 young people involved, of which more than 88 belonged to a group with fewer opportunities. In their trainings, the following principles apply: the participation is voluntary; the session is centred around the participant taking into account their experiences and practical activities and organised for educational purposes in an interactive and participatory way to learn about life skills and active citizenship; it is accessible to all; the program is based on the involvement of individuals and collective group learning; it is designed in a holistic, non-hierarchical way, shaped to the needs of the participants.
Their educational offers a rather broad, including for instance the "School of Intercultural Dances"[73] in 2018, in which 4 young people had the opportunity to discover dances from all over the world thereby reflecting about their citizenship or training sessions for young people in 2018 and 2019 to introduce them to the concepts of non formal education in their pursuit to become animators, monitors or coordinators. The sessions lasted three hours each and had both theoretical and practical parts, throughout which participants were able to reflect, transform and develop.

[72] https://youthcoop.pt/

[73] https://youthcoop.pt/escola-dancas-interculturais/

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Success factors

Through the diverse offer of the YouthCoop uniting both, a national and international target group, and centering on the pillars of capacity building, community development and European identity, the cooperative manages to reach many young people, including those with fewer opportunities, while also implementing several projects in different locations. The non-formal learning approach allows them to apply and enhance flexible, innovative projects, programs and training formats, thereby accommodating to their target group's needs.

Constraints

As for the "School of Intercultural Dances" it was claimed that the project had to finish due to a lack of interest and funding to ensure impact and sustainability. Engaging people to become active in such projects and initiatives, even when they are free, often depicts a challenge for associations working in these areas. In terms of funding, given that the YouthCoop is an non-profit organisation living from fundings, the dependence of donations and other money-givers is unfortunate and often determines the cooperation's opportunities.

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Sweden

(1) Folkbildning; Studieförbunden; Adults[74]

Summary

Folkbildning is the non-formal Swedish adult education format. In it, the desire to learn is the core reason why people participate. It considers learning as the lifelong process it is, and the adult learner is the one deciding on their own responsibility and initiative whether they want to participate in learning activities.

Objectives

Strengthening and enriching people and thereby the whole of society.

Actions and implementation

Folkbildning is based on the first study circle held in 1901. Thus, study circles have long been a place for exchanging knowledge, experiences, and learning, and for people to join like-minded individuals that want to learn. This also contributes to building a sense of community. Furthermore, besides the learning circles, Swedish study associations also organise cultural programmes and lectures as part of folkbildning, and these associations also work in partnership with most of the major popular movements in Sweden, making Folkbildning a part of Swedish Civil Society. Any subject can be addressed in Folkbildning, from painting to Italian language lessons, to botany or even how to run a democratic organisation. But the result remains the same: When people whose paths would not normally cross meet in Folkbildning, new ideas and novel insights emerge. Indeed, by the exchange of their experiences and knowledge, they are able to go beyond what each had individually and learn from their collective experiences and knowledge, contributing not only to their personal development, but also for the development of society as a whole.

Constraints

Some of the Folkbildning learning activities are not free.

Other countries

[74] https://studieforbunden.se/other-languages/

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(1) PINYA-CO; Belgium; Adults, teens, kids[75]

Summary

Pinya-Co organises socio-artistic, artistic and community-shaping projects throughout all possible art disciplines such as music, circus, castellers, theatre, plastic arts, etc… with extra attention to and opportunities for people who experience barriers to art – and cultural participation.

Objectives

It aims to promote creativity, education and imagination. Pinya-Co works with people of all ages, nationalities, cultures and backgrounds. Part of the projects is artistic and another important part is socio artistic with a focus on a fragile public. We work with all kinds of arts to give different messages or to educate on different values.

Actions and implementation

- Offer workshops and initiations to other organisations: schools, companies, associations…
- Give recognition and help the participants gain self-confidence through the perspectives they create and the success stories they experience during the projects/workshops.
- Participate in cultural activities or set up cultural activities ourselves, to give direction and stimulate young and old to artistic and creative leisure activity.
- Work intergenerationally

Success factors

The main values of the work are respect, solidarity and collaboration, central themes of the projects. The bet on discovering and valuing the talents of each individual, regardless of what they may be.

[75] pinya-co.eu

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PART II: TRAINING FORMAT

A) Methodological guidelines

The research for the CECIL guide will entail a mixed methods approach including a survey and desk research, united in a final research report together with a training format and its guidelines.

The survey aims to map stakeholders on the national level of the partners and to identify educational needs and barriers (regarding skills and struggles to be overcome) as well as social exclusion factors of women at risk of exclusion (women at the age of 35-45 years). The desk research completes this by examining existing offers and good practices at national and European level regarding tinkering methodology, circular economy education and plastic craftwork methodologies, and other non-formal education methodologies. In order to provide a promising base for the development of the Training Format, the research will result in a detailed explanation of the identified methodologies and their replicability in activities involving the target group. Finally, the training format will entail a coherent educational programme in the shape of eight educational modules on different topics, which will be evaluated through an assessment by stakeholders/target groups as well as an international training format.

B) Educational modules

a. Ice Breaking and Team Building
b. Theoretical session regarding Circular Economy
c. Simulation exercise of a Circular Economical Business
d. Good practices of CE businesses
e. Theoretical session regarding plastic craftwork
f. Focus session: how to manage plastic craftwork in practice- risks and guidelines
g. Tinkering session of plastic craftwork
h. Theoretical and practical session on co- design

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MODULE 1

INTRODUCTION

Ice Breaker - Relationship's string	
LOs:	*Participants will introduce themselves to one another, discovering one another's name, passions, character.*
Duration:	*15 minutes*
Materials needed:	*A wool ball*
Preparation:	*Prepare a wool ball and the following list of questions to ask participants:* *- What's your name?* *- How old are you?* *- Where are you from?* *- Tell us what you love to do most* *- Describe yourself in a word .*
Description:	1. *The trainer asks participants to build a circle with their bodies* 2. *Once they are all set, the trainer will cast a wool ball to a participant and the trainer has to ask her the list of questions above mentioned* 3. *After her introduction, the participant holds the end of the wool strings and casts the rest of the ball to another participants, which has to repeat the name and the "describing word" of the previous participant and respond to the same questions.* 4. So *the others do until the last one.* 5. *At the end the trainer invites participants to see the tangle of strings created.*
Learn check/ Debriefing:	*At the end of the activity, the trainer indicates every participant and the others have to repeat her name aloud. If nobody remembers a specific name, then the participant has to repeat it.*
Tips for the Trainer:	*The trainer should use an involving communication to make sure nobody gets bored. The trainer can put on some energizer music to involve more participants.*

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Handouts:	//
References:	//

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Activity: Ice Breaker - Getting to know each other	
LOs:	*Participants will learn more about each other.*
Duration:	*30m*
Materials needed:	*pen, posts-it*
Preparation:	*The trainer will check if everything works in the classroom (electricity, Internet connection) and will share the posts-it.*
Description:	*Firstly, the trainer will introduce himself/ herself in order to make the others feel more comfortable and then each participant will write in a post-it 5 things (name, age, studies, hobbies, etc.) about themselves. The trainer will let 10 min to think and then each participant reads his post-it loudly.*
Learn check/ Debriefing:	*At the end of this activity, the trainer will make sure that everyone knows each other.*
Tips for the Trainer:	*The trainer should keep a positive attitude and encourage the participants to ask questions for an active dialogue. (*the *participants may have the same experiences and discussed about them)*
Handouts:	*//*
References:	*//*

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Ice Breaker - Free questions	
LOs:	*Participants will learn more things about one another, deepening one another's knowledge.*
Duration:	*30 minutes*
Materials needed:	*A box and 3 little pieces of paper each participant*
Preparation:	*Provide the material above mentioned to each participant and put the box in the middle of the implementation space.*
Description:	*The trainer should provide every participant three little pieces of paper* *Every participant writes three questions to a general "YOU" such as: Do you have any sibling? Do you work? What are you more afraid of?...* *Then, every participant should close the pieces and put them in the box.* *Every participant will then take randomly three questions each and answer to them aloud and give back the piece of paper to the trainer* *The trainer will eventually read aloud one question per participant ask the group the answer. (For instance: Kate says that she has three siblings, she gives back the question to the trainer. At the end of the activity, the trainer asks to the group: How many siblings does Kate have? And the group has to answer)*
Learn check/ Debriefing:	*The point 5 is used also to check the attention paid by the participants in the activity and their knowledge of one another.*
Tips for the Trainer:	*The trainer should help the participants with their lack of creativity in writing the questions (if any), providing him/herself the questions.*
Handouts:	*//*
References:	*Taken inspiration* by the *activity "Three Questions" of MVNGO training tools*
Team building - Human Draw	

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LOs:	*Participants will learn how to work in group and to achieve together a target*
Duration:	*25 minutes*
Materials needed:	*Bandages for every participant and a rope*
Preparation:	*Provide bandages to* every one *and connect them through a rope.*
Description:	*Provide bandages to every participant and blind them with them* *Ask participants to create letters of the alphabet through their bodies and with the help of the rope. Participants are allowed to communicate among one another to achieve the objective and to coordinate their actions* *When a letter is done, the trainer will take a photo of it standing on a chair.* *The trainer will ask the participants to draw 6 letters* *At the end, the participants will see the result of their activity*
Learn check/ Debriefing:	*The trainer will ask participants feedback and feelings felt during the activity. The trainer will then ask these questions:* *- What was the most difficult part of the activity?* *- Did you feel excluded? Did you work to create the letter or did you wait the others to tell you were to go?* *- What does it mean cooperation for you?*
Tips for the Trainer:	*The trainer should help the participants when the situation is blocked, helping them to set in the right position*
Handouts:	*//*
References:	*Taken inspiration* by the activity *"The perfect square" in Team Building a Milano e in tutta la Lombardia | Team Building Aziendale (iltempoprezioso.it)*

Team Building- Blind obstacles	
LOs:	*Participants will learn how to trust one another, to rely on one another's indications and to take care of one another.*

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Duration:	*20-30 minutes*
Materials needed:	*1 bandage, cones, pins, ropes,* hoola*-hops, chairs, balls.*
Preparation:	*Create a path full of obstacles and change it every time the blindfolded participant is changed.*
Description:	*The trainer will divide the group into 2 smaller groups.* *The trainer creates a path full of obstacles while the participants stay from the back.* *Then the trainer makes blindfolded one participant with the use of a bandage.* *The blindfolded one should complete the path without hurting anything through the indications of the others.* *Every time someone hits something the score is – 1; every time a person completes the path seamless the score is + 5. Everyone will be blindfolded sooner or later. In the switching participant moment, the trainer will change the path while the participants stay from the back.*
Learn check/ Debriefing:	*The trainer will ask participants feedback and feelings felt during the activity. The trainer will then ask these questions:* *- What was the most difficult part of the activity?* *- Did you trust the others?* *- Did you feel safe during the activity?* *- How was to have the responsibility of someone else?*
Tips for the Trainer:	*The trainer should create easy paths not to hurt anyone.*
Handouts:	*//*
References:	*//*

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Facilitation for women at risk of exclusion- Me vs/& You	
LOs:	*Participants will learn how to collaborate with each other and to communicate to overcome common threats, experiencing two different memberships.*
Duration:	*20 minutes*
Materials needed:	*//*
Preparation:	*//*
Description:	*1. Put all the participants in a row in a game field line and just one of them on the other game field line.* *2. The participants have to run one towards the others. The "single" participant" has to fetch more people as possible and the others have to escape from her.* *3. When the single participant touches one of them the touched ones become members of her team against the other ones* *4. When participants achieved to escape and go to the other game field line, the game starts again. Of course, when the "single" one touches one or more than one of them, these ones go to the opposite game field line with the "single" one creating another team that has to block the original main team* *5. When the team of the "single" achieves to touch everyone, they win*

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	6. The team of the "single" has 10 tentative to touch everyone. If, after these 10 tentative, someone still has to be touched, the ones that escaped so far win.
Learn check/ Debriefing:	*The trainer will ask participants feedback and feelings felt during the activity. The trainer will then ask these questions:* *- Did you feel excluded at the beginning or at the end of the activity?* *- Did you communicate to one another to escape?*
Tips for the Trainer:	*//*
Handouts:	*//*
References:	*.//*

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Activity: Energizer – Dancing Queens	
LOs:	*Participants will learn not to judge the others. They will also entrain their memory and their coordination having fun together*
Duration:	*15 minutes*
Materials needed:	*"Dancing Queen" of ABBA as soundtrack, a stereo.*
Preparation:	*Prepare the material above mentioned*
Description:	*The trainer will ask participants to make a circle standing on their feet* *Then the trainer will put on "Dancing queen" of ABBA* *Everyone will create a dance step to show to the other. Everyone has to create a dance step linked to the previous one.* *When the first one creates a step, the second one has to repeat the step and follow it with her one and so on until the last one has to repeat the whole choreography.* *When the whole choreography is made, they have to learn it and dance it on the notes of the song trying to be more coordinated as possible.*
Learn check/ Debriefing:	*The trainer will ask participants feedback and feelings felt during the activity. The trainer will then ask these questions:* *- Did you have fun?* *- Was it had to remember all the steps?* *- Did you feel judged/uncomfortable?*
Tips for the Trainer:	*The trainer should motivate participants creating a relaxing atmosphere.*

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Handouts:	//
References:	*Activity based on dance improvisation practices.*

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Energizer - Applause!	
LOs:	*The activity will foster the capacity of listening to the others and pay attention to the others.*
Duration:	*20 minutes*
Materials needed:	*//*
Preparation:	*//*
Description:	*The trainer will ask participants to make a circle standing on their feet (the trainer will be included)* *Every participants has to look for the eye contact of a person and when she has it, then she will clap her hands toward her companion.* *There is no order. Everybody can clap their hands toward one another, but if two people clap their hands simultaneously, the game starts from the beginning.* *When the game starts from the beginning the first person who clapped her hands in the previous round will be the first person to clap her hands in the following one and so on until to arrive at the point where the mistake happened in the previous round.* *The objective is to make everybody clap one time without simultaneously claps.* *The eye contact has to be clear to avoid mistakes.*
Learn check/ Debriefing:	*The trainer will ask participants feedback and feelings felt during the activity. The trainer will then ask these questions:* *- Did you have fun?* *- Was it difficult?* *- The eye contact you received was clear? And the ones you give?*
Tips for the Trainer:	*The trainer should stress the attention on the importance of eye contact.*
Handouts:	*//*

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References:	*Activity based on theatre improvisation practices.*

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Evaluation 1	
LOs:	*Participants will cement the knowledge of one another*
Duration:	*10/15 minutes*
Materials needed:	*A ball*
Preparation:	*//*
Description:	*1. Put all the participants in circle* *2. The trainer will cast a ball to the other participants* *3. The trainer will ask the one with the ball: Say the name, the passion and a word that describes the companion on your left side* *4. Once the first one has done it, she passes the ball to another companion who has to do the same* *5. By the end, everyone will have been described everyone*
Learn check/ Debriefing:	*The trainer will ask participants feedback and feelings felt during the activity. The trainer will then ask these questions:* *- Did you agree with the description made by your companion?* *- What are the differences now in the group before and after the activities are done?* *- Was it hard to describe your companions?*
Tips for the Trainer:	*//*
Handouts:	*//*
References:	*.//*

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Evaluation 2	
LOs:	*Participants will cement their relationship, demonstrating gratitude.*
Duration:	*10/15 minutes*
Materials needed:	*Some music and a stereo*
Preparation:	*//*
Description:	*1. The trainer will put some stimulating music.* *2. The trainer will ask participants to dance/run/walk around the place they are* *3. When they are ready, the trainer will ask them to look for the eye contact of the others.* *4. When the eye contact is mutual, the two of them has to get closer, smile to each other and say "thank you, because…" to each other.* *5. When everybody will have done this to everybody, the trainer will ask them to make a great applause and then the activity will be over.*
Learn check/ Debriefing:	*The trainer will ask participants feedback and feelings felt during the activity. The trainer will then ask these questions:* *- Did you feel appreciated?* *- Did you feel uncomfortable saying thank you? If yes, why?* *- How was feeling that someone is grateful to you?*
Tips for the Trainer:	*Try to stimulate the feelings of the participants by making them notice how many things they have done with strangers and how many beautiful relationships they are building.*
Handouts:	*//*
References:	*.//*

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MODULE 2

CIRCULAR ECONOMY EDUCATION

What is circular economy?	
LOs:	*Understand the concept of circular economy and get ideas of how to put it into practice.*
Duration:	*45-60 minutes*
Materials needed:	*Laptop, video projector, speaker, flipchart papers, A4 papers, pens and markers*
Preparation:	*Check the internet connection, prepare the video and presentation*
Description:	*The trainer starts by asking the participants what they know about Circular Economy. The trainer writes down the keywords on a flipchart paper with the words "Circular Economy" written in the middle.* *The trainer gives a brief explanation of the concept of Circular Economy and then projects the explanatory video.* *The trainer invites the participants to brainstorm together about what are the products that turn into toxic waste (ex. plastic products, electronics, fabrics etc.) and writes them on a flipchart paper - creating a list; the list should be very specific - not electronics but washing machine, phone, camera etc.* *The trainer splits the participants in groups of equal number, they get a flipchart paper and are invited to come up with solutions on how they can reduce the toxic waste - solutions for the list of products mentioned before. The participants will create a visual representation of these solutions.* *Each team comes in front of the group and presents their solutions. At the end of each presentation, the other participants are invited to ask questions, comment or share their thoughts.* *After all groups present, the trainer tells the group to create a circle and start the debriefing.*
Learn check/ Debriefing:	*Each participant will receive a piece of paper and a pen and they are invited to do the debriefing. First, they do it individually, by writing their answers to the following questions:* *How did I feel while I was watching the movie?* *What is one new thing that I learned today?* *How would I define Circular Economy?* *What are 5 specific steps that I can put into practice in order to promote the Circular Economy?* *After the participants answer these questions individually, they are invited to share with the group any interesting things that came up while reflecting on the activity.*

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Tips for the Trainer:	*Make sure all the materials are prepared and enough.* *Keep a good track of time, as sometimes the discussions might take longer.* *Make sure that the comments made by the participants are on the topic.*
Handouts:	Video to put on the projector
References:	//

Evaluation 1	
LOs:	*Participants will inform us what they learn.*
Duration:	*15m*
Materials needed:	*Chairs*
Preparation:	*A circle with the chairs*
Description:	*All the participants with the trainer will sit in a circle and will express what they learn, with what they impressed or what they did not like in the activities.*
Learn check/ Debriefing:	//
Tips for the Trainer:	*The trainer should understand if the participants are telling the truth*

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Handouts:	//
References:	//

MY AVATAR	
LOs:	*Participants will learn more about themselves and others, using their creativity and the principles of circular economy*
Duration:	*30 m*
Materials needed:	*A round table; recycled materials (diverse), elements of nature (leaves, small twigs…); glue and small yarns (e.g. wool);*
Preparation:	*Provide the material above mentioned, in a box, under the round table*
Description:	*1. The trainer invites the participants to form a circle in front of the round table and presents the activity referring to the different material that exists on the table* *3. Participants should make an "avatar" of themselves, in 15minutes, with the materials they consider most appropriate* *4. At the end, participants must present their "avatar", the materials they use*
Learn check/ Debriefing:	*At the end of the activity, the trainers will ask participants feedback, why they define themselves that way, why they choose that specific material(s)*
Tips for the Trainer:	*The trainer should help the participants in case of lack of creativity and encourage them to be the most as faithful as possible to themselves*
Handouts:	//
References:	//

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Circular Reflexions	
LOs:	*Participants will understand the importance and the meaning of Circular Economy Business thought a reflection about good practices in the area.*
Duration:	*45-60 minutes*
Materials needed:	*Paper, pen*
Preparation:	*Provide de material to the participants and put them on a round table*
Description:	*Put the participants into groups of 4* *The trainer should explain the activity, asking participants to: a) define what they understand by Circular Economy Business; b) identify businesses with good practices in this area* *Each group will have a spokesperson who will present their results* *Group discussion: joint definition of Circular Economy Business; listing of good practices*
Learn check/ Debriefing:	*The trainer should ask the participants feedback and feelings during the activity. The trainer should ask the participants: how they manage the teamwork, if it was hard to make a consensus, whether the concepts were familiar to them; whether they found it easy to apply these concepts to a business*
Tips for the Trainer:	*The trainer should promote the discussion, encourage people to express themselves, their point of view and make consensus*
Handouts:	//
References:	CE Business: https://hbr.org/2021/07/the-circular-business-model Some examples of Good Practices of CE Business: https://ciclo-project.eu/ ; https://projeto-reparar.pt/wp-content/uploads/2021/11/RepairCafe_manual_final_WEB.pdf https://urjalandiaacircular.pt/ ; https://biodolomerforlife.se/ ; https://www.cradlenet.se ; https://www.malmoupcyclingservice.com/about

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The Cloud	
LOs:	*Participants will understand what Circular Economy Business is*
Duration:	*45-60 minutes*
Materials needed:	*Post it - 2 different colours; small ball stickers*
Preparation:	*Provide the material above mentioned; each participant has 3 post its of each colour and 6 sticky balls;*
Description:	*The trainer promotes reflection about "what are the advantages/challenges of having a Circular Economy Business"* *The participants must write the advantages in on colour e the challenges in the other colour (3 advantages and 3 challenges)* *In end all the participants must put the post its in a wall, separated by colours with the help of the trainer* *After viewing all the post-it notes (train should read), participants should paste the 6 small ball stickers on those post it notes that they feel are relevant (either advantages or challenges)* *At the end, the trainer must count the ball stickers and mention the advantage(s) and the challenge(s) with the most votes.*
Learn check/ Debriefing:	*The trainer should ask the participants feedback and feelings during the activity. The trainer should ask the participants: if it was hard/easy to think in 3 advantages and 3 challenges; If was hard/easy to make a final decision; If the initial idea was pushed aside by a better idea from another participant.*
Tips for the Trainer:	*The trainer should guide and promote the discussion between participants.*
Handouts:	//
References:	https://www.bain.com/insights/circularity-challenge-expect-disruption-and-get-out-in-front-of-it/?gclid=EAIaIQobChMI7vvPwfK5-QIVOI9oCR2LSQaDEAAYASAAEgICI_D_BwE

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Evaluation	
LOs:	*Participants will cement the knowledge and express their opinions about CE Business and about the group/participants*
Duration:	*15m*
Materials needed:	*AVATAR*
Preparation:	*The trainer provides the Avatar to all participants and should have a paper for take notes. The participants should be sitting in circle.*
Description:	*Trainer asks the participants, one at a time, to say:* • *One aspect they learn by Economy Circular Business* • *A new thing that they learn about another participant of their choice* *The trainer should refer a thing that the learn about the group.*
Learn check/ Debriefing:	*The trainer should guide the participants in this sharing and promoting the discussion.*
Tips for the Trainer:	*Trainer takes notes of everything that is said.*
Handouts:	*//*
References:	*//*

Ice Breaker - My Circularity	
LOs:	*Participants will learn more about themselves and others, using their creativity and the principles of circular economy*

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Duration:	*30m*
Materials needed:	*Paper, pen*
Preparation:	*The trainer provides the material to all participants*
Description:	*The trainer must explain the activity: the participants must imagine (or draw, if they want) an object that they have at home and that they use daily. They must explain how the same object personalizes, for them, the circularity*
Learn check/ Debriefing:	*At the end of the activity, the trainers will ask participants feedback, why they choose that specific object*
Tips for the Trainer:	*The trainer should guide and promote the discussion between participants.*
Handouts:	*//*
References:	*//*

My CE Business	
LOs:	*The participant will apply the concept of Circular Economy and develop a Sustainable Business Model Canvas*
Duration:	*45m*
Materials needed:	*Papel A3, Pen*

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Preparation:	*Provide the material above mentioned;*
Description:	1. *Put the participants into groups of 4* 2. *The trainer should explain the activity: the participants should simulate an ideia of a business (apply the principles of the circular economy) and build a Sustainable Business Model Canvas* 3. *Each group will have a spokesperson who will present their results*
Learn check/ Debriefing:	*The trainer should ask the participants feedback and feelings during the activity. The trainer should guide and promote the discussion between participants*
Tips for the Trainer:	*The trainer should help the participants in case of lack of creativity.*
Handouts:	//
References:	*https://www.businessmodelsinc.com/about-bmi/tools/business-model-canvas/* *https://canvanizer.com/new/business-model-canvas*

IdeoGram	
LOs:	*Participants will express their feedback regarding the Business Model Canva.*
Duration:	*15m*
Materials needed:	*pen, board*
Preparation:	*//*
Description:	*Each participant will write what they understood about the Business Model Canva. They can use images, words, graphs etc*

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Learn check/ Debriefing:	*The trainer will read the board and then he will ask the participant if they all agree or he will explain again what it's needed.*
Tips for the Trainer:	//
Handouts:	//
References:	//

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MODULE 3

TINKERING

Human Billboard	
LOs:	*Participants will:* • *learn more about each other* • *connect on a personal level* • *create empathy* • *use divergent thinking* • *use creativity* • *learn how to develop a Tinkering activity for Adults*
Duration:	*60m*
Materials needed:	*Every participant needs to receive from the trainer:* • *one very large piece of paper* • *various coloured markers* • *scissors*
Preparation:	*The trainer will prepare the materials and will distribute them to all participants*
Description:	*Firstly, the trainer will introduce the activity explaining what each participant has to do with the materials received.* *He will give six minutes to all participants to describe themselves on the billboard, using words, pictures, images or symbols.* *When the billboard will be ready, each participants has to create a hole in the paper and put it over his/her head so becoming a "human billboard".* *Then the participants have to walk in the room and meet and discuss, asking questions each other about themselves to learn more about the others.*
Learn check/ Debriefing:	*This activity will permit the participants to unwind via a fun game and at the same time to know more each other's*
Tips for the Trainer:	*The trainer should use this activity for teams that don't know each other very well or in case of new groups as an activity of team building.*

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Handouts:	//
References:	//

The poisoned orange juice	
LOs:	*Participants will:* *train divergent thinking* *think out of the box* *use problem solving*
Duration:	*45m*
Materials needed:	*Every participant needs to receive from the trainer:* *an image showing a glass of orange juice like the following one* *a list of questions and given answers* 
Preparation:	*T[illegible]l will distribute them to all participants*

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Description:	*Firstly, the trainer will introduce the activity explaining what each participant has to do with the materials received. the task of the learner is to find the solution of the mystery.* *The mystery is the following: "At an event guests drink a poisoned orange juice contained in a pitcher. Everyone dies except one man. Why?"* *He will ask to all participants to make questions such as the following:* *Is the man immune to poison? No.* *Is the orange juice always the same? Yes.* *Is the poison already in the drink when the man drinks it? Yes.* *Does man have an antidote with him? No* *Does the man drink as much orange soda as everyone else? Yes.* *Is the poison dissolved when the man drinks the orange juice? No.* *Does the man drink first? Yes.* *Is there a pill of poison not yet dissolved at the bottom of the jug? No.* *Then the learners have to find the possible solution to the enigma.*
Learn check/ Debriefing:	*This activity will permit the participants to think out opf the box trying to use creativity and divergent thinking to find the solution of the mystery*
Tips for the Trainer:	*The trainer has to stimulate the learners to use their creativity and think about any possible reason.* *The solution is that the poison is in the ice, therefore, the man who first drinks the orange juice does not poison himself because the ice has not yet melted.*
Handouts:	*//*
References:	*//*

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What is tinkering	
LOs:	*Participants will understand the methodology of tinkering*
Duration:	*75m*
Materials needed:	*Laptop, video projector, speaker, flipchart papers, A4 papers, pens and markers, internet connection*
Preparation:	• *Check the internet connection,* • *Prepare a ppt presentation* • *Prepare the necessary materials* • *Prepare the link for the video explanation*
Description:	*The trainer starts by asking the participants what they know about Tinkering methodology and why it is used as a form of informal learning in which one learns by doing.* *The trainer will introduce:* • *the concept of Tinkering methodology and its 3 main concepts (Think – make – improve)* • *which kinds of things can be developed using tinkering* • *which kind of materials can be used to create that things (recycled or low-cost materials, such as cardstock, newspaper sheets, kitchen paper rolls, adhesive tape, sample holders etc.)* *Then the trainer will show some video such as the followings:* *1) https://www.youtube.com/watch?v=78CcarCgt8Y* *2) https://www.youtube.com/watch?v=WdnWGPC89D8* *Now the concept of tinkering should be clear to all participants, so the trainer should invite the participants to brainstorm together on the possible uses of tinkering.* *Them he will divide the participants in different sub-groups and will ask them to make examples of possible things that can be created with tinkering, describing them on their flipchart paper.* *The participants will create a visual representation of these opportunities and sectors of possible usage.* *Each team comes in front of the group and presents their solutions. At the end of each presentation, the other participants are invited to ask questions, comment or share their thoughts.*

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	After all groups present, the trainer tells the group to create a circle and start the debriefing.
Learn check/ Debriefing:	*Each participant will receive a piece of paper and a pen and they are invited to do the debriefing. First, they do it individually, by writing their answers to the following questions:* 1. *How did I feel while I was watching the movie and the presentation in ppt?* 2. *Have I learned something new for me today?* 3. *How would I define Tinkering?* 4. *In which sectors can tinkering be used in my opinion?* 5. *Why tinkering could be useful methodology for recycling?* *After the participants answer these questions individually, they are invited to share with the group any interesting things that came up while reflecting on the activity.*
Tips for the Trainer:	*Make sure all the materials are prepared and enough.* *Keep a good track of time, as sometimes the discussions might take longer.* *Make sure that the comments made by the participants are on the topic.*
Handouts:	*A useful guide is the following:* *https://bostonchildrensmuseum.org/sites/default/files/pdfs/Tinker_Kit_Educators_Guide_singles_web.pdf*
References:	*Useful videos:* *1) https://www.youtube.com/watch?v=78CcarCgt8Y* *2) https://www.youtube.com/watch?v=WdnWGPC89D8*

The wall clock	
LOs:	*Participants will understand the methodology of tinkering and will develop an interesting and amazing activity of Tinkering for Adults*
Duration:	*90min*

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Materials needed:	• *Round old watch case* • *Packaging carton* • *Hot glue* • *Pencil* • *Scissors* • *Vinyl glue* • *Brush* • *Pistachio shells* • *Spray paint* • *Adhesive half pearls* • *Laptop, video projector and speaker,* • *internet connection*
Preparation:	• *Prepare the necessary materials and show them to the learners* • *Prepare the link for the video explanation for who needs more help*
Description:	*Here's how you can use scrap material and make a cute wall clock by reusing the center case of an old clock to make a new piece.* *The steps to realise it are the following:* • *Make a cardboard circle* • *Place the pride chest in the center of the cardboard* • *Make a line around the chest* • *Cut out the center circle* • *Slip the crate into the hole and glue it with hot glue* • *Spread the vinyl glue on one side of the cardboard* • *Glue the shells to cover all the cardboard around the crate* • *Let it dry* • *Spray paint all shells evenly* • *Finish the edge of the cardboard with adhesive half beads* • *Let it dry well for a couple of hours* • *Hang the clock on the wall*

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Learn check/ Debriefing:	*Each participant will receive the materials and then, following the instructions and the video, they have to create their own clock.* *In this way, they will develop a new object using and recycling an old one.*
Tips for the Trainer:	*Make sure all the materials are prepared and enough for all learners.* *Take the video ready because it shows step by step what to do for creating the clock wall.* *It is possible also to realise a clock with other materials, such as, for instance, a bicycle wheel, a palette of colors or a 33 vinyl record, so you can propose different solutions*
Handouts:	*//*
References:	*Useful video:* *- https://www.youtube.com/watch?v=JtF_yyc896U&t=5s*

A sofa recycling pallet	
LOs:	*Participants will understand the methodology of tinkering and will develop an interesting and amazing activity of Tinkering for Adults*
Duration:	*1 day*
Materials needed:	• *Pallet of dimensions suitable for the sofa you want to make* • *Cushions* • *Mattress* • *Coarse-grained sandpaper* • *Hacksaw* • *Cementite* • *Water-based enamel* • *Laptop, video projector and speaker,* • *internet connection*

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Preparation:	• *Prepare the necessary materials and show them to the learners* • *Prepare the link for the video explanation for who needs more help*
Description:	*The fundamental material to carry out this tinkering activity are the pallets that are used in fact for the transport of goods in supermarkets or department stores.* *The steps to realise it are the following:* • *Get two pallets of similar size, preferably exactly the same: they will be the base of your sofa.* • *Now with coarse-grained sandpaper, available at any DIY store, sand the entire top surface of the pallet.* • *With this operation you will eliminate any splinters or pointed wooden parts and avoid damaging pillowcases and cushions.* • *Spread a coat of cementite over the entire surface of the pallet and let it dry for at least 24 hours.* • *Then paint the two pallets with the colour you prefer and the sofa will be ready.*
Learn check/ Debriefing:	*Each participant will receive the materials and then, following the instructions and the video, they have to create their own sofa* *In this way, they will develop a new object using and recycling an old one.*
Tips for the Trainer:	*Make sure all the materials are prepared and enough for all learners.* *Take the video ready because it shows step by step what to do for creating the clock wall.* *For the pallets there are two main sizes which are 800x1200mm or 1000x1200mm: they are generally made of wood or wood substitutes, however in very resistant material. It is possible to ask to local supermarket if they give you some.*
Handouts:	*//*
References:	*Useful video:* *- https://www.youtube.com/watch?v=XXSvSx4stdA&t=2s*

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Realize a tinkering activity reducing risks	
LOs:	*Participants will understand how to develop a Tinkering with courage, resilience and taking informed risks*
Duration:	*75m*
Materials needed:	*Laptop, video projector, speaker, flipchart papers, A4 papers, pens and markers, internet connection*
Preparation:	• *Check the internet connection,* • *Prepare a ppt presentation* • *Prepare the necessary materials* • *Prepare the link of the guides*
Description:	*The trainer starts by explaining the learners that each tinkering activity has to be planned and organised before doing it. In fact it is necessary to dedicate some time before (and after) each meeting so that the space and materials are ready, interesting and stimulating.* *The trainer will introduce some rules such as:* • *The arrangement of materials must be taken care of: objects, connectors and tools can be separated.* • *Boxes and containers are useful for making materials available (e.g. do not leave the clips in their box, better put them in a bowl; the same goes for coloured pencils and markers).* • *The quantity of objects must be checked, which must be adequate for the activity to be carried out.* • *Surplus items can be kept in a cupboard (as a reserve), but should not be displayed so as not to create disturbance or attract attention, favouring their unregulated use.* • *Objects in too limited quantities may also not be made available.* • *Tinkering must not be managed, guided or conducted, but the activity as a whole must be organized.* • *All tools must be functional and easy to use.* • *Various waste can be collected in a special box.* • *The learners have to be involved, at the end of each meeting, in rearranging the workspace.* • *The trainer must evaluate what needs to be reinstated before the next meeting.*

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	• *Etc.* *So the trainer has to explain that potentially an activity of tinkering* • *could be dangerous if not planned adequately and if all the necessary rules are not followed in the right way;* • *needs to be resilient;* • *can be amazing but it needs resilience, determination, self-motivation and creative thinking.* *The learners, in fact,* • *are engaged in a process in which they set their own goals but must also recognise the limits to achieving them.* • *are challenged to persist in finding solutions to problems, or possibly re-forming their goals should the limits not be overcome.* *Now the concept of tinkering should be clear to all participants, so the trainer should invite the participants to brainstorm together on the possible rules to be used for developing a tinkering activity.* *Them he will divide the participants in different sub-groups and will ask them to make examples of rules, describing them on their flipchart paper.* *The participants will create a visual representation of these rules.* *Each team comes in front of the group and presents their solutions. At the end of each presentation, the other participants are invited to ask questions, comment or share their thoughts.* *After all groups present, the trainer tells the group to create a circle and start the debriefing.*
Learn check/ Debriefing:	*Each participant will receive a piece of paper and a pen and they are invited to do the debriefing.* *Learners have to understand that a tinkering activity is also a way to:* • *optimise strategies or solutions* • *try something new or never done before* • *overcome the lack of confidence in outcome* • *realize a process composed by small successes and frequent mistakes* • *promote a goal even if there could be difficulties, setbacks or frustrations.*
Tips for the Trainer:	*Make sure all the materials are prepared and enough.* *Keep a good track of time, as sometimes the discussions might take longer.* *Make sure that the comments made by the participants are on the topic.*

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Handouts:	*Useful guides to tinkering are the following:* • *https://www.science-center-net.at/wp-content/uploads/2020/08/tinkering-addressing-the-adults-framework.pdf* • *http://www.museoscienza.it/tinkering-eu/download/Tinkering-A-practitioner-guide.pdf*
References:	//

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MODULE 4

PLASTIC CRAFTWORK

Theoretical session of Plastic Craftwork	
LOs:	*In this session, participants will understand what Plastic Craftwork is and how to manage a session of Plastic craftwork. Acquiring knowledge about Plastic Craftwork as a method to promote sustainable/Circular Economy, and competences on how to engage Adult learners in Plastic Craftwork activities.*
Duration:	*1:30 h*
Materials needed:	*Laptop or phone* *Presentation* *Small interactive games (e.g. mini quizzes)* *Glue, colours, glue, paints, paper, scissors, magnets* • *Sticky notes*
Preparation:	• *To prepare for this activity, the trainer will prepare a presentation with the Theoretical information and some interactive activities.*
Description:	*The activity will be an interactive workshop on theoretical notions.* *It will first start with an energizer activity where participants can get to know each other and get energised to start.* *The activity will be an interactive workshop on theoretical notions.* *Pre-Activity Discussion Points: notions about circular economy plastic waste and craftwork* *Activity: How can we do craftwork with plastic? Let's try* *Post-Activity Discussion Points: results and exchange of ideas* *Plastic today represents one of the most dangerous and polluting materials found on Earth. The contemporary world is challenged by mounting plastic waste on the environment due to increase in economy and population. It is necessary to consider plastic not as waste, but as feedstocks.[1] To address this the circular economy is important and Plastic craftwork can be a solution design- oriented because the goal is to reduce plastic waste by repurposing it to create something useful.* *Plastic Craftwork - Google Slides* *Interesting/relevant links:* *How to teach about plastic recycling (preciousplastic.com)* *Pre-Activity Discussion Points: notions about circular economy plastic waste and craftwork* *Activity: How can we do craftwork with plastic? Let's try*

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	Post-Activity Discussion Points: results and exchange of ideas *Plastic today represents one of the most dangerous and polluting materials found on Earth. The contemporary world is challenged by mounting plastic waste on the environment due to increase in economy and population. It is necessary to consider plastic not as waste, but as feedstocks.[1] To address this the circular economy is important and Plastic craftwork can be a solution design- oriented because the goal is to reduce plastic waste by repurposing it to create something useful.* *Interesting/relevant links:* • *How to teach about plastic recycling (preciousplastic.com)*
Learn check/ Debriefing:	*With a small questionnaire & quiz on plastic craftwork.* *https://take.quiz-maker.com/QS6LDRNLR*
Tips for the Trainer:	*Should take into consideration that workshop participants may be from different cultures and backgrounds and thus could be adapted to the needs of the target audience*
Handouts:	*Gem Board* *PowerPoint* *Tool provided by https://community.preciousplastic.com/how-to/how-to-teach-about-plastic-recycling* *Google form*
References:	*[1] E. Iacovidou, R. Geyer, J. Kalow, J. Palardy, J. Dunn, T. Hoellein, B. Xiong, E.Y.X. Chen, Toward a circular economy for plastics, in One Earth Volume 4, Issue 5, 21 May 2021, pp. 591-594.* *https://greenlearning.ca/blog/climate-change/embracing-a-circular-economy-through-everyday-plastics*

Plastic and you	
LOs:	*At the end of this session, participants will understand how they use plastic in their everyday life and will develop new insights in how plastic can be beneficial to be used in other ways.*
Duration:	*90 minutes*

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Materials needed:	• *Printed pictures of everyday plastic objects (lids, water bottles, containers, etc.)*
Preparation:	• *mentimeter to build quiz/interactive parts (make sure all participants have access to the internet and have a device with which they can participate in the mentimeter)*
Description:	*The first part of the session aims to understand how participants use plastic in their everyday life. To do so, open the mentimeter you have prepared and which includes the following questions:* *Name some things/products you buy that are made out of/include plastic?* *Once you used the plastic, what do you do with it (do you recycle it, do you just throw it etc.)?* *Have you ever crafted with plastic?* *If you have ever made something "new" out of plastic you already had, what was that?* *Once all questions are answered, look together at the results and discuss trends among the participants. Collect benefits of working with plastic.* *In the second part, brainstorm some ideas of participants how to further use plastic.* *Divide participants into two groups.* *Give each group a set of the pictures with plastic objects.* *Ask each group to brainstorm at least one idea for each plastic object how to 1) recycle, 2) upcycle, 3) downcycle the object.* *Then, each groups presents their ideas for the different objects. Write down the different results on a whiteboard/presentation.* *At the end, make a vote (for example with mentimeter) with all participants on* *The most creative ideas for each of the categories (recycle, upcycle and downcycle)* *The easiest idea to implement* *And the one they would most likely try themselves* • *Use the list you made to remember all ideas.*
Learn check/ Debriefing:	*Participants will collect ideas in the brainstorming process which will inspire them to see the objects through a new perspective. The collection of these will prove that they gathered new perspectives. By asking which they would most likely try to do by themselves, the trainer can encourage/invite the participants to actually do so.*

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Tips for the Trainer:	*Make sure to include a big variety of plastic objects which participants can find in their everyday life.*
Handouts:	*//*
References:	*//*

Plastic Craftwork	
LOs:	*At the end of this activity, you will be able to manage a session of Plastic craftwork, taking into consideration possible risks and guidelines. In this session, participants will understand what Plastic Craftwork is and how to manage a session of Plastic craftwork. Acquiring knowledge about Plastic Craftwork as a method to promote sustainable/Circular Economy, and competences on how to engage Adult learners in Plastic Craftwork activities. In this session, participants will develop an activity based on plastic craftwork and tinkering .*
Duration:	
Materials needed:	*Discarded plastic items, and crafting supplies such as scissors, glue, etc.* *Participants will also need access to a computer for their evaluation tool and for ideas and inspiration.* *Laptop* *Presentation* *Small interactive games (e.g. mini quizzes)* *Any discarded Plastic (caps and bottles, cups, straws)* *Glue, colours, glue, paints, paper, scissors, magnets* •

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Preparation:	*To prepare for this activity, the trainer will prepare a presentation with the Theoretical information and some interactive activities. They will also first do an ice breaker that will allow the participant to get energised, comfortable and know others better.* •
Description:	*The session will be structured in two parts.* *In the first part, the learners learn about the risks of crafting with plastic through the presentation of a PPT. After the presentation of the PPT, the learners will have to identify the plastic everyone brought according to the types of plastic and their level of toxicity as well as temperature maximums.* *https://www.pinterest.com/pin/492518966563427 2/?mt=login* *https://www.cutoutandkeep.net/projects/the-very-important-guide-of-plastic-safety The Very Important Guide Of Plastic Safety* *The second part will entail the practical activity of crafting with plastic. To do so, the trainer has chosen one/two of the products to be made, depending on the feasibility within his/her given context. Together with the participants, the trainer will implement these activities through a step-by-step guide following a lesson plan. The session ends with sharing the results and evaluating the outcomes of the activity.* *This instruction will also be available as a lesson plan to download.* •
Learn check/ Debriefing:	*How will the trainer check the learning achievements of the participants?* *Through Evaluation and assessment activities such as quiz and a reflection activity using post it notes on Gem board.*
Tips for the Trainer:	*Is there anything that the trainer should take into consideration?* *Should take into consideration that workshop participants may be different and thus could be adapted to the needs of the target audience*
Handouts:	*Gem board* *Google form* *Tool provided by https://community.preciousplastic.com/how-to/how-to-teach-about-plastic-recycling*
References:	//

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Diving into the world of plastic crafting	
LOs:	*In this session, participants will turn plastic into a craft product with the guidance of the trainer.*
Duration:	*45 min*
Materials needed:	*The trainer has to choose between doing different plastic craftworks, depending on the trainer's comfort zone, the specific target group and location where the training will take place. Therefore, depending on which different material will be necessary. Potential ideas for what to create can be:* *a. Bracelets out of cables (for example https://www.youtube.com/watch?v=CovPeiffoD0)* *b. Basket out of plastic bags (for example https://www.youtube.com/watch?v=xxlCemoQ4vk and https://www.youtube.com/watch?v=mcT_RHf1Klk)* *c. Little things out of plastic containers, straws, lids (for example https://www.youtube.com/watch?v=774foiJWgLg)* *d. Waist bag out of plastic bags (for example https://community.preciousplastic.com/how-to/waist-bag-from-plastic-bags)* *e. Tote bag out of plastic bags (for example https://www.youtube.com/watch?v=Pp4vmfVlm2k)*
Preparation:	*To prepare this activity, the trainer will first need to decide upon the specific craftwork they intend to implement with the group. They can choose either from the aforementioned activities or any other craftwork experiences they find themselves. Depending on the chosen strategy, the trainer has to watch/read the tutorial to ensure that it is feasible. Finally, they need to take care of the logistics, such as setting up the tables for dyads to work on.*
Description:	*1. Divide the group into dyads and distribute them to the tables.* *2. Start with the first step of the task, while explaining what you are doing and emphasising to be cautious. Participants only watch and listen.* *3. Once you are done, participants execute the same step, while you walk around and give guidance as needed.* *4. Repeat steps 2 and 3 until the craftwork is finished.* *5. Ask each dyad to present their work and to answer the following questions:* *a. Did you find the task difficult?* *b. Would you do that again?* *c. Can you think of other things/techniques to use this material?*

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Learn check/ Debriefing:	*After the task, participants present their products which they should have finished. By asking questions on the difficulty and other ideas, the task is reflected upon.*
Tips for the Trainer:	*1. Always highlight to be careful when crafting with plastic due to the material's toxicity and the tools used (e.g., iron, x-acto knife).* *2. Try to encourage participants' creativity and ideas to transform the learned task with other plastic material or approaches (e.g., using the same technique for the tote bag but instead create a sleeve for their glasses).*
Handouts:	*/*
References:	*Aforementioned links to the task tutorials*

Getting creative	
LOs:	*In this session, participants will develop the ability to come up with ideas to create products out of plastic.*
Duration:	*1:30h*
Materials needed:	*Some plastic products that participants bring from home. Some of the classic tools (iron, sewing machine, scissors, fan, etc.) to craft on the plastic. Pens, paper, colours, paint etc.*
Preparation:	*The participants have to be invited to bring at least three pieces of plastic from home.*
Description:	*2. The trainer shows some videos (like youtube videos) and other examples that have not been used in Activity 4, to promote inspiration of what is possible (for example: https://www.youtube.com/watch?v=NdxuTQUztJY or https://www.youtube.com/watch?v=YV-ORalKAb0).* *3. Divide participants in groups of 3-5 persons who come together at one table.* *3. Ask members of each group to put the materials they brought from home together.*

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	4. *Ask each group to brainstorm ideas what to create out of their collection of plastic, encouraging them to be creative. If there is a material from the other group they would like to use, they are allowed to make trades (thereby fostering collaboration skills).* 5. *Each group decides on one product they want to create and draws the imagined product on a sheet of paper and makes a plan of action. They don't have to use all the materials they have brought and they can also create several smaller products (like several pieces of jewellery for example).* 6. *Each group implements the plan and creates the project, ensuring everyone is included and has a task.* 7. *Each group presents their products to the whole class.*
Learn check/ Debriefing:	*Each group will have developed a product emerging out of a brainstorming process.*
Tips for the Trainer:	*This is a tinkering session, therefore it should be highlighted that it is not necessary to have a perfect outcome and that an error and trial approach should be embraced.*
Handouts:	/
References:	*Aforementioned links*

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MODULE 5

CO-DESIGN

What is Co-Design	
LOs:	*Participants will learn more about Co-design practices*
Duration:	*20 minutes*
Materials needed:	*A chair each participant, a ppt*
Preparation:	*//*
Description:	*1. The trainer will introduce them what is co-design and design thinking through the presentation of a ppt that explains them*
Learn check/ Debriefing:	*The trainer will ask participants feedback and feelings felt during the activity. The trainer will then ask these questions:* *- Have you ever experienced this practice?* *- Do you think it can be useful?* *- Which are, according to you, the pros and the cons?*
Tips for the Trainer:	*The trainer should involve participants in the lesson as much as possible*
Handouts:	*//*
References:	*//*

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The magic luggage	
LOs:	*Participants will learn that a single object/thing can be seen by endless points of view depending on our experiences and objectives. Participants will be pushed to use their creativity.*
Duration:	*20 minutes*
Materials needed:	*A chair each participant, a luggage a little ball*
Preparation:	*//*
Description:	*1. The trainer invites participants to make a circle seating on their chair.* *2. The trainer introduces the "magic luggage" a luggage that can contains whatever they want.* *3. Participants are supposed to open their luggage and use the little ball inside as if it were something different (a jewel, a person, a snake..)* *4. Participants have to make a reaction coherent with the thing they want the ball to represent.* *5. The other participants will try to understand from the reaction what is the object.* *6. The game finishes when the last one has done it.*
Learn check/ Debriefing:	*The trainer will ask participants feedback and feelings felt during the activity. The trainer will then ask these questions:* *- Was it hard to use your imagination? Did you feel uncomfortable doing this activity?* *- Would you have thought about a solution made by one of your companions?* *- Which was the most unexpected?*
Tips for the Trainer:	*The trainer should help participants in case of lack of creativity suggesting some scenes.*
Handouts:	*//*
References:	*Game based on theatre improvisation exercises.*

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Prototyping	
LOs:	Participants will learn how to create a common concept, working in team.
Duration:	*45 –60 minutes*
Materials needed:	*Scissors, glue, post its, papers, board, texture, plastic jewelleries, magazines.*
Preparation:	*The trainer will prepare all the above-mentioned material on a table*
Description:	*1. The trainer asks participants to think about a new fashion product (jewel, dress) to lunch in the market.* *2. The participants have to team work creating an idea for a target group, develop it and create a prototype of product (even a sketch) using the material given.* *3. At the end, they have to show the product to the trainer explaining its uses and facilities.*
Learn check/ Debriefing:	*The trainer will ask participants feedback and feelings felt during the activity. The trainer will then ask these questions:* *- Which was the hardest part?* *- How did you manage working in a team?* *- Why did you think about this precise object? Which needs did you want to solve?*
Tips for the Trainer:	*The trainer should help participants in case of lack of creativity suggesting some solutions. The facilitator should be involved in the process to help participants not to lose focus.* *If the group is very big, divide it into smaller groups.*
Handouts:	*//*
References:	*//*
References:	*//*
The prince of Egypt	

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LOs:	Participants will apply design thinking tools and phases to create a fairy-tale.
Duration:	*30 minutes*
Materials needed:	*Two cards with two problems, cards with the characters, two boards, post-its.*
Preparation:	*The trainer has to prepare two cards with two problems written and several cards with different characters.*
Description:	*1. The trainer divides the participants into two teams* *2. Every team has to choose a "problem" card and three "characters card"* *3. With the problem and the character given, they have to create a story dealing with "the prince of Egypt" and his adventure, finding a credible solution to the problem.* *4. Every group has to implement the design thinking phases in their story, representing it through post it hangs on the board.* *5. At the end, the teams have to tell the story to each other.*
Learn check/ Debriefing:	*The trainer will ask participants feedback and feelings felt during the activity. The trainer will then ask these questions:* *- Which was the hardest part?* *- Was it hard to implement design thinking methods?* *- Do you think this method can be applied to business?*
Tips for the Trainer:	*The trainer should help participants in case of lack of creativity making some suggestions. The trainer should also refresh design thinking phases.*
Handouts:	*//*
References:	Designing a co-design workshop. The why, the what and the how | by Gyöngyi Fekete | Medium

The story of my life	
LOs:	Participants will know better one another and they will try to improve problem solving tasks.

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Duration:	*60 minutes*
Materials needed:	*//*
Preparation:	*//*
Description:	1. *The trainer will divide the group into two teams* 2. *Everyone has to tell the other group an unpleasant experience she lived or that she knows (nothing too traumatic, it can be easily "when I was a child I wanted a toy but my mum did not buy it")* 3. *Once one had told her story, the other team of participants will put on scene a role play to put on scene that experience and try to find a way to resolve it, creating a positive ending* 4. *So the other group with another experience coming from the other team until everybody has told its own story.*
Learn check/ Debriefing:	*The trainer will ask participants feedback and feelings felt during the activity. The trainer will then ask these questions:* *- For the ones who told the story: How was it to see it ending in a different way; have you ever thought about this solution?* *- For the one doing the role play: What did you think first to create a solution?*
Tips for the Trainer:	*The trainer should encourage people to express themselves. The trainer has to make them feel comfortable while doing the exercise.*
Handouts:	*//*
References:	*A game based on theatre role play exercises.*
An object I am	
LOs:	*Participants will learn how to put together all their energies and input to create a new service/product*
Duration:	*45 minutes*
Materials needed:	*Post its and a board*
Preparation:	*//*

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Description:	*1. The trainer ask participants to make a circle standing on their feet* *2. Everyone is asked to say a thing that represents themselves: an object, a memory… Then everyone has to write it on a post-it and put it on a board* *3. Everyone then is asked to say something they are afraid on, write it in a post it and put it on a board* *4 . The group will gather in front of the board and they have to think about a product/service that has the features and/or the utilities of all the objects in the board and that can be used to overcome the fears/threats of the participants* *5. At the end, they will explain the new entrepreneurial idea to the trainer* *6. The final result will be a co-created object/service that mirrors the group itself*
Learn check/ Debriefing:	*The trainer will ask participants feedback and feelings felt during the activity. The trainer will then ask these questions: - Was it hard to co-create?* *- How have you managed to put together all the single input?* *_ Does this product/service reflect you?* *_ Does this product/service reflect the group?*
Tips for the Trainer:	*The trainer should stimulate creativity offering some solutions/suggestions.*
Handouts:	*//*
References:	*//*
Major complains	
LOs:	*Participants will break the ice and start to think in a problem solving way*
Duration:	*15 minutes*
Materials needed:	*//*
Preparation:	*//*

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Description:	*1. Divide the group into two queues, one in front of the other* *2. The people on the right queue will be the citizens, the ones on the left one, the majors* *3. The citizens, one by one, have to show their complaints to the majors (f.i. Our district is dangerous), which, one by one, will try to say something to overcome citizens 'problems (f.i. We will put some cameras to control the situation)* *4. Once a major solves a problem, both of them go at the end of the other queue in order to make everyone do the citizen and the major at least once.*
Learn check/ Debriefing:	*The trainer will ask participants feedback and feelings felt during the activity. The trainer will then ask these questions:* *- Was it hard to think about solutions?* *- What did you think first before saying them?*
Tips for the Trainer:	*The trainer should help participants in case of lack of creativity suggesting some questions/answers*
Handouts:	*//*
References:	Designing a co-design workshop. The why, the what and the how | by Gyöngyi Fekete | Medium
The hang phrase	
LOs:	*Participants will stimulate their creativity and their problem solving skills having fun*
Duration:	*30 minutes*
Materials needed:	*//*
Preparation:	*//*
Description:	*1. The trainer divides the participants in pairs* *2. Every pair will be at the centre of the work field once, surrounded by the others* *3. One in front of the other, the pair have to start a conversation (A is a customer and B is a shop assistant)*

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	4. While they are speaking, the others, one by one say, to the A or B a word to say and A or B has to continue speaking using that word. *5. So on until every pair has played*
Learn check/ Debriefing:	*The trainer will ask participants feedback and feelings felt during the activity. The trainer will then ask these questions:* *- How was control eternal input?* *- Was it hard to always find new solutions?* *- Have you ever experienced, in a work context, to have to manage a critical situation using your own words in front of a customer?*
Tips for the Trainer:	*The trainer should help participants in case of lack of creativity suggesting some words. The train can put on some music to stimulate the rhythm and creativity.*
Handouts:	*//*
References:	*Game based on theatre improvisation exercises.*

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Evaluation 1	
LOs:	*Participants will express their opinions about co-design practice.*
Duration:	*30 minutes*
Materials needed:	*Post its and a board*
Preparation:	*//*
Description:	*1. Participants are asked to write on post-its* *- A thing they learnt by co-design* *- A thing they like of the practice* *- A thing they did not like* *2. Then, all the participants will hang their post it on the board*
Learn check/ Debriefing:	*The trainer will read the post it asking everyone:* *- if they agree with the post it;* *- why they liked most some things and less other ones;* *- If they think co-design might help them in their career;* *- how would they improve the things they didn't like?*
Tips for the Trainer:	*//*
Handouts:	*//*
References:	*//*

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Evaluation 2	
LOs:	Participants will cement their relationship expressing appreciation for one another
Duration:	*20 minutes*
Materials needed:	*Music and a stereo*
Preparation:	*//*
Description:	*1. Participants are asked to walk randomly for the work field looking for the eye contact of someone else and smile to one another* *2. When the trainer says "Go", participants have to make a circle and, in turn, every one has to go in the center and say:* *- A thing they are grateful about themselves after having done the activities (f.i. I was afraid of speak my mind and this activity helped me to express myself. Now I am braver and more aware of myself)* *- A thing they appreciate about their companion (f.i. I truly appreciate Mary because…)* *3. So on, until everybody has spoken*
Learn check/ Debriefing:	*The trainer will ask participants feedback and feelings felt during the activity. The trainer will then ask these questions:* *- Did you aspect the thing that the others say about you?* *- Are you more aware of your strengths now?* *- Did co-design help you discover something more about you/about the group?*
Tips for the Trainer:	*The trainer should stimulate everyone to say something good about themselves and the group in case someone did not know what to say*
Handouts:	*//*
References:	*//*

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Partners

Domínio Vivo - Formação e Consultoria Lda, Portugal

Biosphere Portugal represents Biosphere Responsible Tourism in Portugal. Biosphere develops customized sustainability plans with destinations and organizations in the tourism sector, to ensure a long-term balance between economic, sociocultural and environmental dimensions. The sustainability plans are aligned with the 17 United Nations' Sustainable Development Goals. With Biosphere, progress is recognized through a certificate of commitment to sustainability and the Biosphere Sustainable Lifestyle Certificate.

Mine Vaganti NGO , Italy

Mine Vaganti NGO is a non-profit organisation born in Sardinia in 2009. MVNGO promotes intercultural dialogue, social inclusion through Sport and environmental protection using Non-Formal Education. MVNGO is an educational training provider at local and European level and has a consultant role for public and private bodies in order to promote and develop European and trans-continental projects.

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Center for Education and Innovation - INNOVED , Greece

InnovED is a non-governmental organization, operating in the not for profit sector since 2019. The main mission of InnovED is the encouragement and advancement of employability and self-empowerment by innovation fostering educational material, techniques and methods. InnovED focuses on education and training enhancement through research, experimentation, training and exchange of good practices.

Youth Europe Service, Italy

YES is an association founded in 1999 in Potenza. YES works with:
•Integration of people with disabilities or the disadvantaged
•Mutual knowledge between people, to develop solidarity and assert the principle of civil living together
•Knowledge and protection of the historical, cultural, artistic patrimony
•Development of the social, cultural and sports activities to enhance European identity
•Development of new entrepreneurs and job opportunities
• Activities and initiatives in tourism development and promotion.

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Mobilizing Expertise AB, Sweden

MEXPERT works on providing training, creating educational tools, mobilising volunteers to professionalism, project management, promoting entrepreneurship. MEXPERT creates non-formal, alternative and easy to use educational tools for youth workers, educators, volunteers and staff, and it helps people to bring their ideas into the reality through project management tools and process.

Aidlearn, Consultoria em Recursos Humanos Lda., Portugal

AidLearn is a Training, Research-Action and Consulting company, which operates at national level and the European Union, dedicated to the design, implementation and evaluation of studies, projects and training activities that promote individual and / or organisational development. The company is a DGERT certified training provider in a wide range of areas and topics, such as Planning, Design, Organization, Development, Assessment and Distance Learning, but it is also highly experienced in educational projects funded by the Erasmus+ program and has successfully implemented numerous projects centering around social inclusion, tourism, (social) entrepreneuship, active ageing, informal/organisational learning, citizenship and many others.

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Annexes

Annex A - Questionnaire for women

INTRODUCTION

Dear participant,

Thank you for taking the time to answer this questionnaire. By doing so, you contribute to assessing and evaluating important information on our European project CECIL (Circular Economy Education for the Social Inclusion of Women), which is funded by the Erasmus+ program of the European Commission.

The CECIL project tackles the necessity to promote Circular Economy and Sustainability among women at risk of exclusion by fostering a greater interaction between the European Green Deal and the EU Gender Equality Strategy 2020-2025. To do so, CECIL aims to provide Adult Educators and trainers with skills, competences and tools to engage women at risk of exclusion (35-45). At the same time, it creates pathways for upskilling for these women, while also increasing their take-up on new adult education opportunities in the area of circular economy and sustainability.

Please be aware that if you decide to participate, you may stop participating at any time and you may decide not to answer any specific question. Any identifying information will be kept confidential and no one else will have access to it, apart from the researchers. To help protect your confidentiality, the surveys will not contain information that will personally identify you. In any written report or publication, no one will be identified or identifiable, and only group data will be presented. Your participation is completely voluntary.

Clicking on the “agree” button below indicates that:

- you have read the above information
- you understand the purpose and nature of this study and voluntarily agree to participate
- you understand that you can withdraw from the study at any time, without any penalty or consequences
- you grant permission for the data generated to be used in the researcher’s publications on this topic.

If you do not wish to participate in the research study, please decline participation by clicking on the “Disagree” button.

□ I agree to participate.

□ I disagree to participate.

BLOCK I - SOCIO-DEMOGRAPHICS This block will ask some questions about your person and your educational/professional background.
Personal info

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1	How old are you? ___
2	Where do you live (region, district, province)? _____
3	What is your family situation? (Mark all those appropriate (s)) ● single ● married ● widowed ● in a relationship ● I have children
4	Whom do you live with? (Mark all those appropriate(s)) ● alone ● with my children ● with parents/ siblings ● with partner ● with other people in need of assistance ● Others, please specify: _____
5	Do you belong to any disadvantaged group? *(Disadavantaged group: persons that experience a higher risk of poverty, social exclusion, discrimination and violence than the general population, including, but not limited to, ethnic minorities, migrants, people with disabilities, isolated elderly people and children*). ● Yes ● Please specify: ● No ● I don't want to answer
Educational/Professional background	
6	What is the highest level of education you completed? (Mark the appropriate(s)) ● Unfinished primary studies ● Primary education ● Unfinished secondary education ● Secondary education ● Unfinished university studies ● University level ● Others, please specify: _____

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6a	Have you finished an educational level through adult education opportunities (in PT for example Programa Qualifica, Educação e Formação de Adultos etc.)? (if applicable in respective country) ● yes ● no
7	Have you done/participated in any form of vocational education and training (VET) and/or other forms of learning? (Mark the appropriate(s)) ● VET training ● lifelong learning course ● adult education course ● Other, please specify: _____ ● Not participated in any VET
8	● How many years did you attend school? _____ ● How long did you participate in vocational training? _____ ● How long did you study at university? _____ ● How many courses have you done in the last 5 years? _____ ● Please specify which ones: _____
9	What is your employment situation now? (Mark the appropriate(s)) ● Working with permanent contract ● Working in temporary employment ● Self-employed ● Helping with the family business ● No contract ● Unemployed ● Student ● Unfit for working/retired ● Housewife ● Other, please specify: _____

BLOCK II - PREVIOUS EDUCATIONAL EXPERIENCES; BARRIERS ETC.
This block will include some questions about your experiences with training and courses and what you think about that.
Some of the questions will ask you to rate on a scale from 1 (not at all) to 5 (completely). If the questions do not apply to you, please just skip them.

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	Indicators:	Not applicable	not at all	a little	some what	mostly	completely
Accessibility and information							
1	Are you aware about the available training courses in your area/city/province?		1	2	3	4	5
2	Is it easy for you to find information about courses and training offers?		1	2	3	4	5
3	Do you think the offer is adequate?		1	2	3	4	5
4	Do you find it easy to sign up for a course?		1	2	3	4	5
5	How easy is it for you to access an offered course?		1	2	3	4	5
6	During which time is the majority of courses offered? ● during normal working day (8/9-16/17h) ● after work hours ● self-paced ● I don't know						
7	In which modality is the majority of courses offered? ● in presence ● online ● blended (parts online, parts in person) ● I don't know						
Interest and motivation							

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8	Are you interested in the offered courses?		1	2	3	4	5
9	Would you be willing to do a course (regardless of its feasibility)?		1	2	3	4	5
9a	If not, please indicate why: _____						
10	What is your main motivation to start/continue your education/training? (Mark the appropriate) ● Get a job ● Improve my qualifications and skills ● Interest ● Occupy my free time ● Socialise with other people ● Others, please specify _____ ● Not applicable						
Perception of relevance/usefulness/barriers of training							
11	Some workers enroll in courses to improve their employment opportunities. Have you personally done any?	**Not applicable**	1	2	3	4	5
12	Which barriers did you encounter preventing you from participating in a course? (Mark the appropriate(s)) ● Due to lack of information about the courses ● Due to language/communication issues ● Incompatibility of the course hours with my job ● Too much bureaucracy ● Because of the travelling costs ● Courses are too expensive ● Location of the course is inconvenient (too far from home, etc.) ● Accessibility issues (lack of ramps, too many stairs, etc.) ● I don't think they are necessary ● Because they aren't appropriate to my needs ● I find them uninteresting						

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	• I didn't like the teacher • I find it very difficult to study as of now • Other reasons, please specify _____ • Not applicable
13	If you've done one or several courses, what was/were the area/s? (Mark the appropriate(s)) • Business Management • Business and administration • Science, engineering • Information and communication • Technology • Teaching professionals • Health • Manufacturing industry (Metal, machinery, printing…) • Hotel, restaurant and catering • Transport, warehousing and communications • Tourism • Social activities: personal services • Sustainability • Agriculture, farming, fishing • Education and childhood care • Social sciences • Nursing, care of dependent people • Clerk, Sales and customer service • Handicrafts/ Craftwork / Tinkering • Food processing • Office worker (secretary, accounting…) • Others, please specify _____ • Not applicable

14	Do you think that the courses you have done have helped you to get a job or a better one?	**Not applicable**	**1**	**2**	**3**	**4**	**5**
14 a	Please explain why (what aspect of the courses helped you specifically; why did they not help you)? _____						

Relevant skills

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15	Which of the following skills were tackled most in your previous educational path? (Mark the appropriate) • Planning and time management • Oral and written communication • IT skills • Information Management • Conflicts management • Decision management • Critical Thinking • Teamwork • Autonomous learning • Ability to adapt to new situations • Innovation and creativity • Initiative and entrepreneurship • Responsibility • Self-confidence • Other, please specify _____

BLOCK III - QUESTIONS AROUND CECIL THEMATIC AND COURSE

In this final block, we will ask some questions about your interest in the thematics of our project.

Useful definitions:

Co-Design -a participatory approach to designing solutions, in which community members are treated as equal collaborators in the design process, therefore users, as 'experts' of their own experience, become central to the design process

Circular Economy - a production and consumption model, which includes sharing, leasing, reusing, repairing, refurbishing and recycling already existing materials and products for a duration that is as long as possible, thereby extending the products life cycle and thus minimising waste

Crafting - activity/hobby of making (decorative) objects with the hands

Sustainability - the quality of causing little or no damage to the environment and therefore able to be continued in a long lasting manner

Tinkering - an innovative approach to learning to engage people with STEM (science, technology, engineering and mathematics), employing an hands-on, minds-on approach in which the learner takes control of their own learning and is given time, space and opportunity to think with their hands, to puzzle things out, and to design and test ideas in an iterative way and through trial and error

Indicators:	not at all	a little	somewhat	mostly	completely

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Interest/Knowledge on CECIL topics						
1	Are you interested in the topic of sustainability and circular economy?	1	2	3	4	5
2	Are you interested in learning something about crafting?	1	2	3	4	5
3	Which of the following aspects of circular economy and sustainability are you already familiar with? (Mark the appropriate(s)) ● What is circular economy ● How circular economy businesses work ● Examples of circular economy businesses ● What is sustainability ● How to include sustainability in your everyday life ● Recycling and upcycling processes ● Composting ● Others: please specify _____ ● None					
4	Which of the following resources to craft with are you already familiar with? ● Plastic ● Fabric ● Metal ● Wood ● Paper/cardboard ● Other resources, please specify _____ ● None					
5	Are you familiar with the concept and methodology of tinkering?	1	2	3	4	5
6	Would you be interested in a course that employs this methodology?	1	2	3	4	5

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6a	If not, why? _____					
7	Are you familiar with the concept of co-design?	1	2	3	4	5
8	Would you be interested in learning the theory and practical applications of co-design?	1	2	3	4	5
8a	If not, why? _____					
Interest in CECIL course						
9	In order to improve your employment opportunities in the future, do you think a course in the area of sustainability, circular economy, crafting and co-design would be relevant?	1	2	3	4	5
9a	If not, why? _____					
10	Would you be willing to attend a course in the area of sustainability, circular economy, crafting and co-design?	1	2	3	4	5
10a	If not, why? _____					
11	Please describe your expectations if you were attending such a course: _____					
12	Which skills should such a training focus on especially? ● Planning and time management ● Oral and written communication ● IT skills					

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- Information Management
- Conflicts management
- Decision management
- Critical Thinking
- Teamwork
- Autonomous learning
- Ability to adapt to new situations
- Innovation and creativity
- Initiative and entrepreneurship
- Responsibility
- Self-confidence
- Other, please specify _____

DEBRIEFING

Thank you for your participation and time to answer this questionnaire. Your contribution is essential for ensuring the success and quality of the CECIL project.
If you are interested in the results of this survey (and other products developed through the CECIL project), you can now register your email address. The email address will not be linked to your given answers.

_____

- I don't want to receive any information.
- I would like to receive information only about the survey I participated in.
- I would like to receive information about all results of the CECIL project.

Annex B - Questionnaire for stakeholders

INTRODUCTION

Dear participant,
Thank you for taking the time to answer this questionnaire. By doing so, you contribute to assessing and evaluating important information on our European project CECIL (Circular Economy Education for the Social Inclusion of Women), which is funded by the Erasmus+ program of the European Commission.
The CECIL project tackles the necessity to promote Circular Economy and Sustainability among women at risk of exclusion by fostering a greater interaction between the European Green Deal and the EU Gender Equality Strategy 2020-2025. To do so, CECIL aims to provide Adult Educators and trainers with skills, competences and tools to engage women at risk of exclusion (35-45). At the same time, it creates pathways for upskilling for these women, while also increasing their take-up on new adult education opportunities in the area of circular economy and sustainability.

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Please be aware that if you decide to participate, you may stop participating at any time and you may decide not to answer any specific question. Any identifying information will be kept confidential and no one else will have access to it, apart from the researchers. To help protect your confidentiality, the surveys will not contain information that will personally identify you. In any written report or publication, no one will be identified or identifiable, and only group data will be presented. Your participation is completely voluntary.

Clicking on the "agree" button below indicates that:
- you have read the above information
- you understand the purpose and nature of this study and voluntarily agree to participate
- you understand that you can withdraw from the study at any time, without any penalty or consequences
- you grant permission for the data generated to be used in the researcher's publications on this topic.

If you do not wish to participate in the research study, please decline participation by clicking on the "Disagree" button.

□ I agree to participate.
□ I disagree to participate.

BLOCK I - GENERAL INFO ABOUT STAKEHOLDER This block will ask some questions about your workplace and professional experiences.	
Stakeholder info	
1	What kind of organisation/workplace do you work in? (Mark the appropriate) ● adult education institution ● training provider ● non-profit organisation ● other, please specify: _____
2	The organisation/work is ● …. private. ● …. public.
2	What is the name of your organisation/workplace? _____
3	Which of the following target groups does your workplace address? ● women with ages between 35-45 years

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	• women who have not completed their
	  • Compulsory studies
	  • Higher qualification studies (such as apprenticeship, university etc.)
	• other, please specify: _____

4	Please indicate your job title: _____
5	How many years of experience do you have working with this target group? • 0-2 years • 2-5 years • > 5 years
Offers	
6	What are the course areas currently offered by your organisation/workplace? • Business Management • Business and administration • Science, engineering • Information and communication • Technology • Teaching professionals • Health • Manufacturing industry (Metal, machinery, printing…) • Hotel, restaurant and catering • Transport, warehousing and communications • Tourism • Social activities: personal services • Sustainability • Agriculture, farming, fishing • Education and childhood care • Social sciences • Nursing, care of dependent people • Clerk, Sales and customer service • Handicrafts/ Craftwork / Tinkering • Food processing • Office worker (secretary, accounting…) • Not applicable

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	• Others, please specify _____
7	Which of the following competences does your course offer address? • Planning and time management • Oral and written communication • IT skills • Information Management • Conflicts management • Decision management • Critical Thinking • Teamwork • Autonomous learning • Ability to adapt to new situations • Innovation and creativity • Initiative and entrepreneurship • Responsibility • Self-confidence • Not applicable • Other, please specify _____

	Indicators:	not at all	a little	somewhat	mostly	completely
8	Would you say that trainers and adult educators working with women at risk of social exclusion are sensitised to their specific needs and barriers?	1	2	3	4	5
8a	Please explain your answer.					

BLOCK II - EDUCATIONAL NEEDS AND BARRIERS FOR WOMEN

This block will include questions assessing educational needs and barriers of women and solutions/measures to solve these.

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1	What do you think are the main drivers for women to apply/attend a course? (Pick all that apply) ● Get a job ● Improve their qualifications and skills ● Interest ● Occupy their free time ● Socialisation ● Others, please specify _____
2	What do you think are the main reasons preventing women from applying/attending a course? ● Due to lack of information about the courses ● Due to language/communication issues ● Incompatibility of the course hours with the job ● Too much bureaucracy ● Because of the travelling costs ● Courses are too expensive ● Location of the course is inconvenient (too far from home, etc.) ● Accessibility issues (lack of ramps, too many stairs, etc.) ● Not seeing any added value through participation ● Because they are not appropriate to their needs ● Finding them uninteresting ● Difficulties to study ● Other reasons, please specify _____
3	Do you apply specific measures to facilitate and prevent these reasons? ● yes ● no
3a	If yes, please explain which ones? _____ _____
4	Which skills do you find the most lacking in the women signed up for your courses? ● Planning and time management ● Oral and written communication ● IT skills ● Information Management ● Conflicts management ● Decision management ● Critical Thinking

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	• Teamwork • Autonomous learning • Ability to adapt to new situations • Innovation and creativity • Initiative and entrepreneurship • Responsibility • Self-confidence • Other, please specify _____
5	Considering the job market, which skills do you consider most relevant for the employability of the women you work with? • Planning and time management • Oral and written communication • IT skills • Information Management • Conflicts management • Decision management • Critical Thinking • Teamwork • Autonomous learning • Ability to adapt to new situations • Innovation and creativity • Initiative and entrepreneurship • Responsibility • Self-confidence • Other, please specify _____
6	In what areas do you think your/other organisations could improve so that more women would sign up for the courses offered? • Better marketing/communication about course offer • Language classes (for non-native speakers) • Better accessibility (e.g offers in sign language, installation of ramps, etc.) • More flexibility regarding timing of offer • More flexibility regarding modality of offer • Less bureaucracy during registration etc. • Low cost/free course offers • Better/more spreaded location • Transport offer for learners who come from afar • Support in finding solutions for daycare opportunities (proximity to it, agreements, etc.)

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	• Others, please specify _____

BLOCK III - QUESTIONS AROUND CECIL THEMATIC AND COURSE

In this final block, we would like to you to answer some questions which assess the applicability and relevance of the topics and approach applied in the CECIL project. To do so, the following definitions may be relevant.

Useful definitions:

Co-Design - a participatory approach to designing solutions, in which community members are treated as equal collaborators in the design process, therefore users, as 'experts' of their own experience, become central to the design process

Circular Economy - a production and consumption model, which includes sharing, leasing, reusing, repairing, refurbishing and recycling already existing materials and products for a duration that is as long as possible, thereby extending the products life cycle and thus minimising waste

Crafting - activity/hobby of making (decorative) objects with the hands

Sustainability - the quality of causing little or no damage to the environment and therefore able to be continued in a long lasting manner

Tinkering - an innovative approach to learning to engage people with STEM (science, technology, engineering and mathematics), employing an hands-on, minds-on approach in which the learner takes control of their own learning and is given time, space and opportunity to think with their hands, to puzzle things out, and to design and test ideas in an iterative way and through trial and error

	Indicators:	not at all	a little	somewhat	mostly	completely
Offers related to CECIL topics						
1	Does your organisation have course offers concerning sustainability and circular economy?	1	2	3	4	5
2	Does your organisation have course offers concerning crafting?	1	2	3	4	5

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3	Does your organisation apply co-design principles?	1	2	3	4	5
3a	Would your organisation be interested in offering courses that apply this methodology?	1	2	3	4	5
4	Does your organisation apply a tinkering methodology?	1	2	3	4	5
4a	Would your organisation be interested in offering courses that apply this methodology?	1	2	3	4	5
Interest in CECIL course						
5	In order to improve women's employment opportunities in the future, do you think a course in the area of sustainability, circular economy, crafting and co-design would be relevant?	1	2	3	4	5
5a	If not, why? _____					
6	Do you think women would be willing to attend a course in the area of sustainability, circular economy, crafting, and co-design?	1	2	3	4	5
6a	If not, why? _____					
7	If you were designing such a course, which skills would you focus on? ● Planning and time management ● Oral and written communication ● IT skills ● Information Management					

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	• Conflicts management • Decision management • Critical Thinking • Teamwork • Autonomous learning • Ability to adapt to new situations • Innovation and creativity • Initiative and entrepreneurship • Responsibility • Self-confidence • Other, please specify _____					
8	How likely is it that your organisation would make use of free resources/course on sustainability and circular economy catered specifically to the needs of women?	1	2	3	4	5
8a	Please justify your answer to the previous question. _____ _____					

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