Pestalozzi

Strengthening education for democracy (STED)

The big wheel for democratic culture

by

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THE BIG WHEEL FOR DEMOCRATIC CULTURE

Brief description

This training unit addresses developing competences for democracy by moving teaching and learning from classrooms to the space of community. Teachers and NGO activists will make common projects aiming at raising awareness of the significance of sustainable development. The specific topic of the projects will address the problems of violence and environment.

Target group

Type of training	School level / age	Subject area
Initial and in-service training	Primary and high school teachers and NGO activists	All subjects

Expected outcomes

- ✓ to increase enjoyment of the learning experience
- ✓ to develop a culture of democracy in schools and local community
- ✓ to reappraise the concept of community through solving common problems such as violence and environmental issues
- ✓ to shine a light on the concept of intercultural dialogue
- ✓ to raise awareness of true meaning and value of sustainable development
- ✓ to educate participants, teachers and NGO activists to make and implement common projects
- ✓ to develop competences of flexibility and adaptability, civic-mindedness, knowledge and critical understanding of the world

Activities

	Duration	Methods used
Activity 1	100 minutes	Energizer, fish bowl, case study, jigsaw
Activity 2	105 minutes	Energizer, create a metaphor, presentation, small groups technique, mind mapping
Activity 3	110 minutes	Team work, PBL, round Robin
Debriefing /evaluation	45 minutes	Fish bowl, stand to score, evaluation questionnaire

Background and context

Despite relatively successful reforms, our schools remain ossified and tough zones which are not effectively embedded in the community. Active learning methods are not as useful unless we try to cross the boundaries between the two. In order to make school projects more efficient we have to join other agents of civil society. NGO activists and teachers will work collaboratively on the project which will cast light on problems of violence and environment. This training unit will enable them to learn more about collaborative work, cross-curricular approach, intercultural situations, environmental education, sustainable development, project-based learning and democratic culture. And finally, the impact of the project itself on students' development can be life changing by improving their competences for democracy.

The ideal number of participants for this type of training might be 16: 12 teachers and 4 NGO activists. It enables trainers to divide participants in four groups of four participants, three teachers and one NGO activist.
It would be very stimulating and useful if members of school management could participate, but it is very difficult to organize them for this type of training.

Activity 1: Education for Democracy and Sustainable Development

Duration: 100 min

Expected outcome:
- ✓ introducing the concepts of democratic culture, competences for democracy and sustainable development to the participants
- ✓ building and raising participants' awareness of their individual capabilities and assets
- ✓ valuing democracy, justice, fairness, equality and the rule of law
- ✓ analytical and critical thinking skills
- ✓ knowledge and critical understanding of the self

Methods/techniques used:
- ✓ Energizer
- ✓ Fish bowl
- ✓ Case study
- ✓ Jigsaw

Resources:
- ✓ Questionnaire (appendix 1)
- ✓ Competences for democratic culture (appendix 4)
- ✓ Preamble of The UN 2030 Agenda for Sustainable Development (appendix 3)
- ✓ Edutopia: Case of Montpelier High School uses the concept of sustainability (appendix 6)
- ✓ Role cards (appendix 2)
- ✓ Website: http://temeljidemokratskekulture.weebly.com/home.html

Practical arrangements:
- ✓ prepare questionnaire (appendix 1)
- ✓ prepare cards with role drawings (appendix 2)
- ✓ prepare text of Preamble of The UN 2030 Agenda for Sustainable Development (appendix 3)
- ✓ prepare printed CDC model (appendix 4)
- ✓ prepare handouts (appendix 5)
- ✓ prepare text of case of Montpelier High School uses the concept of sustainability (appendix 6)
- ✓ prepare printed Competences for democratic culture model
- ✓ prepare A4 papers, flipchart and flipchart sheets, stickers and different color markers
- ✓ prepare a box or paper bag
- ✓ prepare 5 computers (lap tops)

Procedure

Pre-task activity (15 min)
- ✓ Ice breaker: participants are invited to write down their expectations, hopes and fears concerning this training on stickers and put them in the box. Trainer puts the box aside until the activity is done.

4

✓ Each participant gets the questionnaire to fill and put aside until the activity is done

Step one (45 min)

Jigsaw:
✓ The trainer puts participants into groups of four, one NGO activists and three teachers of three different subjects if possible. Aim: professional heterogeneous groups.
✓ Each member of group gets an extra task: to be a timekeeper, encourager, scribe or group leader. Trainer distributes the roles randomly.
✓ Trainer gives different tasks to each group to explore: principles of culture of democracy, CDC, sustainable development, collaborative and project based learning.
✓ Trainer gives handouts to each group: appendix 1, 2, 3 and 4.
✓ Each group reads materials and discuss them. Scribe writes down interesting ideas.
✓ Participants can use computers or lap tops as help stations - to get to the website or other internet resources for additional information. All members of the group together create a common summary of their findings on flipchart sheets using markers and drawings.
✓ When the task is done, trainer asks group leaders to place flipchart sheet to the place visible to others and to present the results of group discussion to the other groups. Members of other groups are free to ask questions and make comments.

Step two (30 min)
✓ Fish bowl:
✓ Trainer asks participants to sit on chairs arranged in broken circle. She/he puts five chairs in centre of the circle and she/he sits in front of the outer circle, where the circle is broken.
✓ Trainer randomly selects four participants to sit in the inner circle and to reflect on previous activity on the terms of Culture of Democracy, CDC, Sustainable development, Collaborative and project based learning.
✓ Trainer explains to participants that the objective of this activity is to share ideas, listen to others and to reflect on their ideas. Trainer will ask questions from the questionnaire, such as: What does the term of Democratic culture include? Can you explain the role of CDC? What is the connection between education for democracy and sustainable development?
✓ Rules for participants are: only participants in the inner circle can talk. When someone from the outer circle wants something to add, he sits in the empty chair in the inner circle. Participants can leave the inner circle whenever they want. Participants in the inner circle need to listen to what others have to say and wait for their turn to speak.
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Step three- Debriefing (10 min)
✓ Trainer gives the instruction to the participants to sit on the chairs in the form of a circle.
✓ Trainer picks stickers from the box randomly. She/he puts the stickers on the flipchart.
✓ Participants comment on stickers from the box.
✓ Participants compare their answers from the box and questionnaire with the new insights and discuss them.
✓ Trainer asks participants the following questions:
1. How did you feel when you were participating in the jigsaw activity?
2. Why? Did you learn something new?
3. Why yes, or why not?
4. How did you feel about the fish bowl activity?
5. What was its purpose?

Tips for trainers:

    ✓ Having assigned roles within a group, the trainer should clarify each role: leader keeps the group oriented towards the tasks, he/she helps the group to set eventual sub-goals. Encourager is a good spirit for the group making sure that all group members participate in the activities. Scribe takes notes and summarizes discussions. Time keeper tracks time to prevent discussions straying off topic.

    ✓ The first activity is very important for the trainer to meet the needs of participants and groups and to adjust further activities to them.

    ✓ If participants have difficulties understanding all these concepts, it is advisable to use a website made for this purpose.

Activity 2: Culture of Democracy or What can I do?

Duration: 105 min

Expected outcome:

✓ the implementation of the principles of a culture of democracy and sustainable development in the classroom
✓ finding a way out of the classroom to the community space
✓ developing flexibility and adaptability, knowledge and critical understanding of the self, openness to cultural otherness and to other beliefs, world views and practices

Methods/techniques used:
✓ Energizer
✓ Create a metaphor
✓ Presentation
✓ Small groups technique
✓ Mind mapping

Resources:
✓ TASKs
✓ Competences for democratic culture
✓ flipchart sheets, different coloured markers
✓ flipchart
✓ pp or prezi presentation from the website The big wheel of education
✓ Bob Pike, Christopher Busse: 101 MORE GAMES FOR TRAINERS: A Collection of Best Activities from Creative Training Techniques Newsletter, HRD Press, Amherst, Canada, 2004

Practical arrangements:
✓ prepare and adjust for this workshop topic from TASKs: A community of learners (original activity contributed by Madalena Mendes)
✓ prepare presentation
✓ prepare A4 sheets of paper for each participant to start with an individual reflection on his/her own attitudes, skills and knowledge
✓ prepare printed "Competences for democratic culture" model
✓ prepare a paper bag with lots of different small objects like paper clip, lighter, glasses, eraser etc.

Procedure:

Pre-task activities (20 min):
✓ Trainer introduces the activity by giving a short presentation: "The big wheel for education" (presentation on culture of democracy, competence and competences, sustainable development and project method)

Step one Energizer (15 min) What's a Metaphor for?

✓ Trainer places a variety of objects in paper bags, such as a rubber band, paper clip, penny, eraser, pencil stub, or pen. She/he gives one bag to each small group and asks members of the group to choose an object out of the bag and find a way to relate the object to the training topic. Source: Bob Pike, Christopher Busse: 101 MORE GAMES FOR TRAINERS

Step two What is The big wheel for education for you? - Source: TASKs What is education for democratic citizenship for you? (60 min)

✓ Trainer asks participants to gather into new groups per the roles from previous activity: all time keepers in the first group, encouragers in the second, scribes in third and group leaders in fourth.

✓ Trainer gives every group printed Competences for democratic culture model, one page of flipchart paper and markers.

✓ Trainer asks participants to reflect on their experiences with any kind of education for democracy and especially on good practices between schools and external partners.

✓ Before the group activity begins, trainer gives each group the following groups of questions:

Group one:
- Why is it useful for schools to cooperate with external partners?
- What can external partners offer to students and school staff?
- What can schools offer to external partners?
- What kind of cooperation could there be between schools and external partners?
- Who should be responsible for cooperation between schools and external partners?
- Can they join insights from the previous activities with this one?

Group two:
- What are the problems NGO activists face in their practice?
- How do they solve them?
- Why is violence so present in modern society?
- What can we do about it?

Group three:
- What does the term "intercultural" mean?
- What is culture, after all?
- What are examples of intercultural situations in your everyday work?

Group four:
- What is the big wheel for democratic culture?
- Why the big wheel?
- What is the connection between sustainable development and the big wheel for democracy?
- How you can implement their principles in your everyday work?

✓ Participants in groups discuss how teachers of different subjects may teach these issues in this way (e.g. mathematics, biology, chemistry, geography).

✓ Scribe records the key points of the discussion on the A3 sheets of paper.

✓ Trainer ask each group to decide on what they think is one of the most important reasons for cooperation between schools and external partners in the context of democratic education.

✓ Scribe writes down the reasons on A3 paper

✓ Each group makes a poster where the reasons for the cooperation will be presented as a comic book, drawing etc. Reasons will be presented as well.
✓ Leaders of the group introduce others to their ideas.

Step three – Debriefing (10 min)
✓ Trainer asks participants what the three wheels of the big wheel for democratic culture can be.
✓ Trainer asks participants to discuss how we can compare three pillars of sustainable development with the three wheels of the big wheel.
✓ Participants reflect on their roles in school/society.
✓ Participants share their experiences about the activities.
✓ Trainer asks the participants what attitudes, skills and knowledge were touched upon by this and the previous activity.

Tips for trainers
✓ If the participants have difficulty answering the questions, the trainer should offer some guidance to the group.
✓ Trainer can use an additional energizer in order to rebuild group attention span.
✓ Workshop from the TASKs: A community of learners (original activity contributed by Madalena Mendes) used as an inspiration for this training unit with a lot of changes.

Activity 3 Fractal democracy, or how can we make it?

Duration: 110 min

Expected outcome:

- ✓ implementation of principles of culture of democracy and sustainable development from the classroom into society
- ✓ tolerance and ambiguity
- ✓ knowledge and critical understanding of the world
- ✓ cooperation skills
- ✓ valuing human rights and human dignity

Methods/techniques used:
- ✓ Team work
- ✓ PBL
- ✓ Round Robin

Resources:
- ✓ handouts (appendix 4)
- ✓ flipchart sheets, A4 paper and different coloured markers
- ✓ four coloured stickers: blue, green, red, white
- ✓ flip chart
- ✓ printed tips for project (appendix 7)
- ✓ Sustainable Design Project Teacher Manual, prepared by Gilda Wheeler, OSPI, Education for Environment and Sustainability, Kristen Clapper Bergsman, Laughing Crow Curriculum LLC, Colleen Thumlert, Cascadia Consulting Group Beth Kelly, OSPI Learn and Serve America
- ✓ website: The Big Wheel For Democratic Culture: http://thebigwheelineducation.weebly.com/ or http://temeljidemokratskekulture.weebly.com/home.html
- ✓ A template for the Action Plans for STED

Practical arrangements:
- ✓ prepare A4 papers, flipchart sheets, different coloured markers and stickers
- ✓ prepare handouts (app 4)
- ✓ prepare printed tips for project
- ✓ prepare printed excerpts from Sustainable Design Project Teacher Manual
- ✓ prepare website
- ✓ prepare 4 STED Action Plan templates

Procedure
Fractal Democracy (90 min)

Step one
- ✓ Participants are divided into their primary groups of four with new roles (timekeeper, encourager, scribe or group leader).
- ✓ Each group gets a flipchart sheet, A4 papers, different coloured markers and stickers.

✓ Trainer gives instruction to each group to make a draft for a common project on the A4 paper and to make tips on the flipchart sheet of paper.
✓ Each group gets printed tips for project.
✓ Each group gets a template for the Action Plans for STED

Step 2

✓ Members of the group make common decisions about which problems their project will address.
✓ Each project/assignment should address the issues referring to a particular form of violence, intercultural dialogue and environment.
✓ Each member of the group uses his/her attributes and developing his/her aspects: being different subject teachers or NGO activists, each of them is an expert in some special field or science, knowing some special techniques of practical realisation with that knowledge. In this way, they can contribute to the common goal. Furthermore, each of them is an individual with different attitudes, skills, values and experiences which can be used in the activity.
✓ Participants come up with a title for the project.
✓ Participants plan the steps for raising the funds.
✓ Participants follow the instructions from tips for project (appendix 7)
✓ Participants use a template for the Action Plans for STED to develop the concept of their training. Upon completion of assignment, all sheets are placed on the spot where everyone can see it, and the trainer asks participants to make new groups of four.

Step 3

✓ Each group moves between sheets. A member of one group who has been involved in making the particular draft presents it to the other members of other groups
✓ After completing the tour, participants discuss pros et cons of each project and give suggestions/feedback
✓ Trainer asks participants: what would they change in their projects?

Step four

✓ Trainer gives the teachers instructions on how to join Facebook or Edomodo teachers group for further activities
✓ Trainer gives the teachers instructions on how to use the website The Big Wheel for Democratic Culture

Step five- Debriefing (20 min)

✓ Participants reflect on their capacities to implement their projects
✓ Participants are given stickers in four colours: green, blue, red and white, they attach the stickers to the flipchart sheet to address the four themes respectively. The colours refer to assignments with different themes: green for environment issues; blue for sustainable development; red for violence; and white for education;
✓ Participants compare the number of colours and discuss why some colours are different.
✓ Participants discuss how they can implement the projects in their everyday practice: e.g. art teachers can make posters with their students, mathematics teachers can design numerical problems based on their topics; foreign language teachers could explore the meanings of the words and have their students write an essay on the topics etc.

Activity 4 Evaluation and impact assessment

Duration: 45 min

Expected outcome:
- ✓ Participants will make common projects
- ✓ Teachers and NGO activists are willing to cooperate in the future
- ✓ Teachers are willing to implement principles of education for democracy and collaborative learning in their classrooms
- ✓ NGO activists will make more projects which actively include schools
- ✓ Participants will make connections with other organizations, educational, ecological or similar in order to continue to explore new possibilities of collaborative projects
- ✓ Participants. other teachers and NGO activists use the website as a knowledge fair
- ✓ Final report, photos, videos, illustrations, articles

Methods /techniques used:
- ✓ Fish bowl
- ✓ Stand to score
- ✓ Evaluation questionnaire (appendix 9)

Resources:
- ✓ Teaching a Sustainable Lifestyle with the Earth Charter http://www.earthcharterinaction.org
- ✓ Sustainable Design Project Teacher Manual, Prepared by Gilda Wheeler, OSPI, Education for Environment and Sustainability, Kristen Clapper Bergsman, Laughing Crow Curriculum LLC, Colleen Thumlert, Cascadia Consulting Group Beth Kelly, OSPI Learn and Serve America
- ✓ TASKs for democracy, edited by Pascale Mompoint-Gaillard and Ildikó Lázár, Pestalozzi Series No. 4 Council of Europe
- ✓ Questionnaire (appendix 1)
- ✓ Competences for democratic culture Council of Europe Publishing F-67075 Strasbourg Cedex http://book.coe.int
- ✓ Preamble of The UN 2030 Agenda for Sustainable Development (appendix 3)
- ✓ Case of Montpelier High School uses the concept of sustainability – Erica Zimmerman: Educating for Sustainability: Looking at One School's Story, Community Works Journal, 2006. (appendix 6)
- ✓ tips for project (appendix 5)
- ✓ Bob Pike, Christopher Busse: 101 MORE GAMES FOR TRAINERS: A Collection of Best Activities from Creative Training Techniques Newsletter, HRD Press, Amherst, Canada, 2004
- ✓ Example of suitable website: http://temeljidemokratskekulture.weebly.com/home.html

Procedure

Step one Fish bowl (20 min)

✓ Participants are asked to form two circles: trainer and four volunteers are sitting in the inner circle. Others are sitting in the outer circle. They are free to join the inner circle if they want to participate in conversation.
✓ Trainer gives instructions to participants in inner circle to ask him/her about whatever they think remained unclear during the training. He/she asks participants to reflect upon each session and to discuss about future strategies.

Step two Stand to score (15 min)
✓ Ask participants to stand between two poles to indicate their evaluation.

Tips and options: Ask why people have chosen their position. Go through the training activities standing for each part. Score by putting the numbers zero–ten on a wall or on the floor.
Ask participants what else they would like to score. Positions and scores are likely to be influenced by others' movements and by awareness of facilitators if they are watching.
All the same, those at the low ends usually have good insights to share which provide valuable feedback.
Source: Bob Pike, Christopher Busse: 101 MORE GAMES FOR TRAINERS, HRD Press, Amherst, Canada, 2004

Step three Debriefing-Evaluation questionnaire (10 min)

✓ When the training is completed, Facebook group or Edmondo teachers' room and website will serve for future reflection and discussion.

Tips for trainers

✓ Trainer gives tips for the project and asks participants to follow them when making their project draft.
✓ When making their project drafts, participants have to keep in mind the competences for democratic culture, to implement them in the project.
✓ When they choose the problem they want to solve, they have to bear in mind that some problems concerning violence in schools and society itself can be solved engaging students in solving environmental issues. Participants can use examples from the internet: Transition Network, Edutopia, etc.
✓ All necessary links are provided on the training website.

Teachers and NGO activists are always very busy, it is possible that some of them might not be able to participate in the projects actively.
It is not an easy job to find all resources needed for projects. Besides NGO activists, it is possible to engage other social partners.

References

Bob Pike, Christopher Busse (2004): 101 MORE GAMES FOR TRAINERS, HRD Press, Amherst, Canada

Erica Zimmerman: Educating for Sustainability: Looking at One School's Story-Case of Montpelier High School uses the concept of sustainability, Community Works Journal, 2006 also available at https://www.edutopia.org/practice/integrated-studies-sustainability-and-cross-curricular-connections

Pestalozzi Programme training resource: "A community of learners" from TASKs for democracy, Pestalozzi Series No. 4, Council of Europe

https://un.org.ir/component/k2/item/3248-transforming-our-world-the-2030-agenda-for-sustainable-development

Teaching a Sustainable Lifestyle with the Earth Charter available at http://www.earthcharterinaction.org

http://reachtheteach.blogspot.com/

http://www.greeneducationfoundation.org/institute/lesson-clearinghouse/35-Social-Studies.html

https://transitionnetwork.org/

Appendices

Appendix 1: Questionnaire

1. What is democratic culture?

a) I know about it but I can't define it
b) I don't know what it is
c) I know what is it and I can define it

Comment:

_____
_____

2. What are competences for democratic culture?

a) I know about it but I can't define it
b) I don't know what it is
c) I know what are they and I can define them

Comment:

_____
_____

3. The term democratic culture includes:

a) The material resources that are used by members of the group (e.g. tools, foods, clothing)
b) The socially shared resources of the group (e.g. the language, religion, rules of social conduct)
c) Subjective resources that are used by individual group members (e.g. the values, attitudes, beliefs and practices which group members commonly use as a frame of reference for making sense of and relating to the world)
d) All of the above
e) I don't know

Comment:

_____
_____

4. What is sustainable development?
a) I know about it but I can't define it
b) I don't know what it is
c) I know what is it and I can define it
Comment:

_____
_____

5. In which way culture for democracy can influence on sustainable development?
_____
_____

6. How do you perceive the concept of "intercultural "?
a) It includes appreciation of other's freedom, affiliation and beliefs
b) It includes civic-mindedness
c) It is not as important as it seems to be

Comment:

_____
_____

7.   I find competences for democracy very important in my everyday job
a) Yes
b) No
c) I can't answer this question

Comment:

_____
_____

8. What are, in your opinion, three wheels (three bottom lines) for democratic culture?
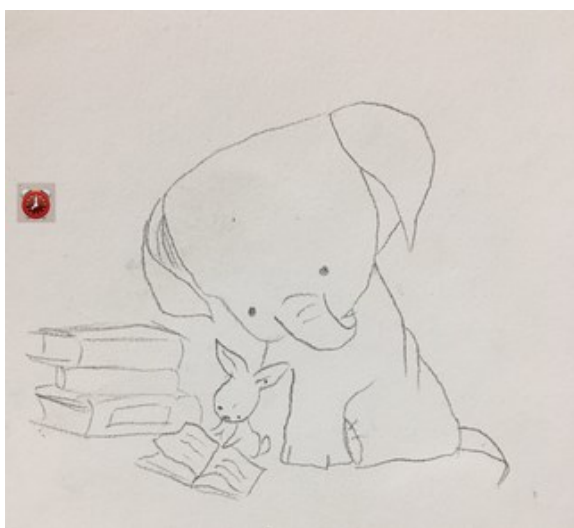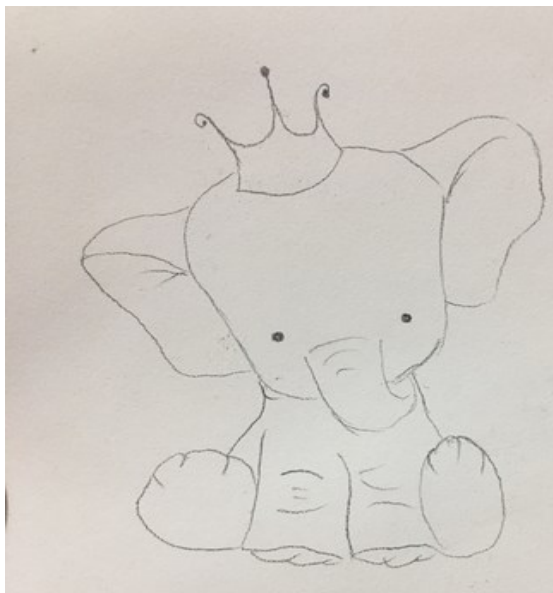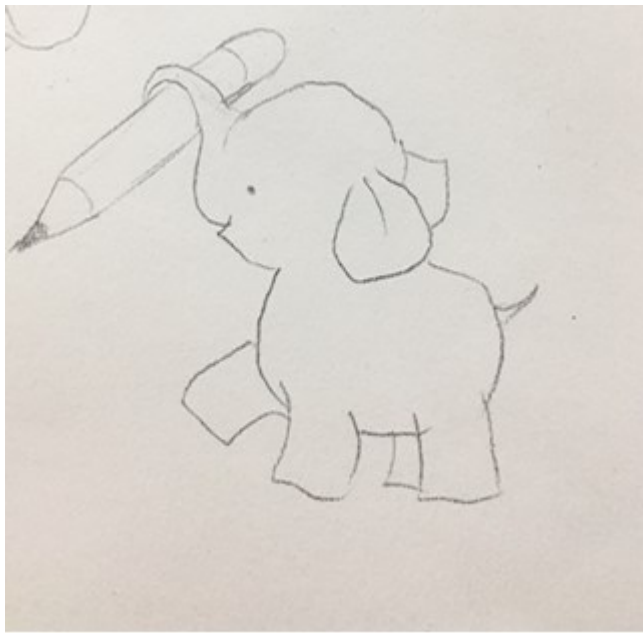a) _____
b) _____
c) _____

Comment:

_____
_____

Appendix 2: Role cards
Author: Sara Stojkanovic, student

Appendix 3: Text of Preamble of the UN 2030 Agenda for Sustainable Development

Preamble

This Agenda is a plan of action for people, planet and prosperity. It also seeks to strengthen universal peace in larger freedom. We recognize that eradicating poverty in all its forms and dimensions, including extreme poverty, is the greatest global challenge and an indispensable requirement for sustainable development. All countries and all stakeholders, acting in collaborative partnership, will implement this plan. We are resolved to free the human race from the tyranny of poverty and want and to heal and secure our planet. We are determined to take the bold and transformative steps which are urgently needed to shift the world onto a sustainable and resilient path. As we embark on this collective journey, we pledge that no one will be left behind. The 17 Sustainable Development Goals and 169 targets which we are announcing today demonstrate the scale and ambition of this new universal Agenda. They seek to build on the Millennium Development Goals and complete what these did not achieve. They seek to realize the human rights of all and to achieve gender equality and the empowerment of all women and girls. They are integrated and indivisible and balance the three dimensions of sustainable development: the economic, social and environmental.

The Goals and targets will stimulate action over the next fifteen years in areas of critical importance for humanity and the planet:

People

We are determined to end poverty and hunger, in all their forms and dimensions, and to ensure that all human beings can fulfill their potential in dignity and equality and in a healthy environment.

Planet

We are determined to protect the planet from degradation, including through sustainable consumption and production, sustainably managing its natural resources and taking urgent action on climate change, so that it can support the needs of the present and future generations.

Prosperity

We are determined to ensure that all human beings can enjoy prosperous and fulfilling lives and that economic, social and technological progress occurs in harmony with nature.

Peace

We are determined to foster peaceful, just and inclusive societies which are free from fear and violence. There can be no sustainable development without peace and no peace without sustainable development.
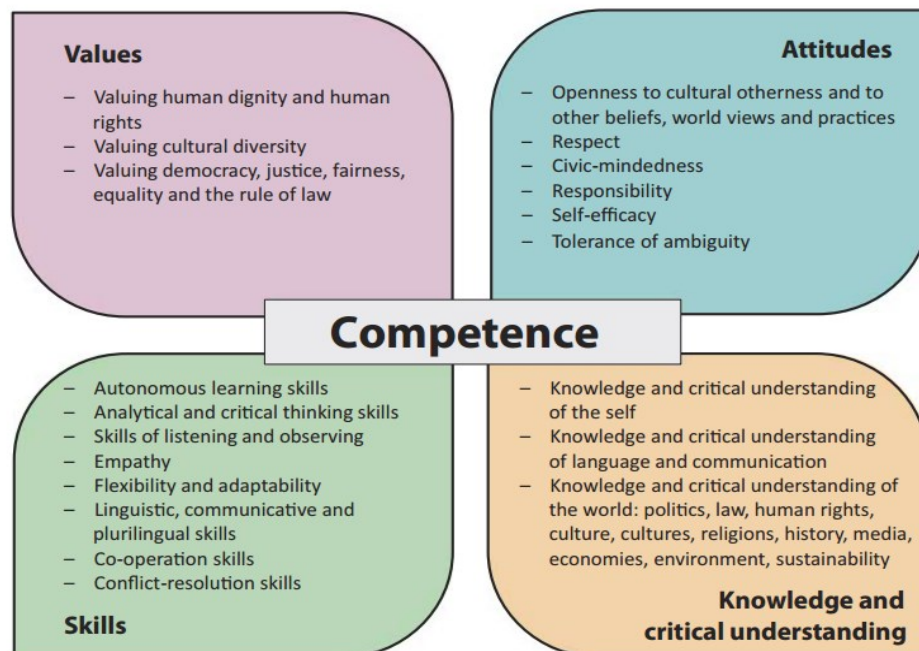
Partnership

We are determined to mobilize the means required to implement this Agenda through a revitalized Global Partnership for Sustainable Development, based on a spirit of strengthened global solidarity, focused in particular on the needs of the poorest and most vulnerable and with the participation of all countries, all stakeholders and all people.

The interlink ages and integrated nature of the Sustainable Development Goals are of crucial importance in ensuring that the purpose of the new Agenda is realized. If we realize our ambitions across the full extent of the Agenda, the lives of all will be profoundly improved and our world will be transformed for the better.
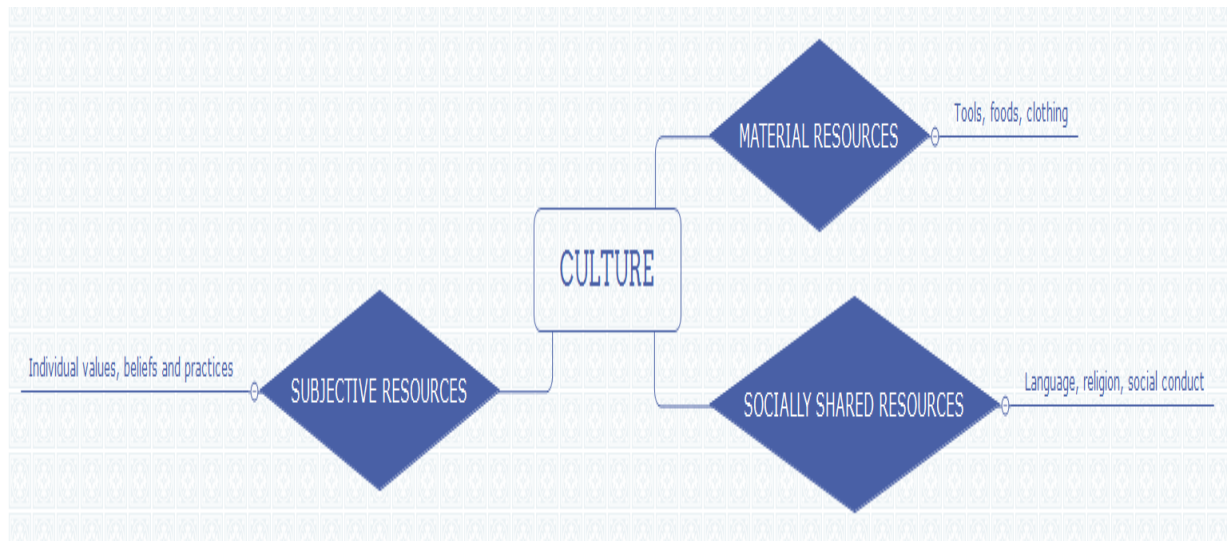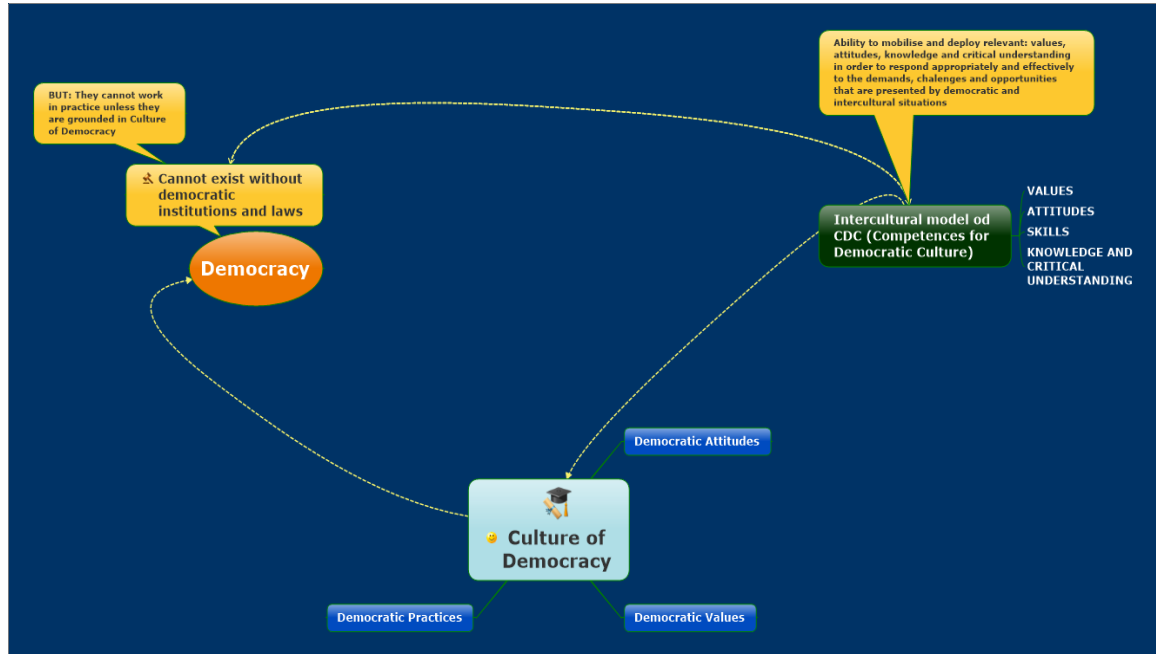
Appendix 4: Model of CDC

Values
- Valuing human dignity and human rights
- Valuing cultural diversity
- Valuing democracy, justice, fairness, equality and the rule of law

Attitudes
- Openness to cultural otherness and to other beliefs, world views and practices
- Respect
- Civic-mindedness
- Responsibility
- Self-efficacy
- Tolerance of ambiguity

Competence

Skills
- Autonomous learning skills
- Analytical and critical thinking skills
- Skills of listening and observing
- Empathy
- Flexibility and adaptability
- Linguistic, communicative and plurilingual skills
- Co-operation skills
- Conflict-resolution skills

Knowledge and critical understanding
- Knowledge and critical understanding of the self
- Knowledge and critical understanding of language and communication
- Knowledge and critical understanding of the world: politics, law, human rights, culture, cultures, religions, history, media, economies, environment, sustainability

21

Appendix 5: Handout 1 – Culture –

CULTURE

MATERIAL RESOURCES — Tools, foods, clothing

SUBJECTIVE RESOURCES

Individual values, beliefs and practices

SOCIALLY SHARED RESOURCES — Language, religion, social conduct
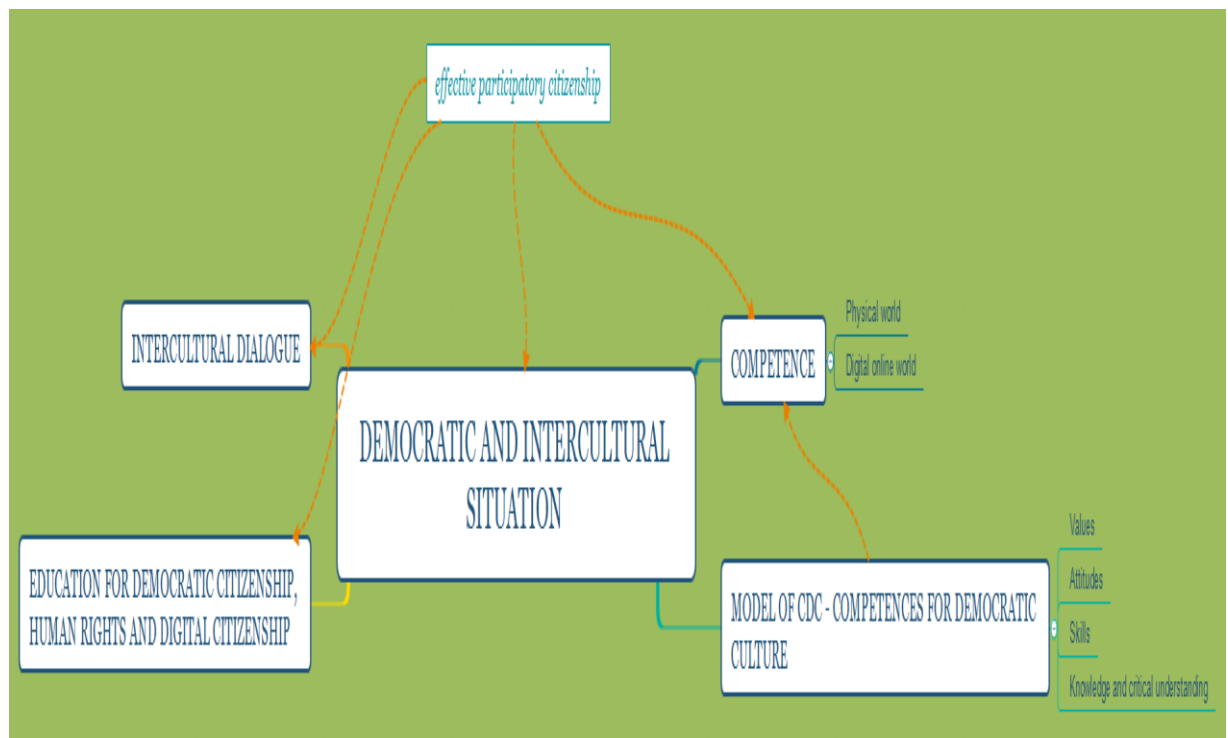
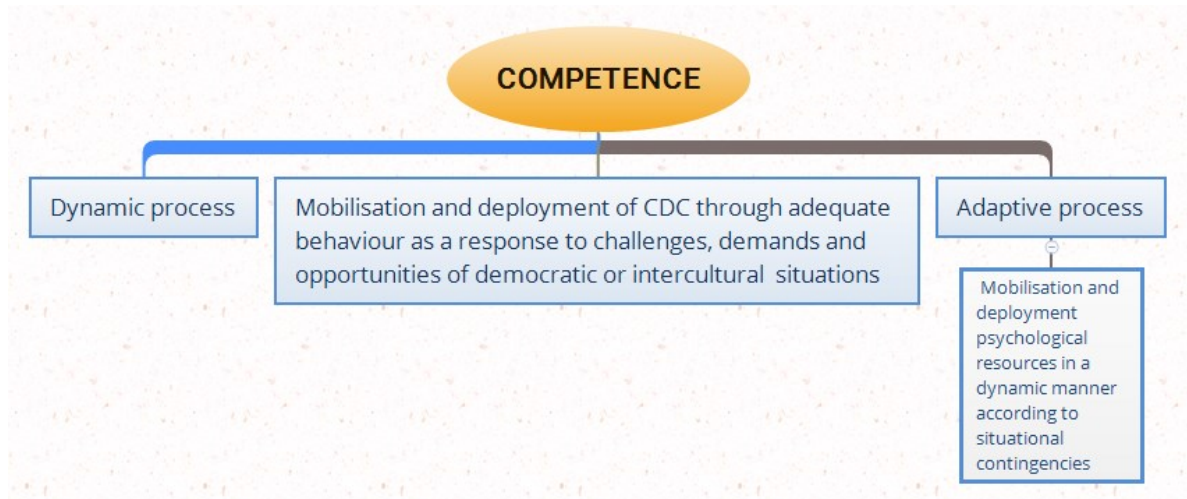## Appendix 5: Handout 2 - Culture of Democracy –

Appendix 5: Handout 3 - Democratic and intercultural situation –

Appendix 5: Handout 4 - Competence –

Appendix 6: Case of Montpelier High School

From https://www.edutopia.org/practice/integrated-studies-sustainability-and-cross-curricular-connections

Montpelier High School uses the concept of sustainability to make curriculum connections across a wide variety of disciplines at the school, from students studying nutrient cycles in biology class, to learning about sustainability through the lens of economics, or even looking at how energy is sustainable in physics class.

Teachers find that these cross-disciplinary connections enhance student understanding, and therefore they encourage learning across disciplines. The concept of sustainability is visible in a concrete context via the school's greenhouse and food production model. Every student can understand sustainability from many perspectives and content areas. These cross-curricular connections provide for a richer, deeper learning experience for all students.

How It's Done
At MHS, the concept of sustainability is considered both important content to teach (by looking at the economic, social, and environmental angles) and an approach to teaching itself. The school built a greenhouse about ten years ago, and has been using it as an outdoor classroom with a focus on sustainability and food production.

Initially, teachers came together on a voluntary basis to explore the idea of sustainability and how they might incorporate it into their classes. Tom Sabo, a science teacher who's been at the school for almost 20 years, sent an email to see who was interested in having a conversation around using the concept of sustainability to make cross-disciplinary connections. About a dozen teachers showed up after school and began to talk about how to tie the concept into their curriculum. They decided that they wanted to make it a thread through their classes while also making the school itself a model of sustainability. What could they do on the campus to really model sustainability? The idea of food production came up pretty quickly, and they decided to explore building a greenhouse as an outdoor classroom.

The school started off with a big vision -- an on-campus greenhouse. The first step was approaching the district for permission to build the greenhouse on school property. Once that was resolved, the school started raising grant money from both local and national funders. The first grant was just a few hundred dollars from a local organization, but it was enough to get started. Most of the grants that came in were initially around environmental issues like dealing with our carbon footprint, or nutrition grants that addressed issues of teen obesity and diabetes. Later money came from educational organizations interested in things like service learning because it offered a

great way to engage students. Grant funds mainly provided the money to build the greenhouse, and any other facilities like the hoop house. Over time the school proved that there was value in the greenhouse and sustainability approach, and the district also became a core supporter. Daily operations of the greenhouse are actually paid for by the sale of the produce, which is sold at a discount to the food services department. The money the school makes from the produce is then used to purchase seeds, soil, and supplies for the greenhouse.

A cheaper and easier alternative to building a greenhouse could be to start with a hoop house, which is a nonpermanent structure. Hoop houses, which can be used to also grow a variety of crops, are easy to put up and take down. MHS currently supports both a greenhouse and a hoop house for additional crops.

Biology class is really at the center of tying sustainability to subject content. Every biology student learns about nutrient cycles, plant physiology, and anatomy, as well as units on the biosphere, energy transfer, and recycling nutrients. The greenhouse gives students an additional context for applying their learning, as everyone in biology class helps to produce the salad greens for the cafeteria.

In economics class, a teacher presented a unit about small banks and wealth creation and extraction. Another year, students looked at the cost-benefit analysis of the greenhouse expenses and the crops they grew.

In physics class, a teacher had the students do a feasibility study to see how much energy the greenhouse used, and whether the solar panels produced enough energy to meet the needs of the space.

In the environment applications class, students look at a range of sustainability issues including population, waste management, climate change, ozone depletion, and water runoff. They also get the outdoor gardens started, test the soil, and set up management and harvest plans for the next year's class to follow.

The district has seen an increased interest in the work of MHS and the success of its greenhouse and sustainability focus. Professional development is now offered to all teachers interested in learning about sustainability and thinking about how they can make cross-disciplinary connections in their own classroom. The class is taught by MHS science teacher, Tom Sabo. It's a ten-week course, and teachers can also receive a recertification credit and a graduate credit from a local college when they complete the course. The course focuses on a food systems approach, and how to make those curriculum connections.

Appendix 7: Tips for projects

1. Projects …
target specific social groups and their specific problems;
are led by a precisely defined focus question;
are oriented to social partners.

2. Does the project meet these following criteria?

Challenges a problem affiliated to this training unit and concerned with real life problems;
Affects real world processes;
Includes other agents from the community;
Concerns students' interests and identities;
Develops students' skills, values, attitudes and knowledge in accordance with the CDC model;
Enables students to actively participate, to find their own ways in problem solving and to make decisions in all the steps of the project;
Provides sufficient metacognitive strategies;
Gives tangible feedback so students can make necessary changes;
Uses resources and tools which allow for the results of the project becoming visible outside of the classroom and school and to a wider community?

3. Make the project design rubric according to these criteria.
4. The central problem of the project should be framed in such a way as to inspire students and other participants, allowing more than one reasonable solution.
5. The central problem enables a cross curricular approach so that the teachers can cooperate.

Appendix 8: Evaluation questionnaire

1. I have learned something new:
a) Yes
b) No

Comment:

_____
_____

2. I will continue with the project:
a) Yes
b) No
c) If I manage to incorporate it in my schedule

Comment:

_____
_____

3) Cross curricular approach is better than traditional:
a) Yes
b) No
c) I am not sure

Comment:

_____
_____

4) Project-based learning is more useful for students than traditional approach:
a) Yes
b) No
c) I am not sure

Comment:

_____
_____

5) I understand the connection between education for democracy and sustainable development:
a) Yes
b) No

c) I need to learn more

Comment:

_____

_____

6) I understand the concept of CDC
a) Yes
b) No
c) I need more information

Comment:

_____

_____

7) I will use website and Facebook/Edmodo platforms regardless of my future participation in the project:
a) Yes
b) No

Comment:

_____

_____

8) I understand the concept of intercultural
a) Yes
b) No

Comment:

_____

_____

Additional comments:

_____

_____

_____