

GREENT SYLLABUS

Green Entrepreneurship Syllabus

Part of the GREENT Project

Funded by the ERASMUS+ Programme of the European Union

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Introduction

This syllabus is created as part of the GREENT project funded by the Erasmus+ Programme of the European Union. The GREENT project works for and aims at producing innovative expert- and teacher-generated educational content on sustainable entrepreneurship that can be taught in high schools across Europe. We are driven by a collaborative and sharing paradigm and are facilitating a process through which teams of teachers from each of the five project countries – Bulgaria, Greece, Latvia, Norway and Romania – can work together and be the ones actually creating the educational content rather than only passively transmitting it to their students in the classroom.

The GREENT philosophy presupposes a blended learning approach for the delivery of green entrepreneurship content in high schools. Thus, this syllabus is closely linked to the GREENT blended learning methodology we have developed – the two documents need to be viewed and used in conjunction by teachers who wish to teach green entrepreneurship either as a stand-alone subject or as topics that can be integrated in various subjects at the high school level. The GREENT desk research report has indicated that currently none of the five countries' educational systems has attributed a specific place for green entrepreneurship topics in the high school subjects' curricula. The GREENT syllabus is envisaged to be a flexible tool that would allow teachers to experiment and integrate parts of it in different subjects (like biology, chemistry, geography, physics, philosophy, foreign languages, etc.) or deliver a full-fledged course (as an extracurricular activity, for instance) that would provide students with a very profound understanding of the values and principles of green entrepreneurship and its practical application.

Who is this syllabus for?

The GREENT syllabus will be useful for any high school teacher who is interested in issues related to sustainable development, entrepreneurship, impact of people on the environment and society, innovation. It is for teachers who are willing to experiment and be innovative in and out of the classroom in order to provide a different and more rewarding learning experience for their students.

The understanding of green entrepreneurship we have adopted as a basis for the GREENT syllabus

For us at the GREENT project, the shortest definition of green entrepreneurship which encompasses its essential traits is:

“Green entrepreneurship is the activity of consciously addressing an environmental/social problem/need through the realization of entrepreneurial ideas with a high level of risk, which has a net positive effect on the natural environment and at the same time is financially sustainable.”

“Green entrepreneur is someone who starts and runs an entrepreneurial venture that is designed to be green in its products and processes from the very moment it is set up.”

GREENT course objectives

- To allow students to experience and become imbued with the principles of nature as a source of life and inspiration in order to develop their green mindset as future entrepreneurs.
- To develop new skills and competencies required for green jobs and green entrepreneurship.
- To improve young people's understanding of the new realities of the world of work and business.
- To improve teachers' performance in delivering high-quality education that combines face-to-face and online teaching strategies.
- To provide a balanced mixture of knowledge and activities both within the "green" and the "entrepreneurial" domain so that in the end students have a desire of launching a green entrepreneurial venture (not necessarily their own company, they can apply the principles of green entrepreneurship in a large company or even public administration they work for) and feel prepared to do it.

Pedagogical principles

These principles are an integral part of both the GREENT syllabus and the GREENT blended learning methodology:

- a learner-centered approach in which the focus of the teaching is on student learning rather than on communicating defined bodies of content or knowledge;
- project based learning process;
- discovery of reality, formation of own understanding and development of skills through learning-by-doing activities and experiential learning, including through the involvement of external experts/mentors in the educational process;
- students construct their own meaning of reality; it is the students who create knowledge rather than knowledge being imposed or transmitted by direct instruction and become co-designers of the learning environment;
- development of self-directed learning skills in which students take responsibility for their own learning;
- collaborative and cooperative learning can be done by students both in and out of formal class time;
- no one-size-fits-all approach for the teachers – our model includes elements of self-evaluation and educational design so that the teacher does not merely "deliver" an already given curriculum, rather designs and adjusts the learning materials available to the profile of his/ her pupils.

Learning outcomes

Learning outcomes are:

*“A formal statement of what students are expected to learn in a course. Expected learning outcomes statements refer to specific knowledge, practical skills, areas of professional development, attitudes, higher-order thinking skills, etc. that faculty members expect students to develop, learn, or master during a course.” (Suskie, *Assessing Student Learning: A Common Sense Guide*, 2004¹).*

The learning outcomes that are desired and expected upon the successful implementation of the GREENT course in a high school setting are indicated in the section “GREENT course syllabus” where in the table each topic contains a reference to the expected green entrepreneurship knowledge, skills, competences, and mindset.

In general, the most rewarding outcome for the students learning the GREENT course, for the teachers who facilitate their journey and for us as course creators and education experts, would be the development of a “sustainability-conscious entrepreneurial mindset”. That mindset includes all the features of the entrepreneurial mindset (tolerance to risk and uncertainty, ability to accept failure and learn from it, self-directed learning, bias toward action, intentional curiosity and creative confidence²), but viewed through the prism of a sustainability mindset characterized by holistic thinking, an environmental and social ethic that respects the value of all living things, a “cyclical view of time that looks backwards as well as forwards”³, responsible consumption, cooperation and teamwork, full-cost accounting, democracy, adherence to the precautionary principle.

Teaching strategies and methods, types of activities

This is only a small indication of the enormous variety of strategies and activities that can be used by a teacher who delivers the GREENT course. True to our conviction that the teacher is co-creator of the content and can adjust it to his/her pupils’ needs and pace, we leave space for experimentation and freedom for each teacher – the possibilities are endless! The full GREENT course will contain many suggestions for specific activities employing a number of the strategies described below, these are only indicative at this point of time:

- Blended learning – it is described in detail in the GREENT blended learning methodology.
- Group-work among pupils – face-to-face learning with group-based student generated content, classroom face-to-face teaching followed by individual online content generation by the pupils.

¹ Retrieved from:

http://www.uwo.ca/tsc/resources/selected_teaching_topics/curriculum_course_design/learning_outcomes.html.

² <http://getttingsmart.com/2016/01/thiel-fellows-reflect-entrepreneurial-mindset/>

³ <http://sustainability-now.org/develop-sustainability-mindset-9-steps/>

- Presence and involvement of parents in the educational process through public activities, such as public project presentations, school fairs, etc. Parents can also be invited in the classroom as business consultants/mentors if their professional expertise is related to the topics.
- Individual or group project-based work: e.g. find all producers of yoghurt within a radius of 50 km from the place you live and assess the level of environmental-friendliness of their product according to criteria you determine in advance, or make an interview with a local eco entrepreneur you have identified through research and prepare a video clip to showcase that entrepreneur's business.
- Different ethical dilemmas and challenges. Sustainable living and green entrepreneurship is all about making conscious choices. That is why we have embedded a lot of activities related to discussing dilemmas and making decisions based on obtaining information from different sources. This also serves the aim to develop the pupils' critical thinking skills.
- Debating competitions on controversial topics related to sustainable development and green entrepreneurship.
- Games that develop knowledge about sustainable development, renewable energy, waste recycling, climate change, etc.

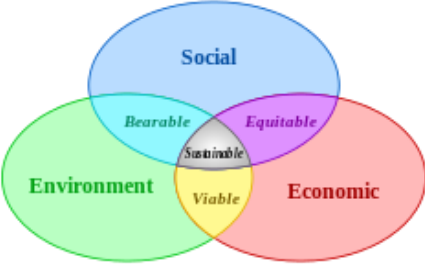
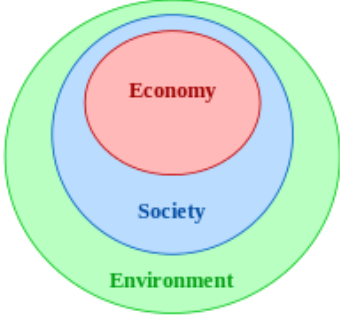
GREENT course syllabus

The GREENT syllabus is divided into two major parts. Part I is intended to give the knowledge about natural systems, sustainability and green entrepreneurship by providing theoretical fundamentals, case studies, examples and opportunities for practical work and experiences suitable for a blended learning environment. Part II is mandatory for every student participating in the GREENT course. Otherwise the project would not be entrepreneurial. It is intended to encourage students to jump into an entrepreneurial journey and experience green entrepreneurship first hand through practical activities. The making of partnership in the practical part is essential. It can be a partnership with a local business that can provide knowledge about the green part or the entrepreneurial part. It can also be a local organization that works with environmental issues, energy, and sustainability in any way or handling of waste for example. The partner could also be a single person in an organization or just a person dedicated to one of the subjects.

There are 4 major topics altogether. The full GREENT content will be developed in such a way that will provide maximum freedom for the teacher to teach it either in short and concise form or in a more extended fashion, covering more school hours.

Topic and subtopics	Learning outcomes - knowledge	Learning outcomes – skills, competences and mindset
Part I. Chapter #1: Natural systems		
	Get an understanding and overview of natural systems and how they work. This	<u>Skills (examples):</u>

	<p>is the key competence and knowledge to understand the climate, environmental and renewable energy challenges in general.</p> <ul style="list-style-type: none"> • What is a system? How does it work? • System boundaries • Ecosystems • Biodiversity and natural systems • Natural cycles and flows – material and energy • Self-regulating mechanism of Earth • Human systems and human impact on natural systems <ul style="list-style-type: none"> ○ Climate change ○ Pollution ○ Waste ○ Biodiversity loss ○ Soil degradation • How to preserve nature and natural resources in a better way 	<ul style="list-style-type: none"> • Describe the biodiversity of a chosen area • Calculate individual carbon footprint • Describe the impacts from economic activities • Propose principles of actions that would improve the condition of biodiversity • Work with future-based scenarios • Work with scientific information • Research skills • Valuation of various ecosystem services • Analysis and synthesis of information • Presentation of results <p><u>Competences (examples):</u></p> <ul style="list-style-type: none"> • Empathy and emotional intelligence • Critical thinking • Teamwork • Justification of own view point in front of others • Application of knowledge from different sources • Critical thinking • Addressing feedback • Creativity • Teamwork <p><u>Mindset (examples):</u></p> <ul style="list-style-type: none"> • Holistic thinking, seeing issues in their interrelatedness and interdependence • System thinking • Responsibility • Sustainability mindset
<p>Part I. Chapter #2: Sustainability</p>		
	<p>Based on the knowledge from Chapter 1, get an understanding of sustainability and sustainable solutions that leads to action taking in Part II.</p> <ul style="list-style-type: none"> • History 	<p><u>Skills:</u></p> <ul style="list-style-type: none"> • Work with scientific information • Perform simple environmental assessment of a business project

	<ul style="list-style-type: none"> • Different approaches to sustainability • What is sustainability when it comes to nature and natural resources? The four system conditions and the four sustainability principles.  <p><i>The diagram of sustainable development at the confluence of three constituents parts</i></p>  <p><i>A diagram indicating the relationship between the "three pillars of sustainability", in which both economy and society are constrained by environmental limits</i></p> <ul style="list-style-type: none"> • What are sustainable solutions? • How to create sustainable solutions that impact climate, environment, energy and handling of waste in an environmentally- and climate-friendly way • Sustainable solutions in everyday life – globally and locally • Sustainable businesses which lead up to the next chapter “Green entrepreneurship” 	<ul style="list-style-type: none"> • Research skills • Analysis and synthesis of information • Presentation skills <p><u>Competences:</u></p> <ul style="list-style-type: none"> • Empathy and emotional intelligence • Critical thinking and distinguishing false solutions • Teamwork • Justification of own view point in front of others • Application of knowledge from different sources • Critical thinking • Addressing feedback • Creativity • Teamwork <p><u>Mindset:</u></p> <ul style="list-style-type: none"> • Holistic thinking, seeing issues in their interrelatedness and interdependence • Active attitude toward life • Exploratory attitude • Entrepreneurship • Responsibility • Initiative • Risk-taking • Sustainability
<p>Part I. Chapter #3: Green entrepreneurship</p>		
	<p>Combine knowledge from Part I, Chapter 1 and 2 with topics regarding entrepreneurial skills and knowledge.</p>	<p><u>Skills:</u></p> <ul style="list-style-type: none"> • Business planning • Business modeling

	<ul style="list-style-type: none"> • What is entrepreneurship? • What are the differences between entrepreneurship and green entrepreneurship? • What defines the green economy • Circular economy • How to start up and manage a green business • What are the advantages of starting up a green business compared to a not so green business? Sustainable business model canvas • Business startup in general and how to make a business plan. • Essentials of business startup and operations, such as customer discovery, marketing, sales, customer service, financials, etc. • Mapping of local possibilities to start up a green business 	<ul style="list-style-type: none"> • Customer discovery • Financial planning • Applying the principles of the circular economy to one's own business idea <p><u>Competences:</u></p> <ul style="list-style-type: none"> • Critical thinking • Innovation • Creativity • Cooperation • Presentation and positive influence <p><u>Mindset:</u></p> <ul style="list-style-type: none"> • Ethical behavior • Entrepreneurial way of thinking • Initiative • Risk-taking • Responsibility for the future • Sustainability
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Part II. Chapter #1: My solution(s) for the future

This part can be done individually or as a teamwork. Either way, it should contain **a partnership** with local business, organizations or public services.

This part is divided into different levels and different ways of thinking. This is done to get the attention of different schools, students and teachers with different approaches to learning. Some schools might want to spend a lot of time on the GREENT course, while others might want shorter programs. The project aims to create as few limitations to the implementation of the content as possible. The different approaches will also suit different types of schools and by that we can meet the demands of both vocational training and general studies. If we have one "light version" that suits all and several other approaches where students can perform in-depth studies in either a practical or academic way, there will be a better chance that we will meet different needs.

Approach 1: Develop ideas and solutions for the future based on creative thinking and innovation

This is the "light" version of the program and could be done by everyone regardless of age and level of competence. The basis of this part is creative thinking and innovation within the framework of the GREENT project. The learning outcomes from this part could be:

- To set focus on environmental, climate and energy challenges
- Raise awareness among students on these challenges both locally and globally
- Learn different ways on how to solve these problems and challenges
- Combine your own knowledge with creative thinking
- Understand how your partners see the problems and their thoughts about different solutions and approaches

Method:

First of all, this part needs to have time limitations since it's meant for schools that have limited amount of time to involve in the project. We need to make sure that there's a proper introduction to the subject, based on the framework of the GREENT project and that the students get a knowledge of the project's main purposes. We propose the following methodology:

- Introduction to the subject / knowledge about GREENT ■ 30-60 minutes
- Work phase ■ 120 minutes
- File in reports / presentations in class ■ 60 minutes

The work phase could be divided in different days so the students get the chance to get in contact with a partner. Here is an example of how this could be done:

Alternative 1:

- Startup – day 1 (30-60 minutes): Introduction – some knowledge of the GREENT project - main goals and purposes. Some general knowledge about global environmental, climate and energy challenges.
- Work phase – day 1 (60 minutes): Define “your” problem – local, regional, national or global. Make a short description of the problem and start doing your short research in different sources (books, teacher, internet, etc.) to expand your level of knowledge. Get in contact with your partner and ask your questions regarding your solution.
- Work phase – day 2 (60 minutes): Collect the answers from your partner and process them into your solution. Prepare your report (1-2 pages).
- File in reports – classroom presentations – day 2 (60 minutes).

Alternative 2:

Same as alternative 1, but based on a “virtual” partner. If the students choose to have a “virtual” partner the whole program could be done within one day.

Partnership involvement:

The partnership involvement in this part could either be a physical or a “virtual” partner. If the students are choosing a physical partner it could be a local company, organization or public service. The partner must either have a climate/energy/environmental challenge themselves or they could provide knowledge about the student's solution. There has to be direct contact between the partner and the students in some way. The students can make interviews, ask questions and even visit their partner if they want to.

It might not be possible for every school to find a physical partner for their project. By choosing a “virtual” partner, the students can make a short research on the internet and they can make up their own “partnership” story. For example: “Based on what we found out, this business has a major problem with handling their waste in an environmentally-friendly way, and we have the perfect solution for them...”

Approach 2: Participation in an innovation camp

The innovation camp is a training camp for creativity and making of solutions. The learning outcomes regarding climate, environmental and energy challenges could be:

- To set focus on environmental, climate and energy challenges
- Raise awareness among students on these challenges both locally and globally
- Learn different ways and approaches on how to solve these problems and challenges
- Combine your own knowledge with creative thinking

- Understand how your partners see the problems and their thoughts about different solutions and approaches
- Learn through feedback from your partner
- Learn by visiting your partner and seeing how they think and work

Method:

- An innovation camp could last 1, 2 or 3 days depending on what's suitable for the school and the partner(s)
- In order to arrange an innovation camp, the group, class or school needs one or several partners.
- The best scenario for an innovation camp is to get the students out of the classroom / school and let their partner be host for the camp. If that's not possible, the second best solution is to move the camp to another part of the community or the school. The point is to get the students out of their regular classroom environment. If the first two options are unsuitable in some schools and communities, a third option is to host the camp at the school. This option would also work well if the representatives of the business/NGO partner come in at the school and be mentors for the student teams.
- The tasks to be solved need to be given by the partner(s) and the tasks need to be as realistic as possible. There needs to be a real challenge for the partner. For example: "We need advice from you on how to get more environmentally-friendly and reduce the amount of paper used in our company".
- The innovation camp could start with an introduction of the partner (5-10 minutes) where the partner gives some information about themselves. Then you can move in to creative activities to put the students in a creative mood.
- After creativity, the tasks could be disclosed and given to the students.
- The innovation camp needs a long working phase in groups of 5-6 students.
- The camp ends with presentations of team solutions and feedback from the partners. This will of course assume that partners are present.

Partnership involvement:

- The innovation camp is quite demanding for the involved partners. The main contributions from the partners will be:
- Defining the tasks for the innovation camp and presenting them to the students.
- Making a paper version of the tasks to be handed out to the students.
- Mentoring – giving advice to the students during the camp. This could be done by visiting the groups, being available on phone and e-mail.
- Giving feedback to the groups during the group presentations.
- Being part of the jury to decide which the winner groups are (could be skipped if you want to avoid the competition element).

Approach 3: Start up a green business – student enterprise

Starting up a green business should be based on the student enterprise program in the country where the students belong. Each country has slightly different approaches to the student enterprise program and the green business startup should be adjusted to this. The green business approach is the most demanding approach to the participation in the GREEN T project. It requires that the student enterprise has a green business idea or at least that green thinking is a part of the business concept. Normally a student enterprise is formed, implemented and closed down within a school year.

The learning outcomes from green business could be:

- Set focus on environmental, climate and energy challenges in a wider perspective by running your own business
- Raise awareness among students on these challenges both locally and globally
- Learn how do develop and implement a green business idea
- Learn about marketing your green business idea and the economics attached to running a green business
- Deepen your knowledge on how to relate and act towards challenges within climate, environment and energy
- Learn from your business mentor on how to relate to climate, environment and energy challenges.

Method:

- Startup, implement, run and close down your own green business.
- This must be according to the student enterprise program in your own country.
- The student enterprise is to be registered in Junior Achievement in your country.
- The business idea could be anything from a marketing campaign, providing knowledge about the subjects within the GREEN T project to an environmentally-friendly service or product.

Partnership involvement:

The partnership involvement in this approach must be according to the mentorship program for student enterprises based on the descriptions of involving mentors in your country.

Approach 4: Do research locally based on a local challenge

This is the academic approach to the subject. The main target groups are the general studies students. It needs to contain a certain amount of academic requirements according to the methods and reporting.

The learning outcomes of this approach could be:

- Set focus on environmental, climate and energy challenges in a wider perspective by doing your own research
- Raise awareness among students on these challenges both locally and globally
- Learn how do research on climate, environmental and energy challenges
- Learn about different methods and approaches for doing research
- Produce and share deeper knowledge about challenges related to climate, environment and energy
- Learn from your research partner on how to relate to climate, environment and energy challenges
- Learn how to discuss problems and challenges related to the subject
- Learn how to make conclusions from your research.

Method:

- In the research approach we will need to stick with the academic traditions.
- The students need to define an aim for their research project.
- Research questions have to be made.
- Students will be provided with a template for their research report.
- Students can choose between different methods like interviews, text based research, surveys or case studies.
- There must be limitations regarding words or pages in their research report.

- Their findings are to be presented for the teacher, class, school and/or their partner(s).
- If they want, they can publish their findings.
- The report must contain an introduction / abstract, discussion and conclusion.
- The report will also need to contain a list of sources based on an official citation style.

Partnership involvement:

The partnership involvement in the research approach defines the entrepreneurial part (the ENT in GreEnt). The students need to find a research advisor either from the university, college, local business, organization or public sector. The students could also find a research partner, or several research partners among fellow students. The research could be performed in groups of students. Teacher involvement as advisors is important as well.

Assessment of the learning outcomes from the GREENT course

All assessment activities should be driven by a holistic approach and should take into account the entirety of learning outcomes achieved by a student and by the class as a whole – the mindset and competencies developed should have a leading role. Piecemeal approaches of mechanically summing up the marks for the individual elements that constitute the assessment process would not work well and will be in danger of missing out important discoveries or insights reached by the students, which may have occurred outside of the formal assessment procedures. Teachers are encouraged to explore and introduce their own grading strategies based on the GREENT educational content.

- Students reflect on their performance and knowledge and skills developed either in a «free-flow» format or through the usage of formal self-evaluation instruments (e.g. online surveys with closed- and open-ended questions)
- Teacher-graded quizzes
- Peer assessment – especially useful when working collaboratively in groups to deliver a project, presentation, etc.
- Teacher evaluation of individual performance within a group-work project.