Naturally sustainable: integration of sustainability impacts into teaching, learning and student and personnel engagement systems in vocational education and training institutions

Trainers' guide

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https://naturallysustainable.global

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PROLOGUE

The main objective of the Naturally Sustainable Teachers' Guide is to enable educators to take full advantage of the students' readiness and capability to learn about sustainability; to improve understanding and retention among learners and engage the whole community.

The guide also presents students with diverse ways to take action to contribute to the issues raised, thereby instilling in them the understanding and confidence that they can improve the environment in which they live.

The Teachers' Guide is organized into sections, namely, Background Information, Workshop scenarios, assessment and evaluation tools, collections of books, simulations & games, movies, mobile applications, and many more additional materials & calendar dates & events to organize to engage students, staff, and stakeholders in sustainability integration in our lives.

The Background Information provides teachers of all grades with extensive information about Naturally Sustainable, so that they can effectively instruct their students and use the lesson plans.

Each lesson provides the teacher with clear educational objectives and a related to the whole scale of the books, materials, movies, applications to extend the class.

Additional activities and resources are provided in the calendar and events section to absorb and act supporting the sustainability of all kinds.

Materials are digitalized and systemized to also give users the freedom to build the content in different formats and for a broader spectrum of activities.

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Introduction

This guide has been prepared as part of the Naturally Sustainable project Education & Training Component.

The objectives of the Naturally Sustainable project are:

- to produce a comparative study on the activities related to these sustainability issues in each country/region
- to create a collections of workshop scenarios presenting different approaches to the sustainability training and engagement activities of each country
- to develop a trainers' guide including a collection of recommendations and best practices for the promotion of sustainability issues via training and engagement activities to empower youth
- to create a Naturally Sustainable online learning platform with on-line learning resources.

The main outputs of Naturally Sustainable projects are :

- Trainers' Guide, Comparative study and Collection of Best Practices
- IT platform, On-line learning resources
- Green Action Plan

This guide offers educators the opportunity to integrate sustainability education into their lessons. The guide is a compilation of workshops that help to bring themes related to the Sustainability development goals into the classroom.

Resources of all Sustainability Development Goals are found in platform's sections "Education and Games", "Workshops' scenarios" and "Calendar and Engagement".

Education for sustainability can enrich many subject areas. It draws on scientific knowledge and understanding as well as the processes of making predictions, obtaining and evaluating evidence. While it is an excellent vehicle for spoken and written language work, it also uses mathematical data and geographical skills and knowledge. It promotes historical understanding and can provide a stimulating and relevant context for work in almost every other area of the curriculum.

How to Use this Guide

The guide is divided into four areas:

Section I **Selected Potential Pedagogical Methods**

Section II **List of workshops on SDG**

Section III **Assessment & Evaluation**

Section IV **Collection of digital and printed materials & applications**

To access the workshops, go to the section that contains the table of lessons. You can review the list of objectives on the list and choose the lesson you would like to use.

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Section I

Selected Potential Pedagogical Methods

Section I: Selected potential pedagogical tools

1.1. Acknowledge, Ask, and Activate

Students are most interested in learning when there is immediate relevance and impact to their personal life as well as their learning, which should be more oriented towards solving some problems they might have. This is the overall direction. Most people like to be respected, acknowledged, and seen where they are and appear. Students bring experience, knowledge, ideas, stories and feeling into the classroom like McEvoy 2004 pointed out. Students have their own way of learning, and it is important to keep in mind that they are usually in the classroom based on voluntary participation; they need to be respected for their self-worth, they like to participate and collaborate. That way is the smartest way to start by asking questions that are based on their experience.

Examples

In blended groups, you can create a group of 3 and have them elaborate on a question like this:

- What is the best experience you had from your school year?
- What is the best experience you have from being a teacher/ trainer?
- What is the worst experience?

It is likely all members have some kind of memories and stories, and the facilitator's role is to learn from these stories and use that learning as a guideline for his/her own work in the training. All have participated, based on their experiences and feelings, and it is easy to build a positive lifelong hunger from this, knowing what has been positive and what has been the most difficult or vulnerable part for the participant.

How and why do we learn new skills and increase our competences? Noel Burch in 1970, introduced 4 different stages about how students learn new skills and in today's adult training this might be worth looking into, especially when trying to think about how we can create a hunger for lifelong learning. His stages were this:

1. Unconscious incompetence (Ignorance)

The individual does not understand or know how to do something and does not necessarily recognise the deficit. They may deny the usefulness of the skill. The individual must recognise their own incompetence, and the value of the new skill, before moving on to the next stage.[2] The length of time an individual spends in this stage depends on the strength of the stimulus to learn.[3]

2. Conscious incompetence (Awareness)

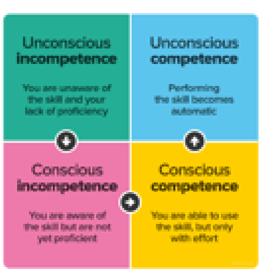
Though the individual does not understand or know how to do something, he or she does recognise the deficit, as well as the value of a new skill in addressing the deficit. The making of mistakes can be integral to the learning process at this stage.[4]

3. Conscious competence (Learning)

The individual understands or knows how to do something. However, demonstrating the skill or knowledge requires concentration. It may be broken down into steps, and there is a heavy conscious involvement in executing the new skill.[3]

4. Unconscious competence (Mastery)

The individual has had so much practice with a skill that it has become 'second nature' and can be performed easily. As a result, the skill can be performed while executing another task. The individual may be able to teach it to others, depending upon how and when it was learned.



1.2. Storytelling in relation to Sustainable Development

Description:

Storytelling means the act of narrating: it is a discipline that uses the principles of rhetoric and narration to frame the events of reality and explain them according to the logic of common sense. The act of narrating, in storytelling, is found in human experience and can be represented in various forms that connect thought and culture. It is above all human emotions that find the most effective means of expression in storytelling. The emotional component constitutes its heart. The narrative discourse makes it possible to make the experience understandable, communicable, and easily memorable. It is an interactive process since narrative discourse makes multiple interpretations possible. By telling stories, we try to establish order and make sense of everyday experiences. Human experience takes shape, becomes communicable, understandable and can be remembered. Telling a story always involves confrontation. It refers to a memory, and consequently determines an emotional component that characterises the story itself; also, because we spontaneously try to give meaning to each act that is described. The stories persuade: they become a means of sharing and allow us to give an interpretation of reality even in an autobiographical form. In fact, the human brain understands narrated stories more easily than logical-mathematical processes. A story of any kind is more likely to remain in mind than a formula or data without a narrative context.

Potential Pedagogical Teaching Methods to Use with Groups in Face-to-Face Contexts:

The narrative must have an internal structure familiar to those who are using it. Events and characters must be identifiable and play a clear role. The presence of factors that make it unique, and a rise in emotions is also essential.

Joe Lambert, founder of Story Centre, identifies seven elements that help in a personal approach to digital storytelling:

- the use of the first person, which immediately reduces the distance of the audience
- the inclusion of engaging and non-trivial content
- the evocation of emotions
- the economics of narration as many concepts must be transferred with a few words

- a pace appropriate to the narrative modalities
- the use of the voice (for example in the case of videos or podcasts): timbre, tone and inflection help the narration
- the soundtrack: as with the voice, the music adds depth to the narrative.

Storytelling means letting a voice speak, giving life to an interesting character in the eyes of users. The audience must be led to totally identify with the narrator, who must not be perfect, but credible. The story told must always convey a message. To do this, the storyteller must take a clearly identifiable point of view. The purpose of the message must be obvious, and it must make sense.

Benefits to Learners:

Storytelling has a high pedagogical and didactic potential, especially for digital natives. Today more than ever, knowing how to tell stories can allow students, from the earliest stages of development, to discern what is real from what is virtual. Thanks to storytelling, it is possible to develop the learner's potential as an independent learner, allowing him/her to acquire awareness of his/her own learning process and use strategies such as planning, hypothesis formulation, self-assessment. The construction of stories involves a comparison and collaboration of all the learners of the class group and therefore allows the recognition of the other, of his/her value and role within the narrative construct but also in real life.

Useful links:

- https://plumer.it/esempi-di-storytelling/
- https://improove.it/marketing/storytelling-aziendale-cose-esempi-e-come-usarlo-per-strategie-dimpresa/

1.3. Use of Questionnaires to stimulate exchanges between students

Questionnaires are an indispensable part of running a successful training activity. Feedback form participants helps to:

- Identify which activities they enjoyed the most, what they struggled with, and how much they feel they learned
- Evaluate the effectiveness of the training, make improvements and plan changes for future activities

Questionnaires are the best way of enhancing the training and ensuring that it fulfils its goals.

Potential Pedagogical Teaching Methods to Use with Groups in Face-to-Face Contexts:

Writing questions may seem easy, but several pitfalls can result in the collection of inaccurate information. To ensure that the time spent creating, administering, and tabulating data from a questionnaire leads to accurate and useful information, the facilitator should follow research-based principles for creating questionnaires. The steps are:

1. Determine the **goal or goals of the questionnaire**: what is the main objective of your survey/question? Which areas of your training do you want to get feedback on (instruction, materials, structure, etc)?
2. **Write the questions**: you do not want to overwhelm your respondents. Asking too many irrelevant questions will make people give up your survey halfway through. That is why you need to make sure all your training questionnaires and survey are truly relevant and concise. Also, try to keep the question numbers reasonably low!!
3. **Review the questionnaire** for alignment with goals and adherence to research-based guidelines for writing questions.
4. Organise and format the questionnaire: **close-ended** are questions that provide respondents with a predefined list of answer options to choose from. Usually, those can be answered with a simple yes or no, a predefined value on a fixed-point scale or with a specific piece of information. **Open-ended** questions enable respondents to supply their own answers in a provided text box. There are no predefined answers and respondents have the freedom to express their opinion in the wording of their choice. It also gives them the chance to respond in more detail.

Benefits to Learners:

Questionnaires stimulate discussion and creative and critical thinking, as well as determining how participants are thinking. Questionnaires help them retain material by putting into words otherwise unarticulated thoughts. Questionnaires also allow participants to demonstrate their abilities and knowledge and reflect how close they are to meeting educational and training goals.

1.4. Use of Quizes

Description:

The quizzes and learning tests to be given to the participants are intended to increase involvement, keep interest alive and test the knowledge learned. The quizzes trigger mechanisms that stimulate reasoning by the participants, allow the organisers and trainers to assess the progress of the course and intervene in real time on any unclear elements that need further investigation.

Potential Pedagogical Teaching Methods to Use with Groups in Face-to-Face Contexts:

The quiz is one of the best ways to get in touch with your trainees and enjoy a few fun moments together; in this way the meeting will become more lively and less boring.

- Create a moment of entertainment during the meeting, introduce new topics or use the quiz to check the skills acquired: this allows you to make the question-and-answer game not only a moment of collective reflection, but also a tool to accelerate learning processes.
- It leaves a positive impression on participants. They will remember your intervention for a long time and will leave the training as a positive experience. The quiz becomes a fun moment that no one can escape, because no one wants to lose, or rather, everyone wants to win!
- An interactive quiz created and customised by the organisers allows to test the group's compliance with specific company guidelines in a fun and playful way.

- Participating in a group quiz means sharing a social experience, strengthening ties, creating collaboration, and increasing mutual trust between people. To foster corporate communication, team building is the ideal solution: it stimulates creativity, educates the demand for collaboration between participants of different ages, encourages leadership, but also the skills and potential of everyone. It communicates brand values and encourages their application among team members using quizzes.

Remember that the key word is involvement: make learning a moment of collaboration and fun!

Benefits to Learners:

Proposing personalised professional quizzes during the meetings could help to make participants more involved and motivate the extent to which participants have assimilated the information provided, to improve the method of communication.

Useful links:

- https://wibo.app/2021/04/21/come-creare-un-quiz-con-wibo/
  https://support.google.com/a/users/answer/9310255?hl=en

1.5. Use of Game-based Learning

Description:

Game-based learning is not just a way to spend time – they can also be effective tools for helping people learn better, enhance skills, and increase knowledge. Games in a group will allow participants to play with each other, get to know each other and cooperate to achieve new goals common and dictated by the moment they are sharing.
Games could be a powerful tool to foster a more positive work environment:

- Increases motivation
- Strengthens communication
- Develops specific skills
- Encourages interaction

Potential Pedagogical Teaching Methods to Use with Groups in Face-to-Face Contexts:

Planning games in learning and teaching activities is a key element: this allows us to define steps and modalities of the 'game creation' experience. To make this experience worthwhile for participants it is necessary to:

- pay attention to the duration of games
- create a climate that is open to the idea that learning is fun

Benefits to Learners:

Game-based learning changes the motivation of participants: using it in tandem will help more individuals' tasks, retain information, and apply what they learned to future projects and tasks as well as their lives outside the learning environment. Game-based learning is a good tool to support 'team building' and develop many competences: collaboration, team spirit, empathy, and emotional intelligence.

Useful links:

- www.sunnywayteambuilding.com/it/news/giochi-di-collaborazione

1.6. Use of role-play & simulations

Description:

Role playing is an excellent teaching methodology to be applied in a team under the guidance of an expert teacher / trainer who leads the psychological processes to a result and conveys the behaviours that emerge from time to time under a common denominator. Role play can be considered as a theatrical performance in which each member of the group plays a certain role or character, a second of what he feels is close to his own character or temperament. Role playing can also foresee a specific situation to be faced by putting oneself in one's own clothes or those of another. In any case, the meaning of role playing is to become someone else similar or different from oneself or in finding oneself in situations other than those that occur on a daily basis. By participating in role-playing games, learners learn to stay in a group, to observe others in depth, comparing their own behaviour with those of others and identifying always new and different interaction strategies.

Potential Pedagogical Teaching Methods to Use with Groups in Face-to-Face Contexts:

Learners are at the same time protagonists of the stage situation and observers. The facilitator invites the individual members of the group to act in the scene depicted by interpreting a role or character spontaneously; to facilitate exchange and interaction, some techniques used by theatre actors can be used, for example that of the mirror or double. Another very effective role-playing technique for educational purposes is self-presentation. In practice, each subject is asked to introduce himself/herself freely, speaking without hesitation about his/her family or former school in front of others. This particular situation should be managed by a team of teachers, supported by a psychologist.

Benefits to Learners:

Role playing can be a fun game at school or in creative activities, but in the workplace it has very specific goals. Let us find out together which ones:

- Develop problem solving skills and the translation is literal, problem solving. The game does not end until the problem is solved. So, like it or not, you must brainstorm and find a solution. The role plays become a sort of 'problem solving Olympics', for each problem / discipline you 'train' to get the best result.
- Learning new procedures: any problem can become a typical case. In this way, you can learn how to deal with complaints, outstanding claims, advertising activities, in relations with the press, with foreign countries, with customers. In other words, a sort of vacuum is created that can help everyone to face a problem correctly.
- Stimulate and encourage comparisons and relationships between the different levels of the company. With this type of game, confidence increases, therefore feeling at ease which always benefits the working environment. It is no coincidence that role play is considered to be a team building activity.

Useful links:

- http://www.fisica.uniud.it/URDF/masterDidSciUD/materiali/pdf/zoletto03.pdf
- https://www.olympos.it/training-role-playing-e-simulazioni.html

1.7. Using Workshops

Description:

A workshop is a laboratory-event. In the online dictionary Treccani, it is defined as ‘laboratory’ and, figuratively speaking, a ‘collective working group on a specific topic’.

Thus, workshop means:

- Gathering in a group in one or more days.
- Giving unconventional lessons but led by an expert.
- Creating a learning laboratory.
- Tackling a theme in an innovative way.
- Giving space to creativity.
- Involving the participants and actively including them in the creative process.
- Reworking ideas.
- Establishing a two-way speaker-participant relationship.
- Stimulating debate, discussions, and mutual contamination between the participants.
- Creating tangible or intangible content.

Potential Pedagogical Teaching Methods to Use with Groups in Face-to-Face Contexts:

The general structure of a workshop includes:

- An initial phase, with an introduction to the theme and activities of the session.
- A phase of exploration or divergence.
- A phase of convergence, useful for channeling the work done towards shared choices.
- A phase of closing and presentation of the results of the session's activities.

The activities that take place during a workshop are the most disparate and are reshuffled according to needs. It is not rare that they are modified or invented ‘ad hoc’ to facilitate the work team to reach the goal more easily.

Often these activities include a playful component, which brings into play different dynamics than those experienced during a more formal meeting. Furthermore, materials and visual aids are often used to support conversation or as synthesis tools.

To support these activities, a dedicated space is needed, which allows you to host all the guests, whether they work in small groups or in a single group and which allows you to use the spaces and walls to display the different materials that are generated by hand that the session takes place. This space, usually called the War Room, has the function of helping the team to work with visual aids and reorganise information by using the area as a large mental map shared by the whole group.

Where possible, this place remains dedicated to the project even in the period between one workshop and another, keeping the materials visible and accessible by all those who use the room: an alternative and effective way to involve the rest of the company with what is happening within those four walls.

Benefits to Learners:

The workshop activities provide for an active and permanent involvement of the public who is interested in experiencing a concrete immersion in laboratory events where the individual dimension of the individuals is projected within a collective social context. The workshop is a type of training approach-experiential that allows a 360-degree exchange of ideas. A workshop was created to carry out research, to ensure that experts in the sector support the participants in the course, sharing their professionalism and their knowledge in the field, without creating a one-way and self-referential lesson, but creating a real learning experience, side by side with those who participate in the meetings

Useful links:

- http://meeting-hub.net/blog/cose-un-workshop

1.8. Digital Sharing Tools

Description:

There is a group of tools used to make quizzes and pools:

- Mentimeter: creates interactive presentations & meetings, wherever you are. It makes things more participatory and creative and so it connects people in a more creative and playful setting.
- Slido: Slido is an easy-to-use Q&A and polling platform. It helps people to get the most out of meetings and events by bridging the gap between speakers and their audiences. Slido is used by anyone looking to enable an open conversation at a live meeting, whether in-person or virtual.
- Pear Deck: in addition to hosting your slide presentations, this program allows for assessment on any number of your slides. Your students can draw directly on the presentation, enter their own notes, add numbers, drag, and drop symbols, or answer multiple-choice questions. It has a friendly integration with Google Slides as well, so you can even let your students explore the web directly from your lecture.
- KAHOOT: an application to create a learning game or trivia quiz on any topic, in any language. Host a live game with questions on a big screen or share a game with remote players or join a Kahoot with a PIN provided by the host and answer questions on your device. It is easy and intuitive and brings fun and learning to games.

Potential Pedagogical Teaching Methods to Use with Groups in Face-to-Face Contexts:

Class projects, Classroom discussion, Current events quizzes, Debates, Discussion groups, educational games, gamified learning plans, Group discussion, Guest speakers, Individual projects, Problem solving.

Benefits to Learners:

- Expanded job and study opportunities (online and distant)
- Sharing knowledge and gaining knowledge and skills

- Mutual study process and networking
- Management skills

Useful links:

https://www.mentimeter.com/

https://www.sli.do/about

https://kahoot.com/

https://www.peardeck.com/googleslides

1.9. Digital Sharing Tools: Padlet, Miro, Socrative

Description:

- **Padlet**: with Padlet you can create an online post-it board that you can share with any student or teacher you want. Just give them the unique Padlet link. Padlet allows you to insert ideas anonymously or with your name. It is easy to use and very handy.

- **Miro** is an online collaborative whiteboard platform that enables distributed teams to work effectively together, from brainstorming with digital sticky notes to planning and managing workflows. You can create content simultaneously, pool for communication, sticky notes, interacting, etc.

- **Socrative**: your classroom app for fun, effective engagement and 'on-the-fly' assessments. How can you know that your student truly understands what you teach? Student feedback is the only way and Socrative has simplified the process of asking for that feedback. Whether you want immediate evaluations or check-ins after some time, this tool lets you monitor classroom work to see that no one escapes close scrutiny. Socrative is a fun and engaging assessment tool that works on a variety of devices and lets you know how your students are really doing. You can also create quizzes and polls for your classroom at a moment's notice. It is also always free for students. The basic package is free, and the Pro package is $60 for a year's subscription.

Potential Pedagogical Teaching Methods to Use with Groups in Face-to-Face Contexts:

Class projects, Classroom discussion, Current events quizzes, Debates, Discussion groups, educational games, gamified learning plans, Group discussion, Guest speakers, Individual projects, Problem solving.

Benefits to Learners:

- Expanded job and study opportunities (online and distant)
- Sharing knowledge and gaining knowledge and skills
- Mutual study process and networking
- Management skills

Useful links:

- https://lv.padlet.com/features
- https://miro.com
- https://www.socrative.com/

Section II

List of Potential Workshops

Section II. List of potential workshops

	Worshop Title
Potential Workshop 1	GOAL 1: No Poverty (RISEBA)
Potential Workshop 2	GOAL 2: Zero Hunger (EPNG)
Potential Workshop 3	GOAL 3: Good Health and Well-being (EPNG)
Potential Workshop 4	GOAL 4: Quality Education (CFP)
Potential Workshop 5	GOAL 5: Gender Equality (APRECA)
Potential Workshop 6	GOAL 6: Clean Water and Sanitation (ACU)
Potential Workshop 7	GOAL 7: Affordable and Clean Energy (LFI)
Potential Workshop 8	GOAL 8: Decent Work and Economic Growth (CFP)
Potential Workshop 9	GOAL 9: Industry, Innovation and Infrastructure (APRECA)
Potential Workshop 10	GOAL 10: Reduced Inequality (ACU)
Potential Workshop 11	GOAL 11: Sustainable Cities and Communities (CFP)
Potential Workshop 12	GOAL 12: Responsible Consumption and Production (LFI)
Potential Workshop 13	GOAL 13: Climate Action (APRECA)
Potential Workshop 14	GOAL 14: Life Below Water (EPN)
Potential Workshop 15	GOAL 15: Life on Land (RISEBA)
Potential Workshop 16	GOAL 16: Peace and Justice Strong Institutions (RSMT, ACU)
Potential Workshop 17	GOAL 17: Partnerships to achieve the Goal (RSMT)

Potential

Workshop 1

2.1. NO POVERTY

SGD 1

Subject(s): Sustainability

Topic: No Poverty

Objectives:

- Learn about the SGD 1: definition, terminology, and classification
- Know the examples of cases at individual, company and national level
- Get the information on measurement system
- Be inspired by different actions and case studies to have a positive impact

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Digital materials to use:

- **'No Poverty'** on https://naturallysustainable.global/ in section "Education"
- Mobile Applications 'GGBN application'
- Youtube videos 'Understanding Goal 12'
  https://www.youtube.com/watch?v=puEWxGStQrE&t=18s
- Guide 'CEO Guide to circular economy'
  http://docs.wbcsd.org/2017/06/CEO_Guide_to_CE.pdf
- Game - 'Circula' https://circula.fi/materiaalit

Potential procedure

1. Lead students in a discussion about facts about SGD 1 that draws our attention to the problems to be solved globally;
2. Explain to students the main Targets of SDG 1 and importance to fight poverty in the world;
3. Provide students with examples of cases to have a positive impact on personal, entrepreneurial, regional and national levels;
4. Introduce them to the SGD 1 measurement system;
5. Show a short video or two on the topic discussed (see collection of videos)
6. Engage students using application: get the facts and examples on business ideas on solving SGD 1 issues.

- Use more games, events, activities, movies, tests, cases and assessment tools from https://naturallysustainable.global/

Potential

Workshop 2

2.2. ZERO HUNGER

SGD 2

Subject(s): Sustainability

Topic: Zero Hunger

Objectives:

- Learn about the SGD 2: definition, terminology and classification
- Know the examples of cases at individual, company and national level
- Get the information on measurement system
- Be inspired by different case studies to have a positive impact

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Digital materials to use:

- **'Zero Hunger'** on https://naturallysustainable.global/ in section 'Education'
- Youtube videos 'Understanding Goal 2' https://www.youtube.com/watch?v=puEWxGStQrE&t=18s
- Guide 'CEO Guide to circular economy' http://docs.wbcsd.org/2017/06/CEO_Guide_to_CE.pdf
- Game - 'Circula' https://circula.fi/materiaalit

Potential procedure:

1. Lead students in a discussion about facts about SGD 2 that brings our attention to the problems to be solved globally;
2. Explain to students the main Targets of SDG 2 and impact of responsible consumption and production to the world;
3. Provide students with examples of cases to have a positive impact on personal, entrepreneurial, regional and national levels;
4. Introduce them to SGD 2 measurement system;
5. Show a short video or two on the topic discussed
6. Engage students using application: get the facts and examples on business ideas on solving SGD 2 issues.

❖ Use more games, events, activities, movies, tests, cases and assessment tools in Section 3 and from https://naturallysustainable.global/

Potential Workshop 3	2.3. GOOD HEALTH AND WELL-BEING	SGD 3

Subject(s): Sustainability

Topic: Good Health and Well-being

Objectives:

- Learn about the SGD 3: definition, terminology and classification
- Know the examples of cases at individual, company and national level
- Get the information on measurement system
- Be inspired by different case studies to have positive impact

Digital materials to use:

- **'Good Health and Well-being'** on https://naturallysustainable.global/ in section 'Education'
- Mobile Applications 'GGBN application'
- Youtube videos 'Understanding Goal 22' https://www.youtube.com/watch?v=puEWxGStQrE&t=18s
- Please see more games & books & movies in sections 3 on collections.

Potential procedure

1. Lead students in a discussion about facts about SGD 3 that brings our attention to the problems to be solved globally;
2. Explain to students the main Targets of SDG 3 and importance of well-being of society;
3. Provide students with examples of cases to have a positive impact on personal, entrepreneurial, regional and national levels;
4. Introduce them to SGD 3 measurement system;
5. Show a short video or two on the topic discussed
6. Engage students using application: get the facts and examples on business ideas on solving SGD 3 issues.

❖ Use more games, events, activities, movies, tests, cases and assessment tools from https://naturallysustainable.global/

Potential Workshop 4	2.4. QUALITY EDUCATION	SGD 4

Subject(s): Sustainability

Topic: Quality Education

Objectives:

- Learn about the SGD 4: definition, terminology and classification
- Know the examples of cases at individual, company and national level
- Get the information on measurement system
- Be inspired by different case studies to have a positive impact

Digital materials to use:

- **'Quality Education'** on https://naturallysustainable.global/ in section 'Education'
- Mobile Applications 'GGBN application'
- Youtube videos 'Understanding Goal '
  https://www.youtube.com/watch?v=puEWxGStQrE&t=18s
- Collections in third section

Potential procedure

1. Lead students in a discussion about facts about SGD 4 that brings our attention to the problems to be solved globally;
2. Explain to students the main Targets of SDG 4 and essential impact and role of education in society and its development;
3. Provide students with examples of cases to have a positive impact on personal, entrepreneurial, regional and national levels;
4. Introduce them to SGD 4 measurement system;
5. Show a short video or two on the topic discussed
6. Engage students using application: get the facts and examples on business ideas on solving SGD 4 issues.

❖ Use more games, events, activities, movies, tests, cases and assessment tools from https://naturallysustainable.global/

Potential

Workshop 5

2.5. GENDER EQUALITY

SGD 5

Subject(s): Sustainability

Topic: Gender Equality

Objectives:

- Learn about the SGD 5: definition, terminology, and classification
- Know the examples of cases at individual, company and national level
- Get the information on the measurement system
- Be inspired by different case studies to have a positive impact

Digital materials to use:

- **'Gender Equality'** on https://naturallysustainable.global/ in section 'Education'
- Mobile Applications 'GGBN application'
- Collections in section 3

Potential procedure

1. Lead students in a discussion about facts about SGD 5 that brings our attention to the problems to be solved globally;

2. Explain to students the main Targets of SDG 5 and society's health in correlation with the negative effects of discrimination, violence, and injustice
3. Provide students with examples of cases to have a positive impact on personal, entrepreneurial, regional and national levels;
4. Introduce them to SGD 5 measurement system;
5. Show a short video or two on the topic discussed
6. Engage students using application: get the facts and examples on business ideas on solving SGD 5 issues.

❖ Use more games, events, activities, movies, tests, cases and assessment tools from https://naturallysustainable.global/

Potential Workshop 6	2.6. CLEAN WATER AND SANITATION	SGD 6

Subject(s): Sustainability

Topic: Clean Water and Sanitation

Objectives:

- Learn about the SGD 6: definition, terminology and classification
- Know the examples of cases at individual, company and national level
- Get the information on the measurement system
- Be inspired by different case studies to have a positive impact

Digital materials to use:

- **'Clean Water and Sanitation'** on https://naturallysustainable.global/ in section 'Education'
- Mobile Applications 'GGBN application'
- See collections in section 3

Potential procedure

1. Lead students in a discussion about facts about SGD 6 that brings our attention to the problems to be solved globally;
2. Explain to students the main Targets of SDG 6 and necessity of water for all existence of the world;
3. Provide students with examples of cases to have a positive impact on personal, entrepreneurial, regional and national levels;
4. Introduce them to SGD 6 measurement system;
5. Show a short video or two on the topic discussed
6. Engage students using application: get the facts and examples on business ideas on solving SGD 6 issues.

❖ Use more games, events, activities, movies, tests, cases and assessment tools from https://naturallysustainable.global/

Potential

Workshop 7

2.7. AFFORDABLE AND CLEAN ENERGY

SGD 7

Subject(s): Sustainability

Topic: Affordable and Clean Energy

Objectives:

- Learn about the SGD 7: definition, terminology and classification
- Know the examples of cases at individual, company and national level
- Get the information on the measurement system
- Be inspired by different case studies to have a positive impact

Co-funded by the Erasmus+ Programme of the European Union

Digital materials to use:

- **'Affordable and Clean Energy'**on https://naturallysustainable.global/ in section 'Education'
- Youtube videos '030 SDG 7: Affordable and Clean Energy' https://www.youtube.com/watch?v=JfjLmgAP16A and 'Understanding Goal 7' https://www.youtube.com/watch?v=jlWfQoycRPE&t=49s
- Guide 'CEO Guide to circular economy' http://docs.wbcsd.org/2017/06/CEO_Guide_to_CE.pdf
- Game- 'Circula' https://circula.fi/materiaalit

Potential procedure

1. Lead students in a discussion about facts about SGD 7 that brings our attention to the problems to be solved globally;
2. Explain to students the main Targets of SDG 7 and correlation of the consumption of energy with climate change;
3. Provide students with examples of cases to have a positive impact on personal, entrepreneurial, regional and national levels;
4. Introduce them to SGD 7 measurement system;
5. Show a short video or two on the topic discussed
6. Engage students using application: get the facts and examples on business ideas on solving SGD 7 issues.

❖ Use more games, events, activities, movies, tests, cases and assessment tools from https://naturallysustainable.global/

Potential Workshop 8	2.8. DECENT WORK AND ECONOMIC GROWTH	SGD 8

Subject(s): Sustainability

Topic: Decent Work and Economic Growth

Objectives:

- Learn about the SGD 8: definition, terminology and classification
- Know the examples of cases at individual, company and national level
- Get the information on the measurement system
- Be inspired by different case studies to have a positive impact

Digital materials to use:

- **'Decent Work and Economic Growth'** on https://naturallysustainable.global/ in section 'Education'
- Youtube videos '#GlobalGoals 8: Decent Work and Economic Growth - Can you make it happen?' https://www.youtube.com/watch?v=7Adj7Bue_e8 and 'AROUNDTHEWORLD.COOP | COOPS & SDGs | SDG 8: Decent work and economic growth' https://www.youtube.com/watch?app=desktop&v=ZTI6wwDn07E
- Game - 'SDGAME' https://gisaction.com/sdgame/#gioca and 'Go Goals!' https://go-goals.org/
- Collections in section 3

Potential procedure

1. Lead students in a discussion about facts about SGD 8 that brings our attention to the problems to be solved globally;
2. Explain to students the main Targets of SDG 8 and to raise awareness of labour law, responsabilities and rights;
3. Provide students with examples of cases to have a positive impact on personal, entrepreneurial, regional and national levels;
4. Introduce them to SGD 8 measurement system;
5. Show a short video or two on the topic discussed;
6. Engage students using application: get the facts and examples on business ideas on solving SGD 8 issues.

❖ Use more games, events, activities, movies, tests, cases and assessment tools from https://naturallysustainable.global/

Potential Workshop 9

2.9. INDUSTRY, INNOVATION AND INFRASTRUCTURE

SGD 9

Subject(s): Sustainability

Topic: Industry, Innovation and Infrastructure

Objectives:

- Learn about the SGD 9: definition, terminology and classification
- Know the examples of cases at individual, company and national level
- Get the information on the measurement system
- Be inspired by different case studies to have a positive impact

Digital materials to use:

- **'Industry, Innovation and Infrastructure'** on https://naturallysustainable.global/ in section 'Education'
- Mobile Applications 'GGBN application'
- Youtube videos 'Understanding Goal 9' https://www.youtube.com/watch?v=puEWxGStQrE&t=18s
- Collection in section 3

Potential procedure

1. Lead students in a discussion about facts about SGD 9 that brings our attention to the problems to be solved globally;
2. Explain to students the main Targets of SDG 9 and challenges of uneven pace of development of industries and technologies in different regions of the world;
3. Provide students with examples of cases to have positive impact on personal, entrepreneurial, regional and national levels;
4. Introduce them to SGD 9 measurement system;
5. Show a short video or two on the topic discussed
6. Engage students using application: get the facts and examples on business ideas on solving SGD 9 issues.

❖ Use more games, events, activities, movies, tests, cases and assessment tools from https://naturallysustainable.global/

Potential Workshop 10	2.10. REDUCED INEQUALITY	SGD 10

Subject(s): Sustainability

Topic: Reduced Inequality

Objectives:

- Learn about the SGD 10: definition, terminology and classification
- Know the examples of cases at individual, company and national level
- Get the information on the measurement system
- Be inspired by different case studies to have a positive impact

Digital materials to use:

- ‘Reduced Inequality’ on **https://naturallysustainable.global/** in section ‘Education’
- Mobile Applications ‘GGBN application’
- Youtube videos ‘SDG 10 Reduced Inequalities
  https://www.youtube.com/watch?v=J0Ogxrc3Cns and
- Collection in section 3

Potential procedure:

1. Lead students in a discussion about facts about SGD 10 that brings our attention to the problems to be solved globally;
2. Explain to students the main Targets of SDG 10 and impact of responsible consumption and production to the world;
3. Provide students with examples of cases to have a positive impact on personal, entrepreneurial, regional and national levels;
4. Introduce them to SGD 10 measurement system;
5. Show a short video on the topic discussed;
6. Engage students using application: get the facts and examples on business ideas on solving SGD 10 issues.

❖ Use more games, events, activities, movies, tests, cases and assessment tools from https://naturallysustainable.global/

Potential

Workshop 11

2.11. SUSTAINABLE CITIES AND COMMUNITIES

SGD 11

Subject(s): Sustainability

Topic: Sustainable Cities and Communities

Objectives:

- Learn about the SGD 11: definition, terminology and classification
- Know the examples of cases at individual, company and national level
- Get the information on the measurement system
- Be inspired by different case studies to have a positive impact

Digital materials to use:

- 'Sustainable Cities and Communities' on **https://naturallysustainable.global/** in section 'Education'
- Mobile Applications 'GGBN application'
- Youtube videos: 'Creating Sustainable Cities' https://www.youtube.com/watch?v=ViJIJh-BNq8 and 'Milan Vertical Forest Turns 5' https://www.youtube.com/watch?v=XXRu_qMhRbs and
- Game 'Play the City' https://www.playthecity.eu
- Collections in section 3

Potential procedure

1. Lead students in a discussion about facts about SGD 11 that brings our attention to the problems to be solved globally;
2. Explain to students the main Targets of SDG 11 and impact of smart cities to the world;
3. Provide students with examples of cases to have a positive impact on personal, entrepreneurial, regional and national levels;
4. Introduce them to SGD 11 measurement system;
5. Show a short video or two on the topic discussed;
6. Engage students using application: get the facts and examples on business ideas on solving SGD 11 issues.

❖ Use more games, events, activities, movies, tests, cases and assessment tools from https://naturallysustainable.global/

Potential Workshop 12	2.12. RESPONSIBLE CONSUMPTION AND PRODUCTION	SGD 12

Subject(s): Sustainability

Topic: Responsible consumption and production

Objectives:

- Learn about the SGD 12: definition, terminology and classification
- Know the examples of cases at individual, company and national level
- Get the information on the measurement system
- Be inspired by different case studies to have a positive impact

Digital materials to use:

- **'Responsible consumption and production'** on https://naturallysustainable.global/ in section 'Education'
- Youtube videos 'Understanding Goal 12' https://www.youtube.com/watch?v=puEWxGStQrE&t=18s
- Guide 'CEO Guide to circular economy' http://docs.wbcsd.org/2017/06/CEO_Guide_to_CE.pdf
- Game - 'Circular' https://circula.fi/materiaalit
- Collections in section 3

Potential procedure

1. Lead students in a discussion about facts about SGD 12 that brings our attention to the problems to be solved globally;
2. Explain to students the main Targets of SDG 12 and impact of responsible consumption and production to the world;
3. Provide students with examples of cases to have a positive impact on personal, entrepreneurial, regional and national levels;
4. Introduce them to SGD 12 measurement system;
5. Show a short video on the topic discussed
6. Engage students using application: get the facts and examples on business ideas on solving SGD 12 issues.

*Use more games, events, activities, movies, tests, cases and assessment tools from https://naturallysustainable.global/

Potential

Workshop 13

2.13. CLIMATE ACTION

SGD 13

Subject(s): Sustainability

Topic: Climate Action

Objectives:

- Learn about the SGD 13: definition, terminology and classification
- Know the examples of cases at individual, company and national level
- Get the information on the measurement system
- Be inspired by different case studies to have a positive impact

Digital materials to use:

- **'Climate Action'** on https://naturallysustainable.global/ in section 'Education'
- Youtube videos 'We live off of it', 'One planet' https://youtu.be/GfO-3Oir-qM
- Youth Guide 'Forests'
- Game - 'New Shores - A simulation for climate and democracy' https://newshores.socialsimulations.org/
- Collections in section 3

Potential procedure

1. Lead students in a discussion about facts about SGD 13 that brings our attention to the problems to be solved globally;
2. Explain to students the main Targets of SDG 13 and danger of the rapid negative changes of climate;
3. Provide students with examples of cases to have a positive impact on personal, entrepreneurial, regional and national levels;
4. Introduce them to SGD 13 measurement system;
5. Show a short video or two on the topic discussed
6. Engage students using application: get the facts and examples on business ideas on solving SGD 16 issues.

❖ Use more games, events, activities, movies, tests, cases and assessment tools from https://naturallysustainable.global/

Potential Workshop 14	2.14. LIFE BELOW WATER	SGD 14

Subject(s): Sustainability

Topic: Life Below Water

Objectives:

- Learn about the SGD 14: definition, terminology and classification
- Know the examples of cases at individual, company and national level
- Get the information on the measurement system
- Be inspired by different case studies to have a positive impact

Digital materials to use:

- **'Life Below Water'** on https://naturallysustainable.global/ in section 'Education'
- Mobile Applications 'GGBN application'
- Youtube videos 'We live off of it', 'One planet' https://youtu.be/GfO-3Oir-qM
- Game - 'New Shores - A simulation for climate and democracy' https://newshores.socialsimulations.org/
- Collections in section 3

Potential procedure

1. Lead students in a discussion about facts about SGD 14 that brings our attention to the problems to be solved globally;
2. Explain to students the main Targets of SDG 14 and essential need of safety of the ocean and sea life from pollution;
3. Provide students with examples of cases to have a positive impact on personal, entrepreneurial,regional and national levels;
4. Introduce them to SGD 14 measurement system;
5. Show a short video or two on the topic discussed
6. Engage students using application: get the facts and examples on business ideas on solving SGD 14 issues.

❖ Use more games, events, activities, movies, tests, cases and assessment tools from https://naturallysustainable.global/

Potential

Workshop 15

1.15. LIFE ON LAND

SGD 15

Subject(s): Sustainability

Topic: Life on Land

Objectives:

Learn about the SGD 15: definition, terminology and classification

Know the examples of cases at individual, company and national level

Get the information on the measurement system

Be inspired by business ideas to have a positive impact

Digital materials to use:

- Workshop presentation 'Life on Land' on https://naturallysustainable.global/ in section 'Education'
- Mobile Applications 'GGBN application' and 'Picture this'
- Youtube videos 'We live off of it' https://www.inspiringinquiry.com/sustainable-goals/15-life-on-land and 'One planet' https://youtu.be/GfO-3Oir-qM

- Youth Guide ‘Forests’
- Collection from section 3

Potential procedure

1. Lead students in a discussion about facts about SGD 15 that brings our attention to the problems to be solved globally;
2. Explain to students the main directions of human impact on Life on Land;
3. Provide students with examples of cases to have a positive impact on personal, entrepreneurial, regional and national levels;
4. Introduce them to SGD 15 measurement system;
5. Show a short video or two on the topic discussed
6. Engage students using applications: identifying plants and diseases to cure and/or get the facts and examples on business ideas on solving SGD 15 issues.

❖ Use more games, events, activities, movies, tests, cases and assessment tools from https://naturallysustainable.global/

Potential Workshop 16	2.16. PEACE, JUSTICE AND STRONG INSTITUTIONS	SGD 16

Subject(s): Sustainability

Topic: Peace, Justice and Strong institutions

Objectives:

- Learn about the SGD 16: definition, terminology and classification
- Know the examples of cases at individual, company and national level
- Get the information on the measurement system
- Be inspired by different case studies to have a positive impact

Digital materials to use:

- **‘Peace, Justice and Strong Institutions’** on https://naturallysustainable.global/ in section ‘Education’
- Youtube videos ‘2030- SDG 16- Peace, Justice and Strong Institutions- Ted talks' https://www.youtube.com/watch?v=6aqY-iY7s_Q and ‘SDGs Explained: #16 Peace, Justice and Strong Institutions’ (Griffith University) https://www.youtube.com/watch?v=oQ1s_Z5OVsk
- Game - ‘New Shores - A simulation for climate and democracy’ https://newshores.socialsimulations.org/
- Collections from section 3

Potential procedure:

1. Lead students in a discussion about facts about SGD 16 that brings our attention to the problems to be solved globally;
2. Explain to students the main Targets of SDG 16 and essention need of more peaceful, just, and inclusive societies;
3. Provide students with examples of cases to have a positive impact on personal, entrepreneurial, regional and national levels;
4. Introduce them to SGD 16 measurement system;
5. Show a short video or two on the topic discussed;
6. Engage students using application: get the facts and examples on business ideas on

solving SGD 16 issues.

*Use more games, events, activities, movies, tests, cases and assessment tools from https://naturallysustainable.global/

Potential

Workshop 17

2.17. PARTNERSHIP FOR THE GOALS

SGD 17

Subject(s): Sustainability

Topic: Partnership for the goals

Objectives:

- Learn about the SGD 17: definition, terminology and classification
- Know the examples of cases at individual, company and national level
- Get the information on the measurement system
- Be inspired by partnership actions to have a positive impact

Digital materials to use:

- Workshop presentation ‘Partnership For The Goals’ on https://naturallysustainable.global/ in section ‘Education’
- SDG Partnership platform https://sdgs.un.org/partnerships
- Mobile Applications ‘GGBN application’
- Youtube videos ‘SDG 17: Academic insights into partnerships for the goals’ https://www.youtube.com/watch?v=oXQmDy2WG04 and/or ‘SDGs Explained: #17 Partnerships for the Goals’ https://www.youtube.com/watch?v=NJtHd5_Q0zA
- The Lazy Person’s Guide to Saving the World https://www.un.org/sustainabledevelopment/takeaction/
- Game - How to Create a Financial Crisis https://www.nfb.ca/interactive/how_to_create_a_financial_crisis/

Potential procedure:

1. Lead students in a discussion about facts about SGD 17 that brings our attention to the importance of partnership in all the levels and the problems to be solved globally;
2. Explain to students the main directions of partnerships between governments, the private sector, and civil society;
3. Provide students with examples of cases to have a positive impact on personal, entrepreneurial, regional and national levels;

4. Introduce them to SGD 17 measurement system;
5. Discuss valuable partnerships implemented in different regions
6. Engage students using role games and debates on some of the Targets of SDG17
7. Get the facts and examples on business ideas on solving SGD 17 issues.

- Use more games, events, activities, movies, tests, cases and assessment tools from https://naturallysustainable.global/

SECTION III

Assessment and evaluation

Section III – Assesment and evaluation

Stratification and advancement of the sustainability assessment and evaluation in EU countries

This section gives insight in assessment tools' analysis and in addition on the platform all assessment tools and presentation can be found. Please see htpps://naturallysustainable.global section 'Assessment and evaluation. '

Abstract

There are multiple assessment and evaluation strategies, and tools companies and organisations undergo implementing sustainability policies. However, the companies face the whole range of approaches and restrictions on the resource side and have to prioritize choices. Reaching an advanced level of sustainability, enterprises aim to reach their full potential. Therefore, it is crucial for business entity and non-profit organisations to understand the advancement stages, criteria and spread of them among the evaluation techniques internationally. Current research provides support for companies and researchers and systems analyzed not only benefits the individual companies, but it also contributes to the overall success of the sustainability dominance.

The main aim of this article is to provide the systemized and in-depth analysis of the methods and approaches to stratify the evaluation layers, classification of criteria, expanding to throughout classification of the trends and tendencies in seven EU countries. Research was conducted based on bibliographical review and experience of seven partner countries within the project EU strategic partnership project Naturally Sustainable in 2022 - 2023. This study reveals the whole range and scope of the developments in the assessment of good practices working with sustainability issues, setting the up-to-date framework and identifying dominating constituents of the whole meta system of approaches to distinguish, develop and support companies and organisations in the sustainability domain. The main agenda of the research within the project is to engage educational institutions but the research has been expanded to the whole spectrum of entities.

Keywords: sustainability, evaluation, assessment, business entities, organisations.

3.1. Introduction

Sustainability assessment tools and initiatives are currently influencing sustainability strategies and activities both in profit and non-profit organisations and entities. Commercial companies are facing growing demand for the sustainability in action and pressure on the reporting standards and evaluation systems. Nevertheless, the scale of questions combined with limited resource base, knowledge and capacity created the precondition for the analysis and classification of the methods to ease the prioritization and weights of the factors to assess. Education institutions (EIs) in turn are among the most influential elements of implementing concepts of sustainability and sustainable development and their decisions affect the economic, social and environmental dimensions of the communities and regions around them. Society expects them to educate the youth and contribute to society. Still there is no clear understanding how to integrate sustainability into the systems, no guidelines to action, no checklist that would be equally helpful for all EIs or could be applied across the board by all. Institutions are too different in terms of their legal form (private or public), location (rural or metropolitan) or size (small and specialised or large offering a full range of faculties). In order to structure and estimate the significance and occurrence of Sustainability reporting and evaluation factors, a study has to be undertaken, consisting of an analysis of the literature on the topic by means of a bibliometric analysis and a set of case studies that illustrate the various contexts within which Sustainability reporting and evaluation is being deployed as a method.

3.2. Bibliometric analysis

The input data for bibliometric analysis was retrieved from Scopus. Among various academic databases, Scopus was selected because of its broad coverage of quality peer-reviewed research related to the topic of this study. To set the boundary for the literature search, we restricted ourselves to papers focused on Sustainability reporting, assessment and evaluation. We used the following broad-based search string that includes different variants of terms related to Sustainability: (‘Sustainability’ AND ‘reporting’) OR (‘Sustainability’

AND ‘assessment’) OR (‘Sustainability’ AND ‘evaluation’). This search string was informed by previous literature reviews on Sustainability reporting and evaluation. It was developed in an iterative manner. In other words, we started with an initial search string and updated it after checking the returned results from Scopus. That was repeated until adding relevant terms did not result in additional items. The literature search on August 24, 2023, returned 5000 documents. We set no limits on the year of publication. These documents were used for bibliometric analysis.

VOSviewer was used for bibliometric analysis. Among different bibliometric analysis methods, we used the co-occurrence analysis (Fig.1), as we wanted to identify key terms and thematic research areas. The final output is a network of nodes and links, where node size is proportional to the frequency of co-occurrence and link width is proportional to the strength of the connection between nodes. Terms that are strongly linked to each other form thematic clusters and are shown in separate colours.

This section presents and discusses the results obtained and crosschecks them with the literature.

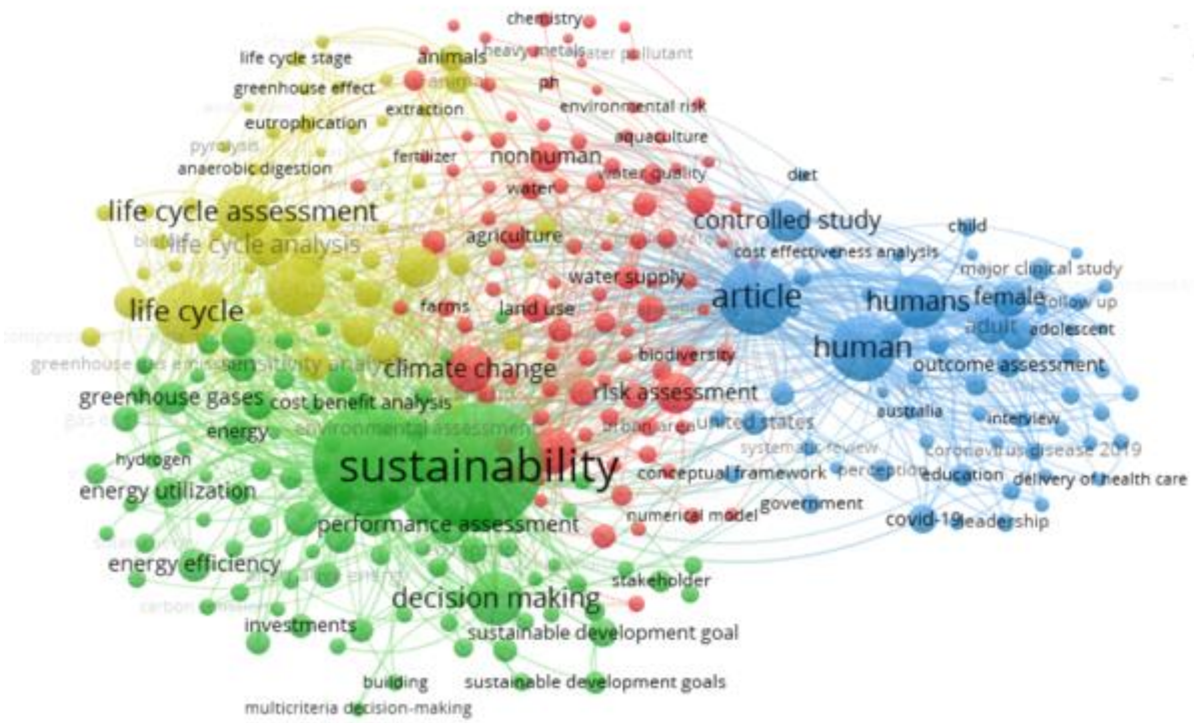


Figure 1 - Results of the co-occurrence analysis (VOSviewer).

The co-occurrence analysis (Fig.1) indicates that Sustainability reporting, assessment and evaluation are closely linked to each other. Four key thematic areas can be distinguished from the bibliometric analysis.

Within clusters, the 15 most weighted keywords that are described in Table 1.

Table 1- The most weighted keywords (VOSviewer)

	Keyword	Total link strength	Occurrences
1	Sustainability	11518	2072
2	Sustainable development	11294	1607
3	Article	9152	738
4	Human	6090	607
5	Life cycle	5404	523
6	Environmental impact	4801	451
7	Life cycle assessment	4482	416
8	Humans	4160	424
9	Decision making	3040	417
10	Environmental sustainability	3019	262

11	Climate change	2661	312
12	Female	2263	193
13	Greenhouse gases	1852	160
14	Risk assessment	1778	248
15	Global warming	1529	153

The Thematic areas are summarised for each cluster, and the keywords in each cluster are listed (as shown in Table 2). Each category is named, with the iconic keywords in each category.

Table 2- Keywords in each cluster (VOSviewer)

Cluster colour	Thematic areas	Keywords
Green	Sustainability/energy	Sustainable development, decision making, environmental assessment, energy utilization, energy efficiency, greenhouse gases.
Blue	Human/health	Article, human, controlled study, outcome assessment, adult, education, public health
Yellow	Life cycle/environmental impact	Life cycle, environmental impact, environmental sustainability, life cycle assessment, recycling bioenergy
Red	Climate change	Climate change, risk assessment, land use, agriculture, water management/treatment, ecosystem, urban development, water supply

The *green cluster* is dominant and is focused on issues such as sustainable development, decision making, environmental assessment, energy utilization, energy efficiency, greenhouse gases. Not surprisingly, decision making has emerged as one of the central terms in this cluster. Environmental assessment plays a vital role, providing decision-makers with an indication of the likely consequences of their actions (Joseph K. 2019). But, despite, the using of different environmental assessment tools are increasingly customized to national political intent and the legislative frameworks, their effectiveness becomes a widespread concern (Zhao Y et.al. 2023) among researchers. Energy is another concern within the sustainability assessment tools. From a sustainability perspective, it is crucial to carry out a comprehensive assessment of renewable energy technologies (Haase M. et.al. 2022). The considerable number of different approaches for energy assessment exists. Although there is growing recognition among scholars of the significance to harmonize and align the methodologies for prospective sustainability assessment of energy technologies, no general approach or standard method exists so far (Haase M, et.al.2022).

The *blue cluster* is also quite dominant and is focused on issues such as article, human, controlled study, outcome assessment, adult, education, public health. Humans are the main term of the cluster. Seeing as sustainability assessment is a widespread mandatory form of impact assessment, it represents an important arena for uncovering potential human health impacts as part of a broader concept of environment (Gulis G, 2022). Another significant term is education. Sustainability assessment requires expert practitioners. Concern about the quality of environmental statements and about the improvement in environmental assessment processes is a recurring topic. Only by the qualitative education this expertise could be achieved. Practitioners' knowledge and skills on environmental assessment can be acquired in various ways, such as education, training and experience (Álvaro Enríquez-de-Salamanca 2019).

The *yellow cluster* is less dominant but still very important and is focused on issues such as life cycle, environmental impact, environmental sustainability, life cycle assessment, recycling bioenergy. The main term 'Life cycle' concept was developed to emphasize the significance of overall assessment (R. Lin 2020). It was criticized for considering only environmental impact, that lead to ignorance of economic benefits and social impacts. So, it was followed by sustainability life cycle assessment, considering environmental, economic, and social aspects.

And finally, the *red cluster* is focused on issues such climate change, risk assessment, land use, agriculture, water management/treatment, ecosystem, urban development, water supply. Great attention is paid to the resources that the land gives to human beings. Climate change, as a main concern worldwide at the level of governments, community, and business (Suzaul-Islam MD, 2016), requires immediate and specific solutions. But the satisfactory reflection of climate change within environmental assessment is therefore seen as a great challenge.

Overall, there are different approaches and methodologies on how to measure the impact, not only environmental, but economic and social. But all of them suffer insufficiency and are criticized.

3.3. Sustainability assessment tools

Sustainability is not a single element, but a complex new paradigm affecting all areas and activities (Lee et al., 2013). Therefore, it can be said that sustainability encompasses the classic three dimensions of any organization (social, environmental and economic), also including its main activity: curricular or academic sustainability (Amaral et al., 2015; Fernandez-Sanchez et al, 2014). Moreover, scholars concluded that efforts and measures towards sustainability were not fully integrated in EIs' strategies, curricula, and initiatives. In order to enable the path towards sustainability, SATs and initiatives have become a crucial element (Lambrechts, 2015). A diverse number of SATs and approaches have emerged in the past decade (Caeiro et al. eds., 2013). They have different purposes: for monitoring, to draw comparisons, and to establish internal strategies towards sustainability (Jenssen, 2012). Many research papers were collected from different sources in order to get an overview of existing techniques for sustainability assessment. These measurement techniques work differently with respect to the area of research. But there is still a lack of summarized information about the tools and initiatives and the methods about SATs teaching.

According to A. Berzosa et.al, (2017), the most widely spread SATs are AISHE, SAQ, USAT and Sustain Tool. The authors made a deep analysis of the above-mentioned SATs on the particular HEIs case studies. Since indicators are mainly qualitative, a measure was based on the entire compliance of a specific criteria or indicator, so its effectiveness was measured by the points that each indicator has. The results are represented in a Fig. 2.

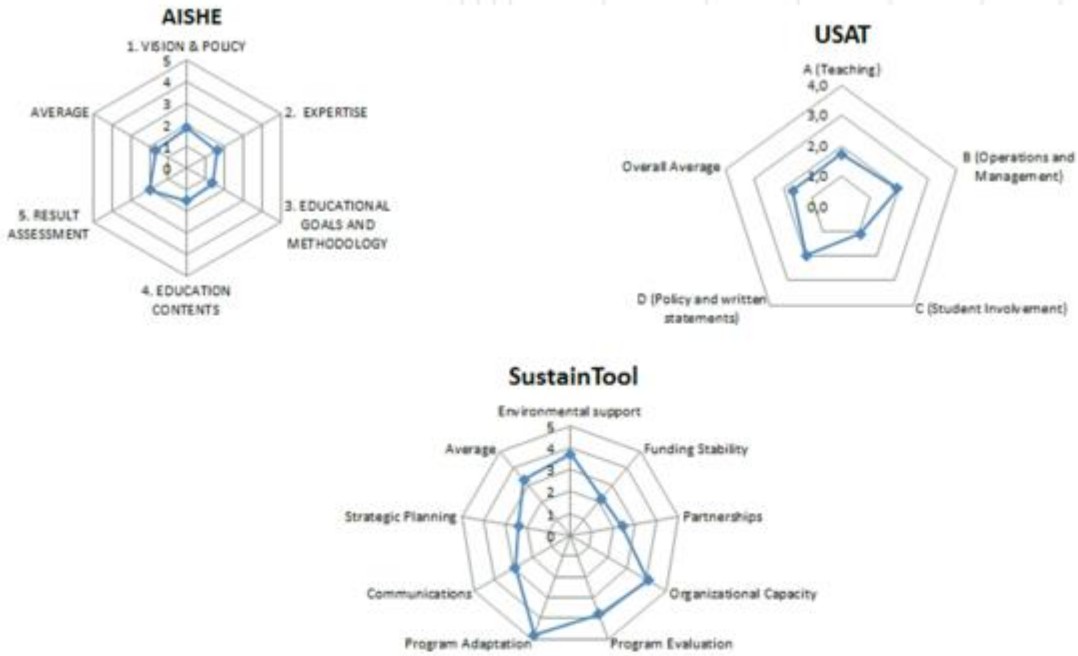


Fig. 2 Results of the UEM applying AISHE, USAT and SustainTool. (Source: A. Berzosa et.al, 2017)

The results obtained for the HEI case study from the SATs are as follows:
AISHE: the areas with the greatest results are vision, policy and assessments. Out of expertise, educational goals and methodology, educational contents are poorly rated (Fig. 1). The AISHE score depends on stages of development of sustainability policies and actions within the organization and varies from an activity oriented (1) to a society oriented (5) approach. The overall average result does not reach stage 2, which indicates that a process-oriented approach is used for implementing sustainability measures.

USAT: The analysis of the results by area shows that the area of operations and management environment (Part B) and the area of policy and written statements (Part D) are those with the highest average score using the USAT tool. On the contrary, teaching and student commitment (A and C) are the areas with the lowest overall score (Fig. 2).

SAQ: by using this tool, 40% of the questions can be satisfactorily answered including the areas of curriculum, research, operations and campus, human resources, dissemination and service to the community, students, and policy, vision and mission. Considering all questions as being equally important, this percentage can be considered as the overall score of the EI, despite the fact, that the tool itself does not have any kind of score. C Sustain Tool: The areas with the highest score are environmental support and organizational capacity as well as a program evaluation and adaptation. The maximum value reached is 4/7, a medium performance in sustainability terms. Fig. 1 shows the obtained results.

The results of the implementation of 3 different SATs to a particular EI show that different criteria and indicator groups are evolving in different SATs. That is why it is vitally necessary to summarize the most commonly used indicators, to elaborate the most qualitative sustainability teaching course. According to the St Flour, P.O.; Bokhoree, C (2021) SATs could not only vary according to the dimensions and indicators, but according to the scale. The authors divided identified SATs into 4 scale groups: Product, project, sector and country. (Tab. 3)

Tab.3 Sustainability assessment tools (Source: St Flour, P.O et.al. 2021)

	Scale				Dimension		
	Product	Project	Sector	Country	Environmental	Economic	Social
Life Cycle Assessment (LCA) [22]	√				√		
Dow Jones Sustainability Index (DJSI) [23]			√		√	√	√
Environmental Sustainability Index (ESI) [24]				√	√		
Environmental Performance Index (EPI) [25]				√	√		
Ecological Footprint (EF) [26]				√	√		
Sustainable Society Index (SSI) [27]				√	√	√	√
Life Cycle Costing (LCC) [28]	√					√	
Human Development Index (HDI) [29]				√		√	√
Environmental Impact Assessment (EIA) [30]		√			√		
Sustainable National Income (SNI) [31]				√	√	√	
Social Life Cycle Assessment (S-LCA) [32]	√						√
Strategic Environmental Assessment (SEA) [33,34]			√	√	√		
Index of Sustainable Economic Welfare (ISEW) [35]				√		√	
National Sustainable Development Index (NSDI) [36]				√	√	√	√
Composite Sustainable Development Index (I_{CSD}) [37]			√		√	√	√
Full Cost Accounting (FCA) [38]		√				√	

Tab.3 Cont.

	Scale				Dimension		
	Product	Project	Sector	Country	Environmental	Economic	Social
Integrated Value Model for Sustainable Assessment (MIVES) [39,40]		√	√		√	√	√
Cost–Benefit Analysis (CBA) [41]		√			√	√	√
Genuine Progress Indicator (GPI) [42]				√		√	
Life Cycle Sustainability Assessment (LCSA) [43]	√				√	√	√
System Dynamics (SD) [44–47]	√	√	√	√	√	√	√
Multi Criteria Decision Analysis (MCDA) [48,49]			√	√	√	√	√
Sustainability Assessment Model (SAM) [50,51]		√	√		√	√	√
Barometer of Sustainability (BS) [52]				√	√	√	√
Fuzzy Evaluation for Life Cycle Integrated Sustainability Assessment (FELICITA) [53]	√				√	√	√
Sustainability Assessment by Fuzzy Evaluation (SAFE) [54,55]			√	√	√	√	√
Fuzzy Logic Approach for Sustainability Assessment based on the Integrative Sustainability Triangle (FUZZY-IST) [56,57]		√	√		√	√	√
Adaptive Neuro-Fuzzy Inference System (ANFIS) [58,59]			√	√	√	√	√

As well authors suggested the following SATs criteria Tab.4

Tab.4 Sustainability assessment tools and criteria (Source: St Flour, P.O et.al. 2021)

Tools	Dimension	Factor	Number of Assessment Criteria
Sustainable Society Index (SSI) [27]	Human Wellbeing	– Basic Needs – Personal Development & health – Well-balanced society	21 basic indicators
	Environmental Wellbeing	– Natural resources – Climate & energy	
	Economic Wellbeing	– Transition – Economy	
National Sustainable Development Index (NSDI) [36]	Economic	– Economic growth – Income level – Economic structure	12 suitable indicators related to each factor
	Resource and environmental	– Climate – Air quality – Forest – Arable land – Energy	
	Social	– Education – Health – Drinking water – Sanitation facilities	

System Dynamics (SD) [47]	Human needs	– Demand for Economic support – Supply human needs	Not composed of fixed indicators. Adapted to changes in the system.
	Economic	– Economic capital – Expenditures and depreciation – Economic growth – Economic capital – Demand for economic utilization	
	Environment	– Renewable resources – Non Renewable resources – Waste generation – Ecological biodiversity – Ecosystem carrying capacity	
	Life services structure	– Available life services – Supply life services – Population growth	
Adaptive Neuro-fuzzy inference system (ANFIS) [59]	Ecological	– Air quality – Land integrity – Water quality – Biodiversity	On SAFE basis (75 optional general indicators)
	Human	– Political aspects – Economic welfare – Health – Education	
Multi Criteria Decision Analysis (MCDA) [49]	Human Wellbeing	– Basic Needs – Personal Development & health – Well-balanced society	On SSI basis (52 optional general indicators depending on available data)
	Environmental Wellbeing	– Natural resources – Climate & energy – Transition	
	Economic Wellbeing	– Economy	
Barometer of Sustainability (BS) [66]	Human	– Health & population – Wealth – Knowledge & culture – Equity – Community	Not composed of fixed indicators. The methodology is flexible.
	Ecosystem	– Land – Air – Water – Species & population – Resource use	
Sustainability Assessment by Fuzzy Evaluation (SAFE) [67]	Ecological	– Air quality – Land integrity – Water quality – Biodiversity	69 basic indicators related to each factor
	Human	– Political aspects – Economic welfare – Health – Education	

3.4. Sustainability assessment indicators

In order to perform sustainability performance measurement, the number of indicators used in each model is the most important factor that contributes to decision-making alternatives. They are analysed based on the various factors constructed from a wide range of sustainability indicators in order to address the most important sustainability issues. Indicators are considered to be a crucial point for tracking the quality of a system.

Another research of Dizdaroglu (2017) resulted in collections of Sustainable Development Indicators. They presented examples to measure all aspects of sustainability of all scales, from the largest (international) to the smallest (building). However, measuring sustainability is difficult due to the fact that many of the sustainability problems are interlinked and affect each another. There will always be a debate over which is the most appropriate set of indicators to use and in which framework to apply. Moreover, spatial scale is important in the use of indicators as their function is dependent on the context in which they are used. SA frameworks need to include a range of indicators which provide information to function under the national and regional planning systems while being effective for local authorities and communities. Some of the SDIs are presented in the Tab. 5:

Tab. 5 Sustainable Development Indicators (Source: Dizdaroglu 2017)

Initiative/Developer(s)	Themes/Headline Indicators	References
The United Nations Commission on Sustainable Development (UNCSD) set of indicators By the United Nations	Poverty Governance Health Education Natural hazards Atmosphere Land Oceans, seas and coasts Freshwater Biodiversity Economic development Global economic partnership Consumption and production patterns	https://sustainabledevelopment.un.org
The Organisation for Economic Co-operation and Development (OECD) Better Life Index	Housing Income Jobs Community Education Environment Civic engagement Health Life Satisfaction Safety Work-Life Balance	http://www.oecdbetterlifeindex.org

Human Development Index (HDI) By the United Nations Development Programme (UNDP)	Health Education Income/Composition of Resources Inequality Gender Poverty Work, employment and vulnerability Human Security Trade and Financial Flows Mobility and Communication Environmental sustainability Demography	http://hdr.undp.org
Millennium Development Goals Indicators (MDGs) By the United Nations	Eradicate extreme poverty and hunger Achieve universal primary education Promote gender equality and empower women Reduce child mortality Improve maternal health Combat HIV/AIDS, malaria and other diseases Ensure environmental sustainability Develop a global partnership for development	http://mdgs.un.org
OECD Green Growth Indicators	The socio-economic context and characteristics of growth The environmental and resource productivity of the economy The natural asset base Environmental quality of life Economic opportunities and policy responses	http://www.oecd.org/greengrowth
EEA core set of indicators By European Environment Agency	Air pollution Biodiversity Climate change Energy Transport Water Other thematic indicators: Fisheries, land, soil, waste, household consumption and green economy	http://www.eea.europa.eu
WHO Environmental Health indicators	Socio-demographic context Air pollution Sanitation Shelter Access to safe drinking water Vector-borne disease Solid waste management Hazardous/ toxic substances Food safety Radiation Non-occupational health risks Occupational health risks	http://www.who.int/ceh/en
EUROSTAT (The statistical office of the European Union) Indicators for sustainable development	Socio-economic development Sustainable consumption and production Social inclusion Demographic changes Public health Climate change and energy Sustainable transport Natural resources Global partnership Good governance	http://ec.europa.eu/eurostat

These indicators are used to monitor the long-term sustainability trends from a retrospective point of view. The information they provide helps in making short-term projections and relevant decisions for the future. The studies in the literature show that there is a lack of consistent data sources within and between countries and communities. Therefore, the development of SDIs requires further investigation and more micro-level indicators are needed to be developed to work with more detailed data in Sustainability Assessment.

3.5. Weighted prioritisation approach: Project 'Naturally Sustainable' methodology

One of the goals of the project 'Naturally Sustainable' is to conduct international research about existing sustainability assessment and measurement tools worldwide, as well as initiatives, in order to identify the most commonly used sustainability assessment dimensions and indicators. This information will be later integrated into an on-line project platform, that will help sustainability teachers and lecturers to deliver the better qualified courses and stress more attention to the most important sustainability measurement indicators.

In total 42 assessment tools and initiatives were collected by the project 'Naturally Sustainable' with 8 partners from 7 countries. (Annex 1).

Analysing collected SATs and initiatives the most commonly used dimension was identified among SATs and among initiatives separately. For both SATs and initiatives, the environmental dimension attracts more attention from the EIs.

Fig. 3 Sustainability assessment dimensions (Source: Authors)

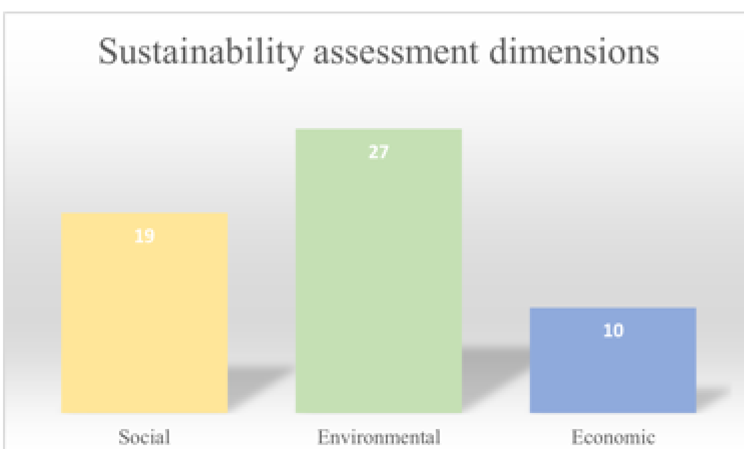
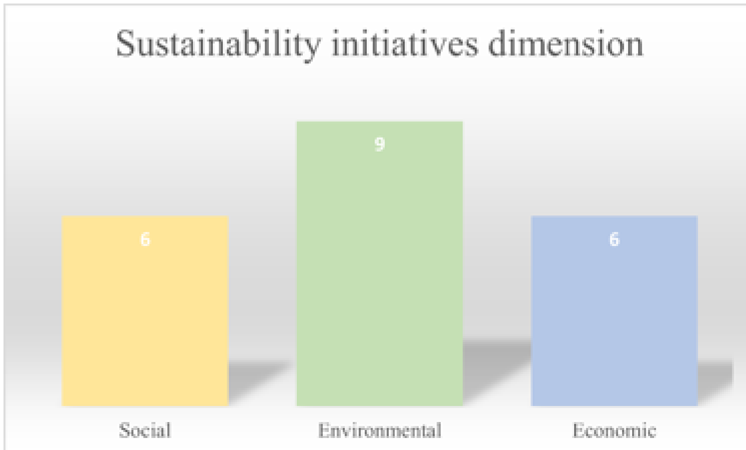


Fig. 4 Sustainability initiative dimensions (Source: Authors)



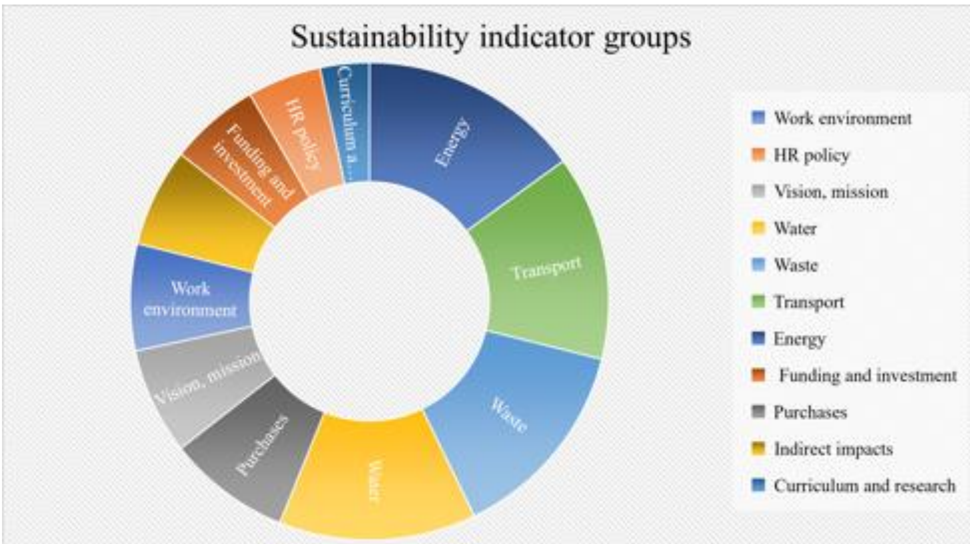
In a previous literature review, comparative studies related with SATs and initiatives were based on desk research and most of them were related only to HEIs. In this research, the main goal is to analyse the sustainability integration extent not only of universities but the other EIs. To do so, some of the most commonly met sustainability dimension is identified. The next step of the research is to identify the most important and most often met indicators of the assessments.

Tab. 7 Sustainability assessment indicator groups (Source: Authors)

		Sustainability indicator groups										
		Social			**Environment**				**Economical**			Other
	Sustainability assessment tools	Work environment	HR policy	Vision, mission	Water	Waste	Transport	Energy	Funding and investment	Purchases	Indirect impacts	Curriculum and research
1	Sustainability index	X	X	X	X	X	X	X	X	X	X	
2	Eco School				X	X	X	X				
3	UI GreenMetric				X	X	X	X				
4	SAQ	X		X								X
5	AISHE			X	X	X	X	X		X		X
6	GASU	X	X	X	X	X	X	X	X	X	X	X
7	UBSAT	X		X	X	X	X	X		X	X	X
8	LCA				X	X	X	X				
9	DJSI	X	X	X	X	X	X	X	X	X	X	
10	ESI				X	X	X	X				
11	Sustainable Brand Index™				X	X	X	X		X		
12	DSFM	X	X	X	X	X	X	X	X	X	X	
13	PSAT	X		X	X	X	X	X	X	X	X	
14	BSAT	X	X	X	X	X	X	X	X	X	X	
16	Sustainability development goals in Regione Lombardia	X	X	X	X	X	X	X	X	X	X	
17	The Europe Sustainable Development Report 2021	X	X	X	X	X	X	X	X	X	X	
18	National Sustainable Development Monitoring Network	X	X	X	X	X	X	X	X	X	X	
19	OKKA	X			X	X	X	X		X		
20	SYKLI Environmental				X	X	X	X				X
21	EcoCompass				X	X	X	X				
23	the National Sports Council, Ministry of Education and Culture				X	X	X	X				X
24	The Swan, official Nordic Ecolabel					X	X	X	X	X	X	
25	LUT University							X				
26	Finnish Association for Nature Conservation							X				
27	EPA (Environmental protection Agency)				X	X	X	X				
28	University College Dublin, AIRO, EPA, GeoHive, Ordnance Survey, OPR				X	X	X	X				
29	Governement of Ireland				X	X	X	X				
30	Irish Green Building Council	X	X	X	X	X	X	X	X	X	X	
		13	9	13	24	25	25	27	11	15	12	6

In total 30 sustainability assessment tools and 11 indicator groups were analysed. According to the analysis of Sustainability assessment indicator groups, the most met and important were identified in each dimension.

Fig. 5 Sustainability indicator groups (Source: Authors)



Work environment and vision and mission of the organisation are considered as the most important indicator groups of a social dimension of sustainability. Both indicator groups got 13 points. Among the Environmental dimension, the most important and commonly met indicator group is energy, though other indicator groups such as waste, water and transport are considered quite often as well. For the third economical dimension, the most important indicator group is purchases. The final most often used indicator, especially related to EIs, is curriculum and research.

Conclusions:

Despite the efforts made by international researchers to measure sustainability, it still remains an important challenge to provide efficient tools. Sustainability assessment has had significant impact on the decisions. Although there are various sustainability performance measurement techniques and tools, only a few of them integrate the environmental, economic, and social dimensions.

The research conducted within the project 'Naturally Sustainable' contributes to a better understanding of the existing SATs and initiatives on different levels. As well, it helps to understand what SATs dimensions and indicators play the most significant role in the sustainability assessments and initiatives.

Funded: ERASMUS+ project 2021-1-LV01-KA220-VET 000025436

SECTION IIV

Collection of additional educational and gamification materials

Section 4.1. List of Movies

Section 4.2. List of Mobile Applications on Sustainability

Section 4.3. List of Books

Section 4.4.: List of Assessment Tools

Section 4.5. List of Simulations & Games

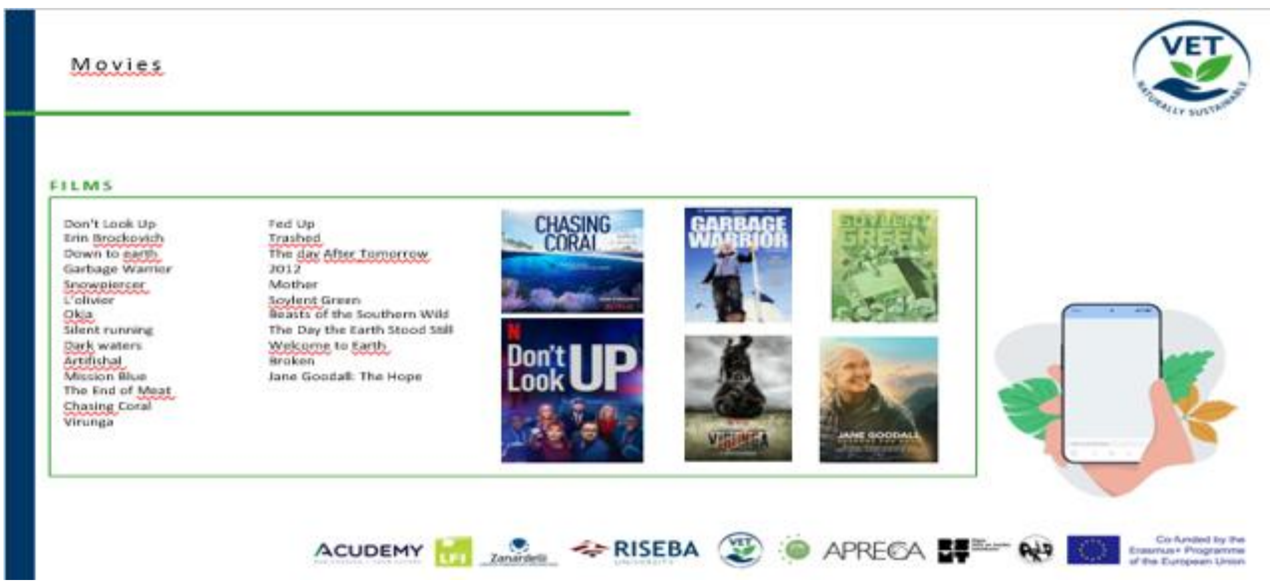
Section 4.6. Comparative analysis of the study platforms & communication platforms

PLEASE SEE PLATFORM FOR MORE DIGITAL MATERIALS & GAMES

https://naturallysustainable.global

Section IV. Collection of additional educational and gamification materials

4.1. List of Movies



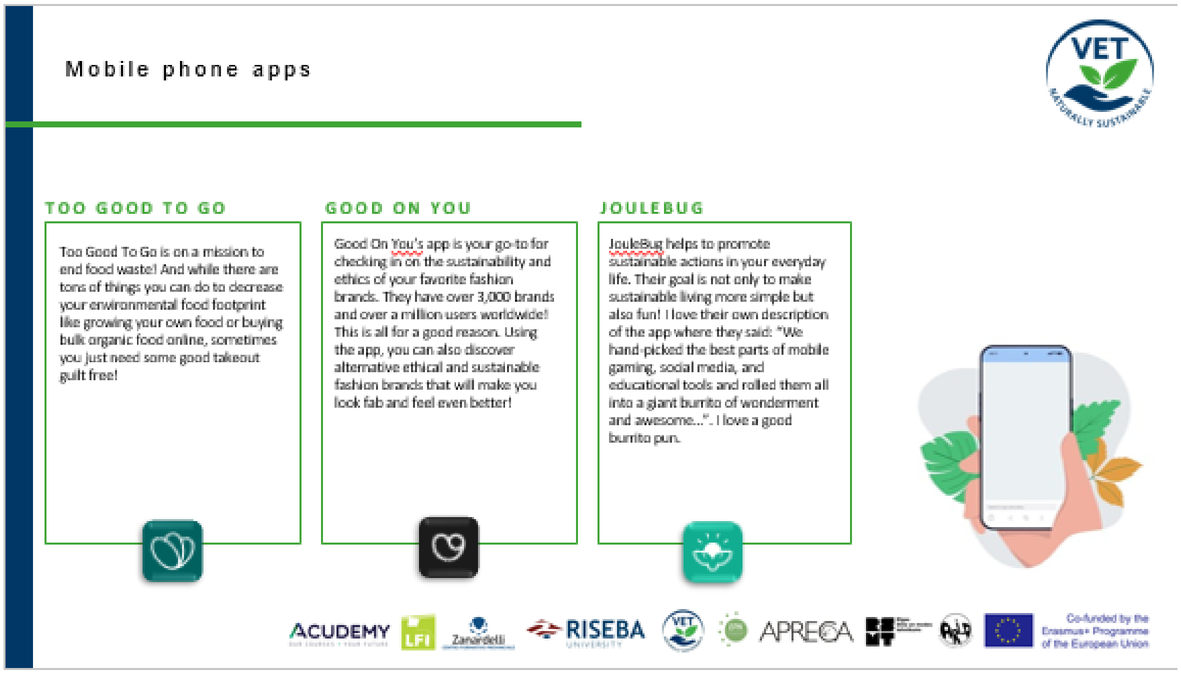
More movies to choose and to see:

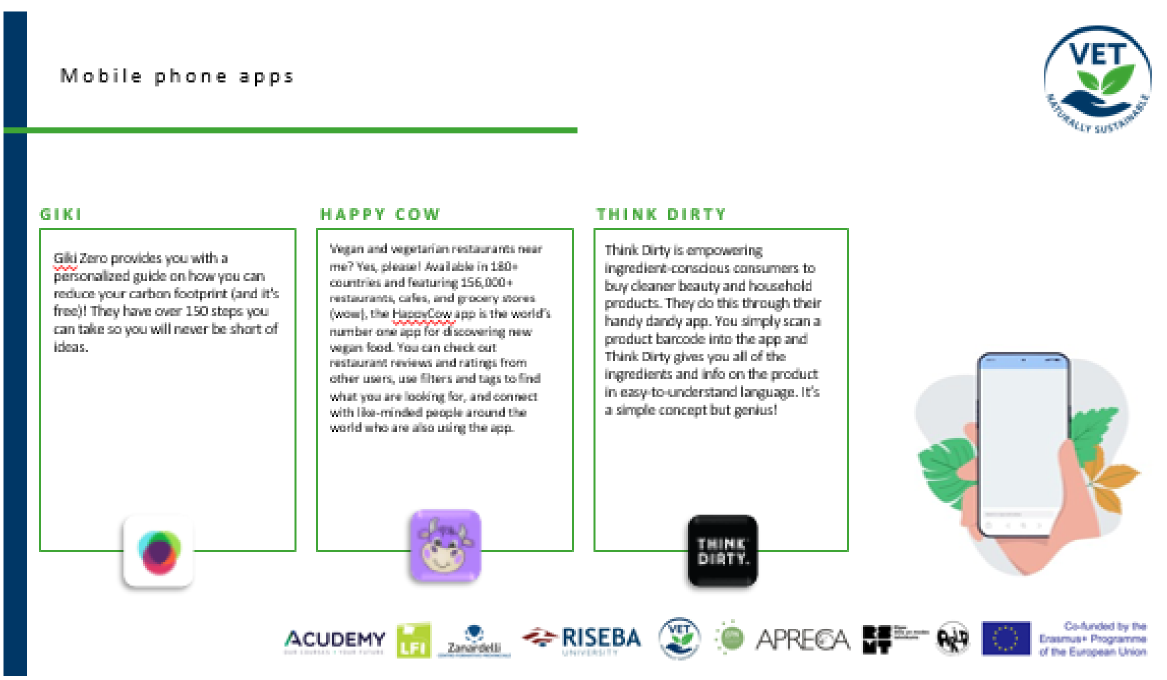
https://www.peacejusticestudies.org/films/

4.2. List of mobile phone applications

4.3.

Green apps for my phone? They are the real deal! By using sustainability apps, not only can we offset our emissions from using our tech devices, but we can adopt more sustainable eco-habits and encourage others to do the same!





Mobile phone apps

ECOSIA

Ecosia is a not-for-profit search engine (think Google or Microsoft Bing) that donates its profits from ad revenue towards tree planting initiatives. They function like any other browser. According to Ecosia, "the Ecosia app is based on Chromium and gives you an intuitive, fast, and secure browsing experience with everything you need, including tabs, incognito mode, bookmarks, downloads, and a built-in ad blocker."

THREAD UP

ThreadUp is an online retailer where you can buy and sell clothes online. Thrifting and selling secondhand items is made even easier using their app, where you can find brands like Gap, Gucci, Lululemon, Zara, Ann Taylor LOFT, and more! They have hundreds of new listings going up every day so you are likely to find what you're looking for, or are just going to enjoy a browse! In my opinion, ThreadUp is one of the best online best thrift stores for secondhand clothing out there.

WELL.CA

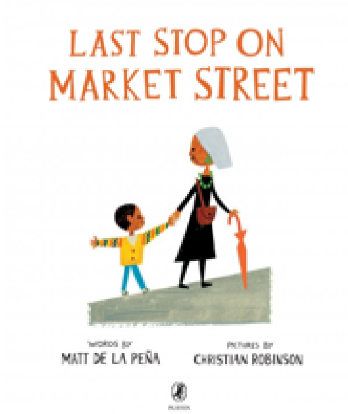
Well.ca because has TONS of green and natural cosmetic brands and it has a great amazon alternative for your green beauty and skincare. While they do carry some conventional products, their zero waste, green cleaning, and natural skincare section is honestly unmatched.

4.4. List of books

SDG 1 No Poverty

Serafina's Promise
This tale of one girl's aspirations to be a doctor is a sad and unflinching depiction of poverty in Haiti but also an uplifting story about the power of love. Serafina both gives to and receives from her parents an understanding and fervent love. It's this nucleus of her family which supports her through all hardships. This is a thoroughly engrossing piece of imagined reality, guaranteed to whet the appetite for more such literature. It is also saturated with warmth in its tales of friendship, experiences that buoy the narrator even as she watches a baby brother fade into nothingness, blighting her faith in humanity.
Author: Ann E. Burg | **Illustrator:** Sean Qualls | **ISBN:** 978-0545535670 | **Publisher:** Scholastic Press

SDG 1 No Poverty



Last Stop on Market Street
A beautifully illustrated book that looks at material poverty through the eyes of a young boy who rides on a bus with his grandmother across town. As CJ points out the things that other people have that he doesn't, his grandmother responds with a positive and hopeful answer to show the beauty of life's simpler things, the wonderful people who they know and meet on their ride through the city, and how rich their lives already are.
Author: Matt de la Pena | **Illustrator:** Christian Robinson | **ISBN:** 978-0399257742 | **Publisher:** G.P. Putnam's Sons Books for Young Reader

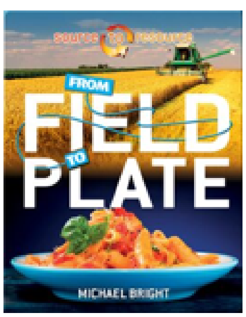
SDG 2 Zero Hunger

Night Stars

- A comic defining Sustainable Development goal 2, emphasing UNICEFs message to end hunger, improve nutrition and promote sustainable agriculture.
- Aimed at children aged 8-16.
- Helps promote discussions about what can be done to reach SDG2.

Source: World's Largest Lesson, Global Goal

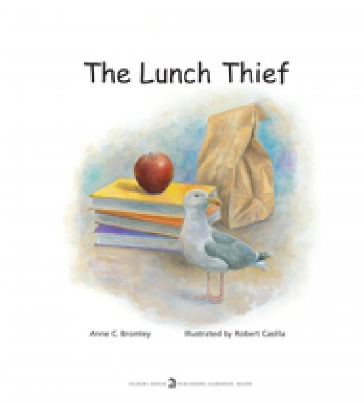
SDG 2 Zero Hunger



From Field to Plate by Michael Bright

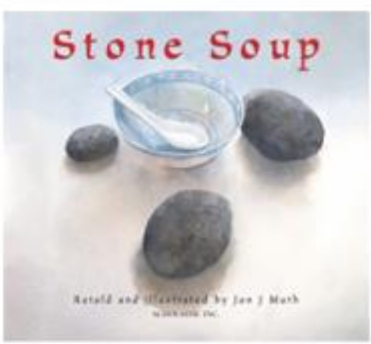
- Helps children understand the fact products in the supermarket shelves actually come from fields all over the world.
- It shows methods of growing, using and delivering food.
- It includes real world discussions of the ethics and worldwide impact of production, distribution and consumption of this global resource.
- Age 8-10
- https://www.getepic.com/collection/1091882/sdg2-zero-hunger

SDG 2 Zero Hunger

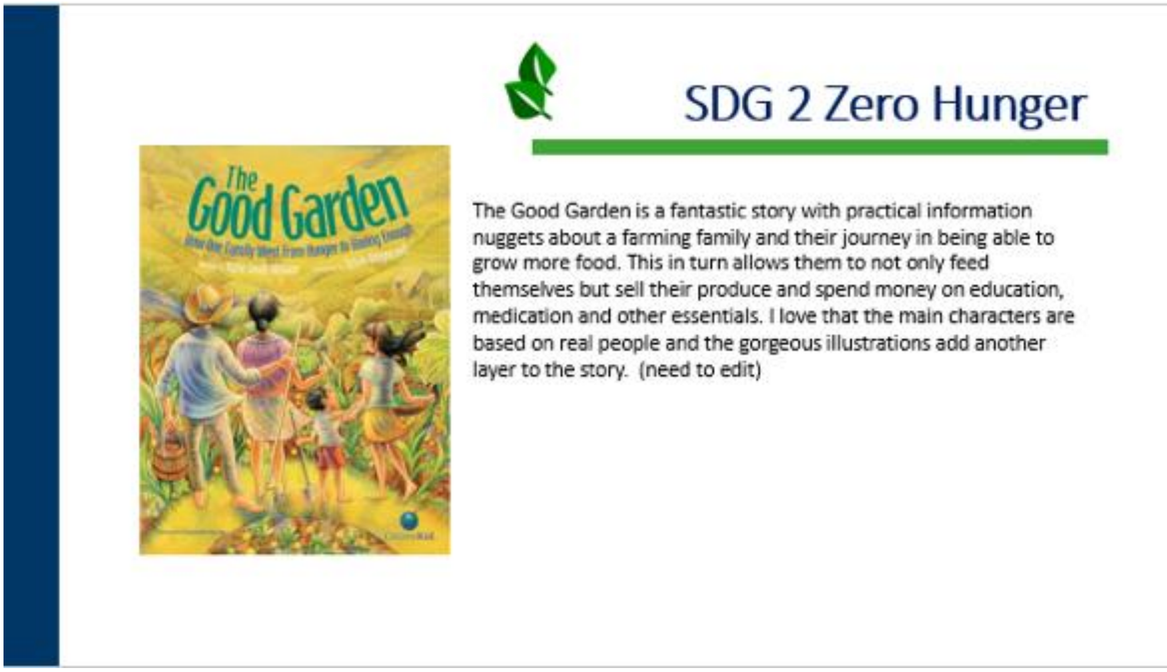


- Heart wrenching story about a young boy who steals other children's lunches at school. One of the classmates notices that his young boy is doing this and tries to understand why. It turns out Kevin's family lost their home to a wildfire. It makes the other boy appreciate his lunches and realise that he could share his lunch.

SDG 2 Zero Hunger



- This book teaches the importance of people working together and looking after each other, like in this book a huge pot of soup brings the whole village together.
- This book illustrates how sharing and generosity are key in the fight against hunger.
- It hightlights the importance of the simple things in life and how when everyone contributes something small, something big and wonderful can be created.



4.4. Sustainability assessment tools and initiatives

Sustainability assessment tools and initiatives.

	Sustainability assessment tool or initiative	Webpage address
1	Sustainability index	https://www.incsr.eu/novertejumi/ilgtspejas-indekss/
2	Eco School	https://www.ecoschools.global/how-does-it-work
3	UI GreenMetric	https://greenmetric.ui.ac.id/
4	Sustainability Assessment Questionnaire	https://ulsf.org/sustainability-assessment-questionnaire/
5	"Assessment Instrument for Sustainability in Higher Education" (AISHE)	https://www.sustainabilityexchange.ac.uk/audit-instrument-for-sustainability-in-higher-educ
6	The Graphical Assessment of Sustainability in Universities (GASU)	http://org-sustainability.com/eng/gasu
7	UNIT-BASE SUSTAINABILITY ASSESSMENT TOOL	https://www.eauc.org.uk/theplatform/usat_unit-based_sustainability_assessment_tool
8	Life Cycle Assessment (LCA)	https://ecochain.com/knowledge/life-cycle-assessment-lca-guide/
9	Dow Jones Sustainability Index (DJSI)	https://www.spglobal.com/esg/performance/indices/djsi-index-family
10	Environmental Sustainability Index (ESI)	https://sedac.ciesin.columbia.edu/data/collection/esi#:~:text=The%20Environmental%20Sustainability%20Index%20(ESI,indicators%20derived%20from%20underlying%20datasets.
11	Sustainable Brand Index™	https://www.sb-index.com/methodology
12	Organizing eco-friendly events	https://www.environnement.gouv.qc.ca/developpement/outils/index.htm#prise_en_compte_principes
13	Education for sustainable development	https://fr.unesco.org/themes/education-au-developpement-durable/outils
14	Analising sustainability	https://www.ifdd.francophonie.org/actions/outils-de-
15	Calculate your carbon footprint	Calculateur carbone Particulier - Fondation GoodPlanet
16	Evaluate sustainability	ESG System - Sustainability Metrics Simplified
17	Evaluate the sustainability capacity of a program	https://www.sustaintool.org/psat/assess/#:~:text=The%20Program%20Sustainability%20Assessment%20Tool%20%28PSAT%29%20is%20a,can%20be%20used%20to%20help%20with%20sustainability%20planning.
18	Express an organization's sustainability performance in three ways	https://sustainabilityadvantage.com/assessments/bsat/
19	Sustainability development goals in Italy	https://www.istat.it/it/benessere-e-sostenibilit%C3%A0/obiettivi-di-sviluppo-sostenibile
20	Sustainability development goals in Regione Lombardia	https://www.svilupposostenibile.regione.lombardia.it/it/strategia-regionale/il-percorso
21	Sustainability development goals in Brescia - A2A (utility, gas, electricity)	https://www.a2a.eu/it/sostenibilita/territori/brescia/sdg
22		https://www.comune.brescia.it/servizi/ambienteeverde/Ambiente/Pagine/Iniziative-del-Settore-Sostenibilit%C3%A0-Ambientale.aspx
23		https://sostenibile.unibs.it/category/sdg/
24	The Europe Sustainable Development Report 2021	https://urly.fi/2wFK
25	National Sustainable Development Monitoring Network	https://kestavakehitys.fi/en/frontpage
26	OKKA Sustainable development certification of educational establishments	https://koulujaymparisto.fi/in-english/sustainable-development-programme/
27	SYKLI Environmental School of Finland	www.sykli.fi
28	EcoCompass	https://ekokompassi.fi/briefly-in-english/
29	Sykli	https://www.kadenjalki.fi/oppilaitokselle/materiaalit/
30	Sitra	https://www.sitra.fi/en/articles/circular-economy-teaching-materials-for-primary-school-upper-secondary-school-and-vocational-school/
31	Syke	https://www.syke.fi/fi-FI/Tutkimus__kehittaminen/Kulutus_ja_tuotanto/Laskurit
33	the National Sports Council, Ministry of Education and Culture	https://www.liikuntaneuvosto.fi/wp-content/uploads/2022/01/Kestava-kehitys-valtion-liikuntaa-ja-urheilua-edistavissa-toimenpiteissa-loppuraportti.pdf
34	The Swan, official Nordic Ecolabel, Ympäristömerkintä	www.joutsenmerkki.fi
35	LUT University	https://www.lut.fi/web/en/news/-/asset_publisher/lGh4SAywhcPu/content/7-questions-and-answers-on-lut-university's-carbon-negativity-target
36	Finnish Association for Nature Conservation	https://www.ekoenergy.org/ecolabel/
37	Cority	https://www.cority.com/environmental-cloud/sustainability-software/
38	EY	https://www.ey.com/en_ie/sustainability/sustainability-assessment
39	EPA (Environmental protection Agency)	https://greenbusiness.ie/sme-efficiency-and-cost-reduction-questionnaire/
40	University College Dublin, AIRO, EPA, GeoHive, Ordnance Survey, OPR	https://enviromap.ie
41	Governement of Ireland	https://www.gov.ie/en/publication/7e1aa-strategic-environmental-assessment-guidelines-for-regional-assemblies-and-planning-authorities/
42	SGS	https://www.sgs.com/en/our-services/sustainability-solutions?utm_source=sgs-website&utm_medium=super-promo&utm_campaign=https://www.sgs.ie/en-gb/sustainability
43	Irish Green Building Council	https://www.igbc.ie/wp-content/uploads/2014/11/IGBC-Guide-NEW-03-10-13-2.pdf

4.5. Comparative analysis of the online study platforms & communication platforms

Review of available online learning platforms for possible use for NaturallySustainable project (Result 2.1.)

Introduction

The analysis covers 15 study platforms available in the market and 10 communication tools for webpages to make the decision on the platform and tools to be used to create Naturally Sustainable output 2/result 2 – study platform.

Analysis of the platforms

1. **Udemy**

Address: https://www.udemy.com/

Overall, it is a great online learning platform for business teams seeking more general skills, but one might not find specific courses for specific needs. Courses are for fee paying but with still some available for free.

Positive:

- Easy to use interface
- Internal quality system
- Participant receives certificate

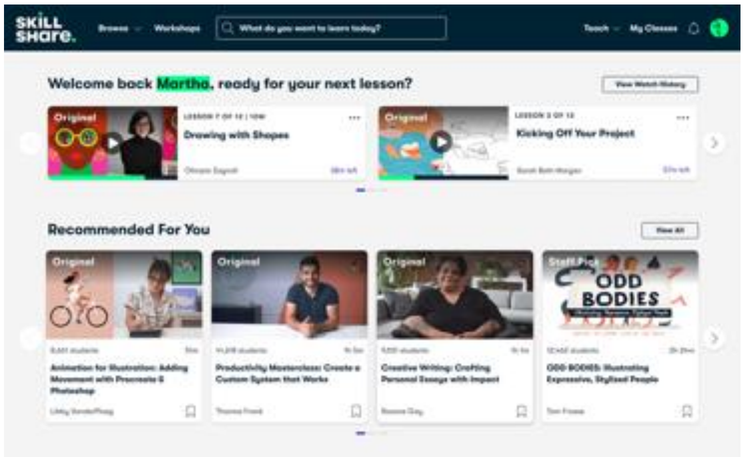
Negative:

- No extensive course creation functionality
- Only video-based courses

- Lack of interaction with educator
- Sometimes certificates are not recognized by employers

1.2.Skillshare

More dedicated to design or visually creative professionals. System let users share their work and engage with fellow students and teachers. Courses are for a fee.



Address: https://www.skillshare.com/

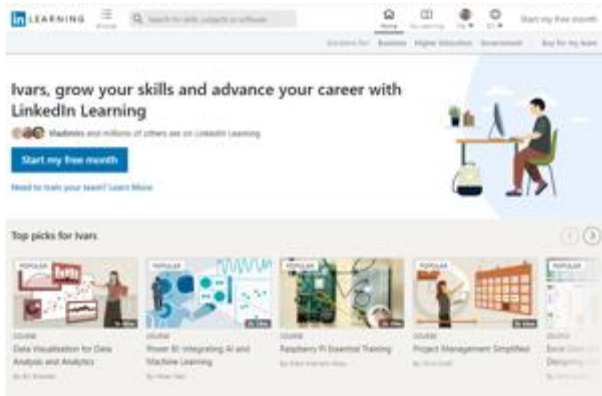
Positive:

- Engaged social community of learners
- Large pool of courses
- Engagement and analytics reports
- Multiple marketing integrations

Negative:

- Only supports video-based courses
- No LMS integration
- Does not offer certificates
- Quality control is challenging

1.3.Linkedin learning



Address: https://www.linkedin.com/learning/

Positive:

- Instructors are vetted for quality control measures
- Appeals to different learning styles (videos, scrolling transcripts etc.)
- Increased interactivity with hands-on practice, exercises and quizzes
- Completion certificates that can be shared on your LinkedIn profile

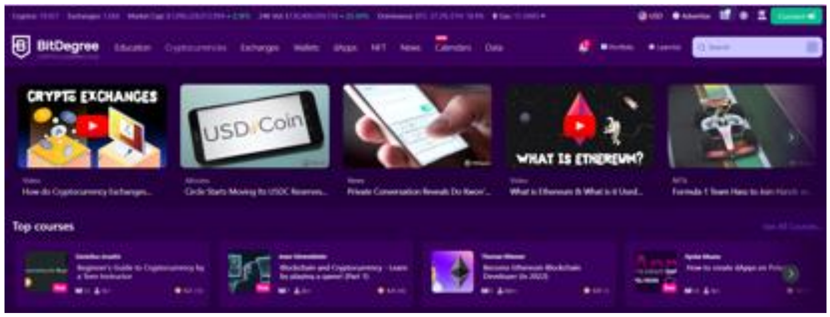
Negative:

- Cannot interact with teachers or fellow learners
- Limited course topics (e.g., only business, tech, and visually creative)
- No LMS, marketing, or analytics integrations
- Completion certificates are not accredited

For individuals or businesses that are looking to upskill their teams in the business, tech, and creative industries.

LinkedIn Learning offers a monthly and annual plan as an all-access pass for individuals.

1.4.BitDegree



Address: https://www.bitdegree.org/

Positive:

- Blockchain powered to facilitate cryptocurrency rewards
- Offers recognized blockchain completion certificates
- Provides a gamified learning environment
- Affiliated with recognized post-secondary institutions and businesses
-

Negative:

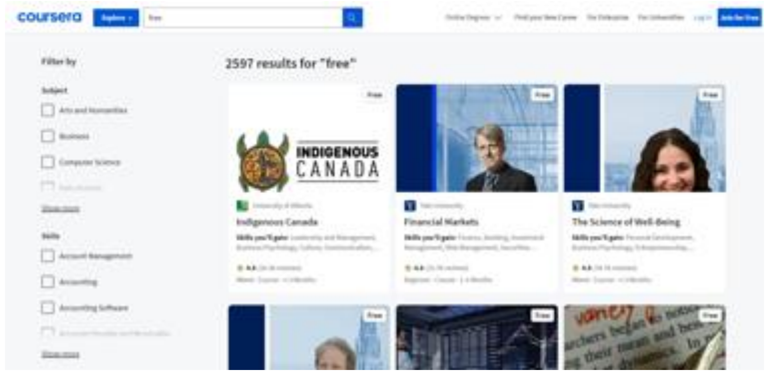
- Community features are quite limited
- Relatively fewer courses offered
- Course topics mainly prioritize crypto, programming, and tech
- Not conducive to training business teams
-

BitDegree is mainly useful for individuals looking to enter the workforce or get an education.

Partially paid platform.

1.5. Coursera

Coursera is more of an online learning platform for educational institutions, since it offers a vast variety of online degrees, specializations, and certificates – many of which are accredited by some of the world's most prestigious academic institutions. Coursera is used by students who are looking for a first-rate education on an online learning platform that offers recognized completion certificates and university diplomas.



Address: https://www.coursera.org/

Positive:

- Well-structured, high-quality courses from reputed institutions
- Transcripts accompany videos to cater to different learning styles
- Completion certificates that are recognized by many employers/institutions
- Follows a classic academic style of learning
-

Negative:

- Limited range of course topics (mainly business and science)
- Some courses have start and end dates, meaning you might miss out
- Large body of learners means instructors often don’t respond to your questions or provide feedback
- For assignments requiring peer reviews, particularly in the less popular courses, this could take a long time, which means you will have to wait longer for your certificate of completion while continuously paying for your monthly subscription.
-

Monthly or annual payment. Some courses are available for free.

1.6. EdEx

Course topics are more academic than professional in nature. In general, paid courses with very limited free version.

Address: https://www.edx.org/

Positive:

- Offers accredited, highly recognized completion certificates
- Offers courses from prestigious organizations like Harvard and MIT
- Most courses can be completed at your own pace
- Wide variety of course topics and learning programs to choose from
- Partially free online learning platform that lets you audit courses

Negative:

- Because partners can create courses as they see fit, there is a lack of uniformity in course structuring
- Relatively lower course count (3,000+) compared to other platforms
- Not so intuitive interface

1.7.iSpring Market

Address: https://www.ispringsolutions.com/ispring-market

iSpring Market is a top online learning platform because it allows you to create and upload

learning content in practically any format – audio, video, PowerPoint presentations etc. It provides powerful analytics, providing insight into both trainee progress and your sales performance. Despite its ease of use, it has a very rich feature set, both of which are necessary for content creators who would like to get their courses to market and start making money as quickly as possible.
Only paid courses, starting from over 50 EUR per month.

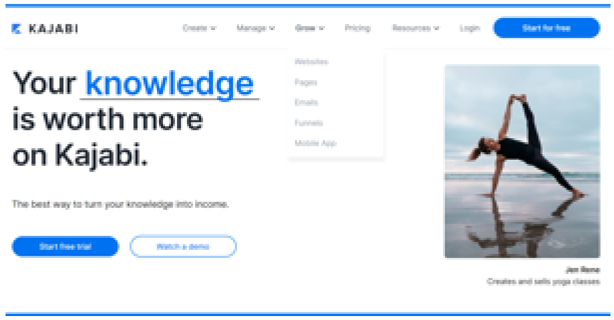
Positive:

- Maximum flexibility with course content types
- Hosts courses with sophisticated interactions
- Gamified learning environment with points, badges, and leaderboards
- Incentivizes sales with limited time offers and coupons
- Issues completion certificates
- Detailed analytics for tracking learner engagement and progress

Negative:

- Basic marketing options
- Basic admin options
- Completion certificates are unaccredited

1.8.Kajabi



Address: https://kajabi.com/

Positive:

- Well-designed user interface and user experience
- One-stop-shop solution from course development to sales
- Highly customizable from a branding and marketing perspective
- Great video streaming abilities
- Beautiful, professionally designed landing pages

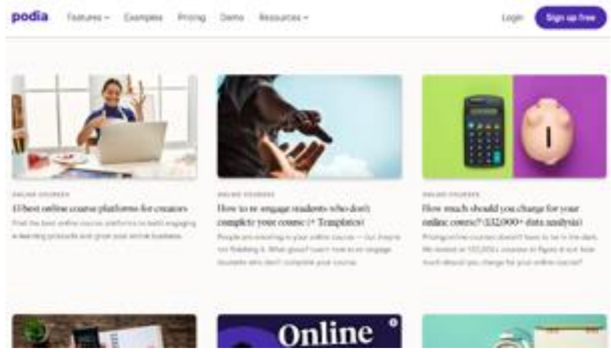
Negative:

- Lacks interactivity and student engagement features
- Does not issue completion certificates
- Steep learning curve, especially during initial setup stages
- Pricier than most other online learning platforms
-

Kajabi is not as dedicated to course creation as it is to selling courses.

Pricing starts from over 100 EUR per month.

1.9.Podia



Address: https://www.podia.com/categories/online-courses

Podia is one-stop-shop solution for your course creation, marketing, and selling needs. No in-built course development tool. You will have to get your content in order beforehand.

Positive:

- Easy to use, minimalist interface
- Membership site integrated within your digital storefront
- Unlimited everything (bandwidth, courses, etc.)
- Integrated email marketing, including affiliated marketing
- Student progress tracking

Negative:

- Limited customization options
- Lacks key learning tools (graded assessments, completion certificates, etc.)
- Basic reporting and analytics abilities
- Inflexible course builder
- Relatively low number of templates for storefront pages

Its minimalist design and built-in features eliminate the learning curve for even the most technologically challenged among us. Podia is most useful for people with simple courses and marketing needs.

1.10. iSpring Learn

Address: https://www.ispringsolutions.com/ispring-learn

An LMS jam-packed with essential and sophisticated features, but boasts a well-designed and intuitive interface. Course authors and admins can effortlessly upload virtually any format of training materials – video, audio, reference documents, or interactive SCORM content – before delivering them to learners.

Positive:

- Comes with a free sophisticated authoring tool as well as a built-in authoring tool for simpler courses
- Well-designed, intuitive user interface for even the most technologically illiterate
- Integrates with Zoom and MS Teams effortlessly for blended learning courses
- Mobile app that works on both Android and iOS
- 24/7 live support

Negative:

- No eCommerce features
- No custom reports
- No support for courses published in xAPI or cmi5 formats

iSpring Learn is a solid LMS for both new and seasoned eLearning professionals. The interface is clean and easy to use.

Pricing starts from about 3 EUR per user per month

1.11. SAP Litmos

SAP Litmos is a popular LMS for businesses that prides itself on being user-centric. It’s not only an LMS – it’s also a training platform with a large content library of compliance, sales, security, and employee skills training courses. The interface is easy to use and software support is offered in multiple languages.

Positive:

- Affordable pricing packages
- Comprehensive suite of learning tools
- Applicable across all industries
- Supports many course formats, including SCORM
- Includes a library of useful training courses across many industries

Negative:

- Sligh Slight learning curve if you’re new to LMSs
- No tagging option, which slows down the assessment and feedback process
- After assigning a course to a team, individual users cannot be removed

It’s almost exclusively geared towards businesses and is optimized for companies of any size – be they in-house or distributed. However, its large library of courses might or might not be of use to you, depending on the nature of your business.

Custom pricing depending on reqirements.

1.12. LearnUpon

Address: https://www.learnupon.com/

In addition to supporting text, images, audio, videos, and slide-based presentations, it’s both SCORM and xAPI compliant. You can also assign roles in order to tailor training to assigned groups and individuals. LearnUpon’s ‘learning portals’ allow you to train multiple audiences from a single system. LearnUpon is like a macro-LMS, and each portal is like a micro-LMS that can be styled and branded according to the profile and needs of the group of learners.

Positive:

- Tailored training via learning portals
- Completion certificates
- Can create branded digital storefronts
- Offers multiple integrations (Salesforce, Zapier, HubSpot, etc.)
- Offers multiple integrations (Salesforce, Zapier, HubSpot, etc.)

Negative:

- Administrative flexibility is relatively low
- Doesn’t work directly with HTML5 courses
- Expensive

Primarily geared toward businesses, LearnUpon also serves as an online educational learning platform. It's most suited for creators of highly versatile content formats. As well, its extra user management features, especially learning portals, show how innovative LearnUpon is.

Pricing starts from above 1000 EUR per month.

1.13. Blackboard Learn

Address: https://www.blackboard.com/

Blackboard Learn has a wide array of educational tools in its arsenal, but remains user-friendly. It allows educators to create and manage online courses, deliver assessments with automatic grading, and interact with students. Furthermore, it supports both live and self-paced training. It provides learning portals to deliver unique training experiences to different groups of learners.

The user interface is quite simple, making it easy to navigate, but too many bare bones without some third-party plug-ins. There are numerous plug-ins for robust reporting, community engagement, etc.

Positive:

- Provides smooth and efficient bidirectional communication between educators and students

- Easy to navigate both the learner's side and teacher's side
- Numerous plug-ins to fill in any functionality holes
- Includes the Blackboard SafeAssign plagiarism detector

Negative:

- Includes the Blackboard SafeAssign plagiarism detector
- Mobile app still functions but is a bit 'buggy'
- Long setup time; but once it's up and running, it's easy to maintain

Because of Blackboard's heavy academic bent, it's a common online learning platform for k-12, high-educational institution, and postsecondary learning environments. Both teachers and students will find it is of great use.

Pricing starts at over 9000 EUR per year.

1.14. Canvas

Canvas is online learning platform with an academic focus. However, online educators often use it to create independent courses – that is, they're not affiliated with any type of educational institution or business. One of its best features is that it's extremely flexible in terms of supporting different training formats. Canvas provides website creation capabilities for hosting your course. With hundreds of integrations, including Microsoft Teams, Google Workspace, and Adobe Creative Cloud, you can do almost everything under one roof.

However, Canvas' gamification abilities don't quite hit the mark as far as online educational learning platforms go. But it makes up for that with its social learning community. Educators can connect with students through audio and video, and send individual or mass messages. It also offers many student collaboration tools, discussion boards, video conference workshops, shared online files, etc., that allow them to connect with each other.

Canvas is a super secure LMS that can accommodate both your organization and learning objectives.

Canvas is both a paid and free online learning platform.

Address: https://www.instructure.com/canvas

Positive:

- Everything you need is under one roof
- Vast selection of integrations
- Social learning and collaboration tools
- SpeedGrader feature for reducing time spent grading assignments/submissions

Negative:

- Intense learning curve required to unlock its full potential
- Little to no gamification features

1.15. Moodle

Address: https://moodle.org/

Moodle is the biggest name in the open-source LMS realm. It not only enables instructors to host their own website, but it also comes with great learner-centric software, plug-ins, and social learning environments for both students and teachers alike.

It enables self-paced, synchronous, and blended learning for maximal flexibility. Moreover, Moodle makes it really easy to incorporate gamification (e.g., points, badges, achievements, and leaderboards) to enhance user engagement. Because it's SCORM-compliant, you can upload eLearning with even the most complex interactions, including simulations, branched dialogue scenarios, and 3D virtual learning environments. In addition, Moodle is compatible with a solid assortment of plug-ins to add extra functionality.

Positive:

- Extremely customizable; there are hundreds of parameters and settings to choose from
- Comes with a highly functional mobile app
- Built-in assessment tools with a quiz bank that can randomize questions
- Integrates with H5P, which enables highly interactive content

Negative:

- Reports and analytics are limited
- Requires a steep learning curve for newbies
- Interface is chaotic and can be confusing for beginners
- Doesn't offer learning paths

As an online educational learning platform, Moodle is most suited for academic contexts, especially since it supports SCORM content and offers decent user management functionality.

Moodle is a free online learning platform.

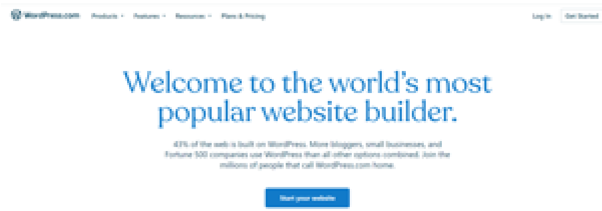
2. Website management systems

2.1. Content Management Systems (CMS)

A content management system (CMS) is a software application that handles the basic infrastructure of creating websites. With a CMS, users can focus on the front-end areas of website building, such as customizing the website design and managing content.

2.2. WordPress

WordPress can work for all levels of users, from those who wish to start a simple blog to those creating a complex site.



Address: https://wordpress.com/

Over 42% of all websites use WordPress, making it the most popular CMS platform. WordPress is an open-source software known for its flexibility and scalability. Moreover, its gallery of over 58,000 WordPress plugins helps users create any type of website.

Positive:

- The cost is flexible to individual needs and budgets
- Customize using an extensive gallery of free WordPress themes and great plugins.

Negative:

- Not all WordPress plugins and themes are reliable or of high quality.
- Lacks personal customer support, instead, relies primarily on forums, tutorials, and documentation.

2.3.Joomla

Address: https://www.joomla.org/

Joomla is an open-source CMS that powers over 2% of all websites. Compared to other CMS platforms, Joomla's core software offers more functionality right away, such as its multilingual features. However, the initial setup can be challenging for non-technical users.

Positive:

- Manage a site with hundreds of sub-pages efficiently.
- Use 2-factor authentication to avoid break-ins.

Negative:

- Web development terminology featured in the control panel is not beginner-friendly
- Lack of compatibility between different modules, extensions, and plugins

Joomla is best for professional websites managed by multiple people.

1.4. Drupal

Designed for professional web developers, its flexible API architecture supports different digital platforms. Drupal optimizes its built-in features for better performance and security.

Address: https://www.drupal.org/

Positive:

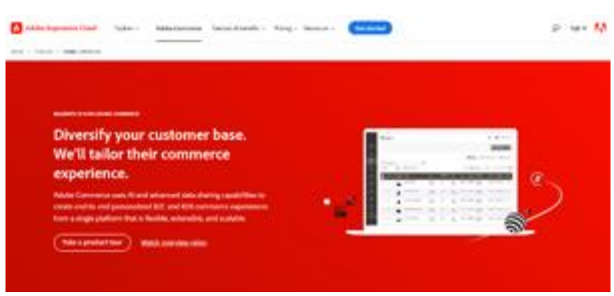
- Less vulnerable to security threats as the CMS software conducts security tests regularly.
- Built-in modules help to expand the functionality of a site.

Negative:

- Requires coding knowledge of PHP, CSS, and HTML
- Managing the platform, such as upgrading to a new version, can be time-consuming
-

A good CMS platform for advanced users with great technical knowledge to create large-scale and complex sites.

1.5. Magento



Address: https://business.adobe.com/products/magento/magento-commerce.html

Magento is one of the best eCommerce platforms out there. The CMS software focuses on security, SEO, and customization to optimize all types of eCommerce sites. As it caters to bigger online stores, the platform is powerful enough to feature a high number of products and orders.

Positive:

- Manage multiple stores in various locations, using different languages and currencies
- Content management is responsive to mobile devices

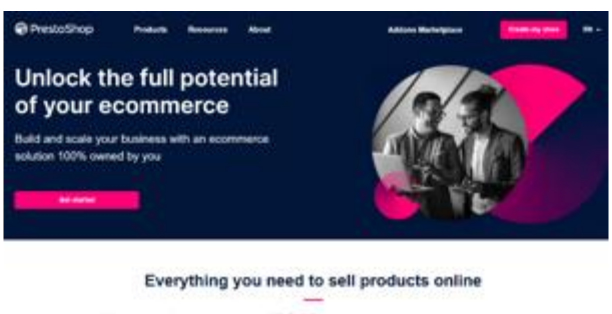
Negative:

- Complicated initial setup
- Customizing design and listing products is time-consuming
-

Magento is great for medium to large-scale eCommerce stores.

1.6. PrestaShop

PrestaShop is an excellent platform for small to medium-sized eCommerce businesses.



Address: https://www.prestashop.com/en

PrestaShop is a CMS platform for small to medium-sized eCommerce businesses. Its active community and broad set of features make it a highly flexible online store management platform. Its comprehensive interface also helps to enter and monitor products easily.

Positive:

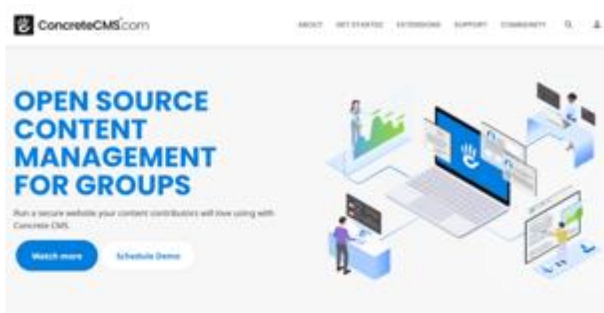
- Access to user-friendly eCommerce features for users of all skill levels to create a professional online store
- There is a broad selection of themes and modules for customization

Negative:

- Lack of scalability to grow into a bigger eCommerce store
- Relies on extensions and plugins, which can be costly

1.7. Concrete5

This CMS platform is best for creating a complex website for medium to large businesses.



Address: https://www.concretecms.com/

Concrete5 is open-source software designed for users with minimal technical knowledge. It offers drag-and-drop content blocks that simplify content management and customization. Its secure user management also makes it a great CMS for websites with multiple developers.

Positive:

- User-friendly interface with a flexible style editor
- Built-in SEO tools, such as adding meta descriptions and creating sitemaps

Negative:

- No community of developers or documentation
- No autosave when making changes

1.8. Contentful

Address: https://www.contentful.com/

Contentful is a headless CMS, meaning that the content is not attached to a web page. Instead, it uses an Application Programming Interface (API) to present content as data. Because of that, the platform has a steep learning curve for non-technical users.

Positive:

- Adaptable to all digital platforms, from web browsers to mobile apps
- Flexible with different types of content

Negative:

- Focus on the back-end without adjusting the actual layout
- Creating content on different platforms requires technical knowledge

Contentful is excellent for companies or individuals creating a custom website that incorporates other digital platforms.

1.9. Sitecore

Sitecore is one of the leading enterprise CMSs in the market and is built on ASP.NET. This platform features content creation for multiple digital platforms. This flexible CMS integrates more marketing tools than other popular CMS platforms.

Address: https://www.sitecore.com/

Positive:

- Intuitive and user-friendly interface
- Features that allow for more support of data privacy in compliance with the latest General Data Protection Regulation (GDPR)

Negative:

- High cost in comparison to other CMS options
- Lack of support, community, and updated documentation
-

This CMS platform is a good option for large-scale organizations that aren't tight on a budget.

2.9. Umbraco

Address: https://umbraco.com/

Umbraco is one of the best WordPress alternatives that is open-source, user-friendly CMS based on Microsoft's .NET framework. Unlike other open-source platforms, Umbraco is backed by a team of experts that provide enterprise-level support.

Positive:

- Displays content on many different digital platforms
- Security patches to secure the system directly after identifying a threat

Negative:

- Many plugins aren’t available for extended functionality
- No community of developers
-

The Umbraco CMS is suitable for companies with different types of content.

2.10. Sitefinity

Address: https://www.progress.com/sitefinity-cms-b

Sitefinity is a great CMS platform for digital marketing. What makes this platform unique is that businesses can engage and retain visitors with ease. In addition, the platform helps to create a personalized visitors’ journey.

Positive:

- Deliver insights to help optimize visitors’ journeys
- Use a drag-and-drop interface to create and manage design and content efficiently

-

Negative:

- Limited third-party integrations
- No automatic updates
-

Sitefinity’s multi-channel experience is great for large websites with high traffic that operate in a fast-paced environment.

2.11. Kentico

Address: https://www.kentico.com/

Kentico is a headless CMS – a cloud-based content management software that uses an API. The platform can deliver content efficiently on different digital platforms. In addition, its great marketing tools help to reach more audiences and engage with visitors.

Positive:

- Easy to enhance digital strategy, including content management, eCommerce, and online marketing tools
- Implements the latest security protocols and data backup features

Negative:

- The cost is higher than other CMS platforms
- Requires technical knowledge to grow a site
-

Great for businesses building a large site that needs multi-functionality.

2.12. Magnolia

Address: https://www.magnolia-cms.com/

Magnolia is an open-source CMS designed to provide users with tools that support demanding digital experiences. The platform uses the Java language, making it an enterprise-grade software with excellent reliability and stability.

Positive:

- Great scalability to grow a site
- Easy to edit pages and personalize content

Negative:

- Lack of support and community
- Requires experience in the Java language to make use of certain features

This CMS is great for tech products and large-scale businesses that can invest more time to create various platforms.

2.13. Hubspot CMS

Address: https://www.hubspot.com/products/cms

HubSpot CMS is one of the top CMS options to create a website without the need for constant updates and edits. It’s perfect for beginners as well since this platform’s user-friendly tools can help publish a website without technical knowledge. Its great integrated sales and marketing tools also help to increase reach and engagement.

Positive:

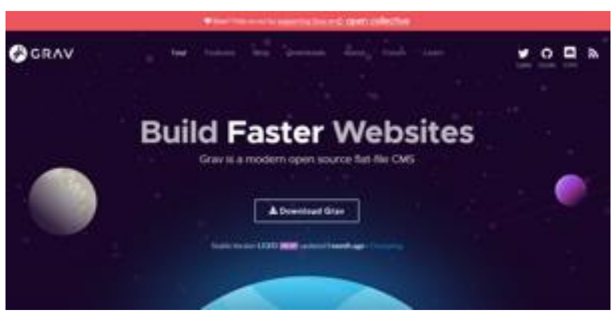
- Increase engagement using email and social media tools
- Provide a dedicated team to monitor the platform 24/7 to check for attacks and handle regular virus scans

Negative:

- Limited gallery for plugins and themes
- No direct technical support
-

The HubSpot CMS is a top choice for marketers and basic websites.

2.14. Grav



Address: https://getgrav.org/

Grav is a file-based CMS platform with simple navigation. Its non-traditional database makes the platform lighter and faster than other CMS software. However, its graphical interface requires some technical knowledge to use.

Positive:

- Fast installation with minimal server space needed
- Powerful taxonomy functionality to create relationships between pages

Negative:

- No library to view all files uploaded to a site
- Lack of inventory management for eCommerce sites
-

Grav is suitable for blogs and portfolios.

2.17. Typo3

Address: https://typo3.org/

Typo3 caters to enterprise-level websites as it offers great scalability. What makes it unique is that it separates the web front-end from the administration interface. As a result, it is harder for hackers to disrupt the websites' properties.

Positive:

- Resolves security issues automatically
- Excellent flexibility and scalability to create a website for both small and large businesses
-

Negative:

- Complicated setup for non-technical users
- Has a steep learning curve for customizing content

-

Typo3 is a great pick for enterprise-level sites.

Conclusions

1. Since there was a popularity among LMS users, open source and waste amount of available plugins, it was decided to use the Moodle platform.
2. It was decided to build a website based on WordPress which offers a more extensive gallery of plugins and themes in comparison to other CMS options. WordPress provides great flexibility to create any type of website and has great support and extensive use in the world.

4.6. Collection of simulations and games

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Internet resources:

1. abc teach –unit with activities, pictures on reefs
   http://abcteach.com/directory/theme_units/habitats/coral_reef/

2. Bermuda Biological Station for Research & College of

Exploration www.coexploration.org/bbsr/coral/lessons/

3. Bridge Ocean Sciences Teachers Resource Centre www.vims.edu/bridge/
4. Coral Reef Alliance – online catalog, photobank, lessons www.coralreefalliance.org
5. CREST (Coral Reef Education for Students and Teachers) Manual www.marine.org/content/CREST/CREST_manual.html
6. Discovery Educational institution www.Discoveryeducational institution.com
7. Endangered Reefs – information on reefs in danger www.eco-pros.com/endangeredreefs.htm
8. International Coral Reef Information Network www.coralreef.org/tools/teachers.html
9. Ocean planet http://seawifs.gsfc.nasa.gov/OCEAN_PLANET/HTML/search_educational_materials. html
10. Add more from presentations

Erasmus+

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