



TECHSTER

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A Teacher's Guide

*for Tools Implementation in
Classroom*



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With the assistance of the TECHSTER Project partners.



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Preface

Pedagogy phrase is most generally used to represent the conventional mode of formal education in which a teacher (e.g., teaching fellows, senior teaching fellows, assistant professors, associate professors, and professors) guides the students through a pre-selected curriculum and shares his or her academic experience and knowledge. Pedagogic research and pedagogic literature increasingly advocate that ‘top-down’ transformation does not necessarily ‘mandate what matters’, and that it is the work of teachers, that is most influential in determining the achievements of students. In this mode, the teacher decides what needs to be recognised, how knowledge and skills are to be communicated, and how the transfer of knowledge and skills to the students will be evaluated. It is a great privilege to have the opportunity to develop and provide this *Teacher Guide* to upskill the HE teachers’ and students’ (e.g., all those students with non-business and management background) skills in a classroom setting.

In this first edition of the *Teacher Guide*, we place clear emphasis on the importance and use of different types of tools – *predominantly used in the business and management discipline* – and their implementation in a classroom setting, defining the aim of the tools (both with general perspective and what the aim in relation to HE teachers), providing a description of the tool and defining its key features, presenting the benefits (both in general and specific to HE teachers and students), how the tool is implemented (both with a general overview with examples of classroom activity), presenting examples of the use of tools by leading organisations, use of tool in a classroom setting, and finally some links to general learning resources (e.g. YouTube videos, articles, and web sources).

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1. A Teacher's Guide to Tools Implementation in Classroom

The *Teacher Guide* aims to support and educate HE teachers and students (i.e., those with technical skills, knowledge, and backgrounds) on tools taught and applied in the business and management world. The content presented will provide clear guidance on how to embed entrepreneurship tools into the classroom, how to teach and assess HE students, including lesson plans on tools implementation that are simple enough for HE teachers to apply within a classroom setting.

The *Teacher Guide* includes detailed description with practical examples on a variety of tools – 15 in total. All these tools are covered within the following five themes:

- Business Modelling Tools
- Sustainability / Environmental Issues Tools
- Pitching and Digital Storytelling
- Creativity and Problem Solving
- Cooperation and Workflow Organisation

This *Teacher Guide* is aimed at HE teachers in technical education and its purpose is to provide them with detailed guidelines on how to implement the 15 tools in the classroom. It will also include special sections on how the best learning emerges in the context of interaction that make learning challenging, engaging and meaningful as well as the internal situation at school on how to get management commitment.

2. Introduction to TECHSTER Project

TechSTER aims to enhance entrepreneurial and soft skills and behaviours of teachers and students in Higher Education Institutions (HEIs) by creating an entrepreneurial dimension to technical education and strengthening the local and European (industry) network of HEIs. This offers a solution to European Union (EU) wide unemployment by enabling young people to create their own employment and become successful entrepreneurs that look beyond country borders. The materials will be easy to implement in existing education, where the primary goal is not specifically to teach how to become an entrepreneur.

TechSTER has a strong added value at EU level, as it encourages the cooperation of different nationalities, cultures, and fields of education. The lack of entrepreneurial behaviour of technical students has been recognised across Europe, HEIs have a common issue to work on. By collaborating internationally, it is possible to gather best practices, examples, and experiences EU-wide. As the project focuses on entrepreneurial and soft skills, it is needed to explain both, taking into attention that soft skills are part of entrepreneurial skills. Entrepreneurial skills, in the context of the TechSTER project, are not primarily meant to start a business, but for the students to use in future workplaces.

In this case, it is more about trying something new or making the process better to enhance efficiency or increase results while working for an employer. These skills also contribute to the process of starting their own business. These skills could be problem-solving and analytical skills, but also influencing skills. Soft skills are complementary to hard skills (which are needed

for a specific job) and involve living and working with other people. Soft skills are related to communication, teamwork, leadership, and organisational skills. There are different academic disciplines and corporate cultures which have different terminologies for each of the concepts.

3. Introduction to the Innovative Tools – Development of Soft Skills

The purpose of the *Teacher Guide* is to substantiate the use of modern tools to achieve the desired result in any field, providing teachers and students with technical background with competitiveness and personnel leadership in the digital era. Through this *Teacher Guide* particular attention is paid to the study of the effectiveness of interactive tools aimed on the development of teachers' and students' cross-cutting competencies, and soft and communication skills, as well as modern teaching trends, such as networking and edutainment, the value of which is allowing specialists to better navigate in a rapidly changing world, in various new directions, and understand the flows of new information.

3.1 Business Modelling Tools

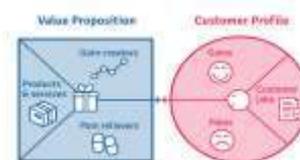
Organisations, small or multinational, continually enhance their processes over time, striving to make them efficient and cost-effective. In this context, business modelling tools play a major role in enabling organisations to visualise and assess their processes. However, the need for expert modelling is often increased when the financial exposure is significant, data sets are large and/or complex, and numerous stakeholders are involved. Modelling is a specialist skill set and requires core understanding and implementation of the relevant tools e.g., modelling tools like value proposition canvas, business model canvas and business model navigator. In general, these tools support in providing a holistic view of the organisation, identifying areas for improvement, enabling transparency, flexibility, and agility to change the course of action, and identifying best practices and implement standardisation in organisations.

Following three tools explain how HE teachers can make use of business modelling to offer the relevant knowledge and skills to understand and enhance performance across an organisation.

3.1.1 Value Proposition Canvas

- **Aim**

The Value Proposition Canvas (VPC) *“is a tool which can help ensure that a product or service is positioned around what the customer/consumer values and needs”* i.e., a tool to understand an organisation's product or product-line value from the customer's/consumer's perspective. In essence, it is a pledge to deliver, convey, and acknowledge value. It is also a customer's/consumer's conviction in how value (benefit) will be given, experienced, and obtained. A value proposition can be applied to a full company, or sections of it, as well as customer/consumer accounts, products, and services.



HE teachers will need to explain how to construct a value proposition based on a review and analysis of the advantages, costs, and value that a firm can give to its

customers/consumers while teaching this technique to students in the classroom. The overall goal of their lecture should be to convey to students the concept of VPC, followed by its use and applicability. In the following sections, HE teachers will get a greater understanding on what this tool is about (general) and how it can be used within the classroom to make students understand the concept in more detail. While teaching students about VPC, students will be able to gain better understanding on the benefits of employing VPC tool to understand customer/consumer preferences while purchasing a product or service.

- **Description**

VPC was developed by Alexander Osterwalder and Yves Pigneur to complement the business model canvas. Michael Lanning and Edward Michaels are credited with coining the term “Value Proposition” (VP) in a 1988 staff paper for the consulting company McKinsey and Co. The authors define value proposition as “*a clear, basic explanation of the benefits, both tangible and intangible, that the firm will provide, coupled with the approximate price it will charge each client segment for those services*”. This tool is basically a simple paper sheet with a large leftward square and the rightward circle. It is a geometrical collection formed by the customer segment canvas and the value proposition template. Together they are meant to impart an understanding of what features and functionalities a product should possess to meet the requirements of a particular category of users (customer/consumer).

The analysis of VPC is divided into six steps, based on the value proposition builder model:

- **Identifying** and analysing market sectors, specific clients, or target those clients for whom the solution has the potential to generate value and profitability.
- **Analyse** and identify the value experience that the organisation’s activities provide to clients. Positive, negative, and neutral experiences must be characterised. The value proposition’s effectiveness is dependent on getting real customer or employee feedback.
- **Define** the offering mix that will enable the defined target market segment to benefit from the value experience.
- **Examine** the benefits of the offers considering the value experience provided to the target market. Benefits have a cost component, which includes pricing and customer risks, allowing value to be calculated as “Value = Benefits minus Cost”.
- The next point to consider is **alternatives** and **differentiation**: what other options does the market have for the product or service?
- To **guarantee** that the value proposition is substantiated, back it up with appropriate proof.

- **Key Features**

VPC can be shaped either of two circles or squares or other geometric patterns. VPC is formed around two building blocks – customer profile and a company’s value proposition (Osterwalder *et al.*, 2014).

- **Customer Profile/Segment** – Conventionally, the introduction to the canvas commences with the right part responsible for the customer profile/segment. The circle is cut into three pieces where the tasks and expectations need to be defined – those that the customers are going to accomplish, as well as positive and negative experiences associated therewith. In this case, there is no engagement with the product but only with the end user’s challenges.

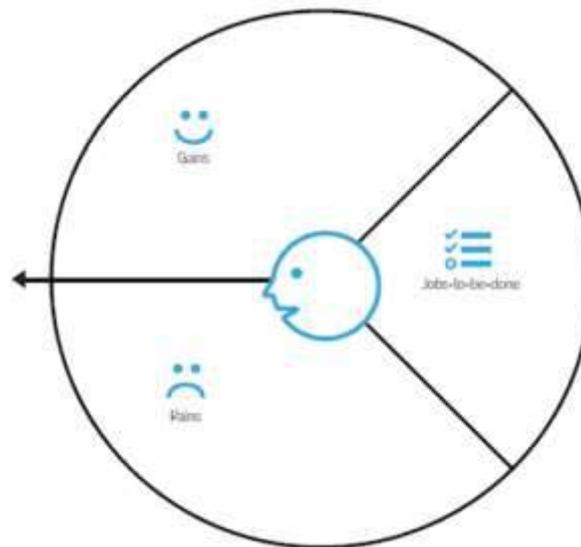


Figure 1: Customer Profile

- **Gain** – the benefits which the customer expects and needs, what would delight customers and the things which may increase likelihood of adopting a value proposition.
- **Pain** – the negative experiences, emotions, and risks that the customer experiences in the process of getting the job done.
- **Customer Jobs** – the functional, social, and emotional tasks customers are trying to perform, problems they are trying to solve and needs they wish to satisfy.

In the customer profile/segment, clients’ thoughts are considered and assessed. It is not about mind-reading but comprehending why they want to complete certain tasks, what causes the negative experience and how to exceed their expectations.

- **Value Proposition** – Similar to the customer profile/segment, the product-related value proposition section is divided into three parts. They correspond to the relevant customer profile section. Here, the focus is made on product features, functionality, and benefits that can be offered to not only attract customers but also meet their requirements from the right part.

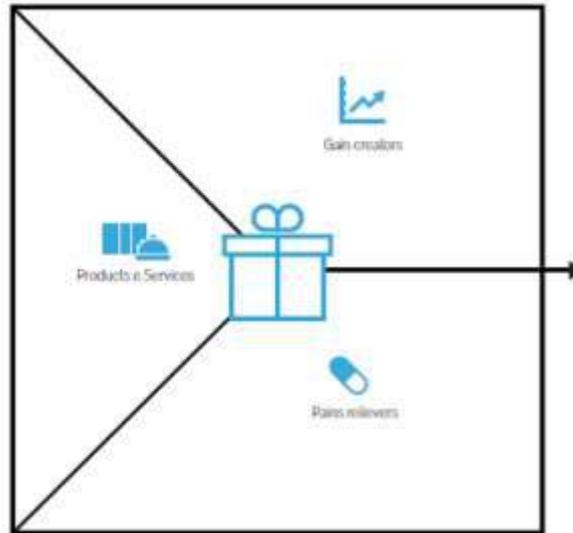


Figure 2: Value Proposition

- **Gain Creators** – how the product or service generates customer benefits and provides extra value.
- **Pain Relievers** – a detailed description of how the product or service relieves client discomfort.
- **Products and Services** – products and services that generate profit and alleviate suffering, as well as those that support the production of value for the customers. In essence, here the focus should be on what can be offered to get the customer jobs done.

VPC is an excellent tool for marketing professionals, product owners, and value creators, as well as their teams, who are developing products and services for a specific audience. It is also useful for teams and organisations attempting to figure out how customers make decisions and what kinds of offers to make that will appeal to them.

- **Benefits**

A business model's value proposition canvas is crucial. It aids the organisation's decision-making and product positioning. It is more than a visual representation of what customers want. Organisations can tailor their strategy to meet the needs of their customers. This can aid in the creation of a product that customers desire. The most significant benefits of the VPC are:

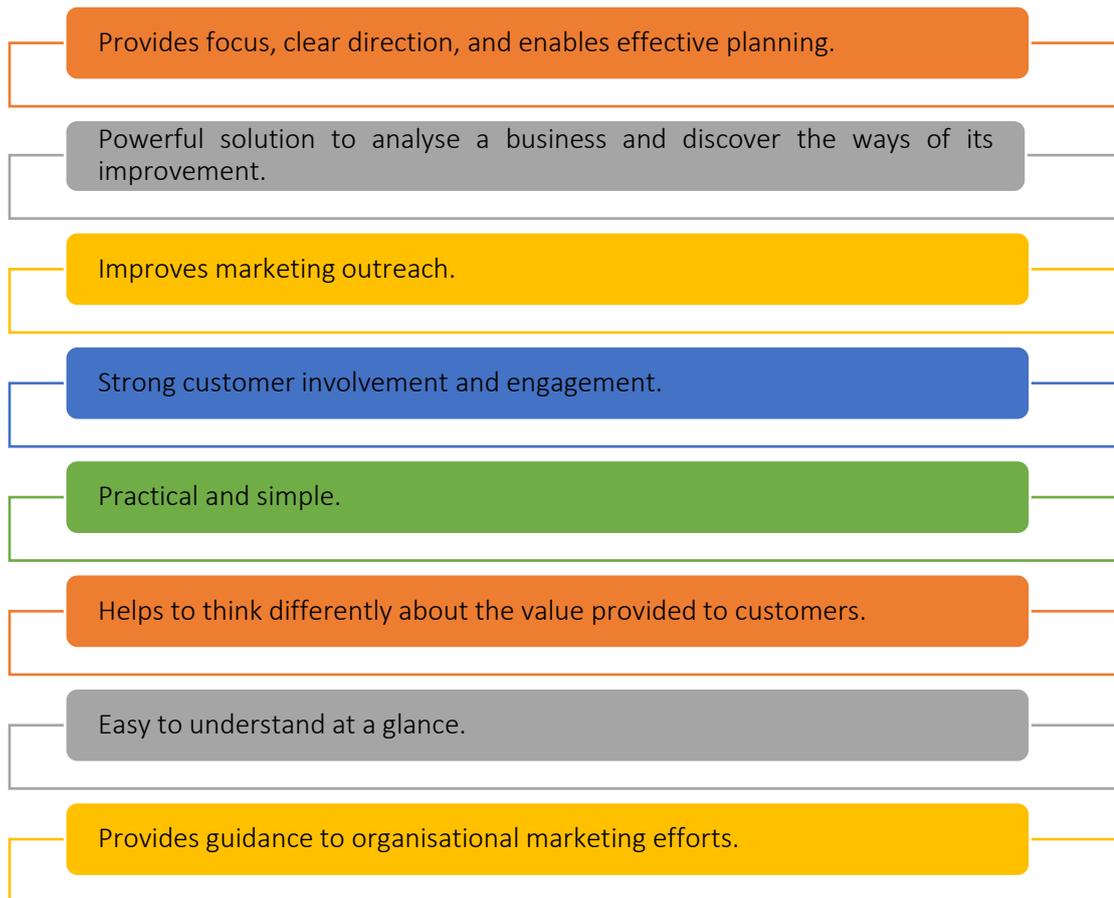


Figure 3: VPC Benefits

A value proposition is a statement that defines the distinct, measurable, and demonstrable benefits that customers receive when they purchase a specific product or service. It should persuade customers that this product or service is superior to the competition. When customers choose that product or service above others as they perceive it to be of higher value, this proposition might give you a competitive edge. From this viewpoint, HE teachers and students using this tool in classroom, following is a glimpse of how it will benefit them and enrich their understanding on the use of VPC.

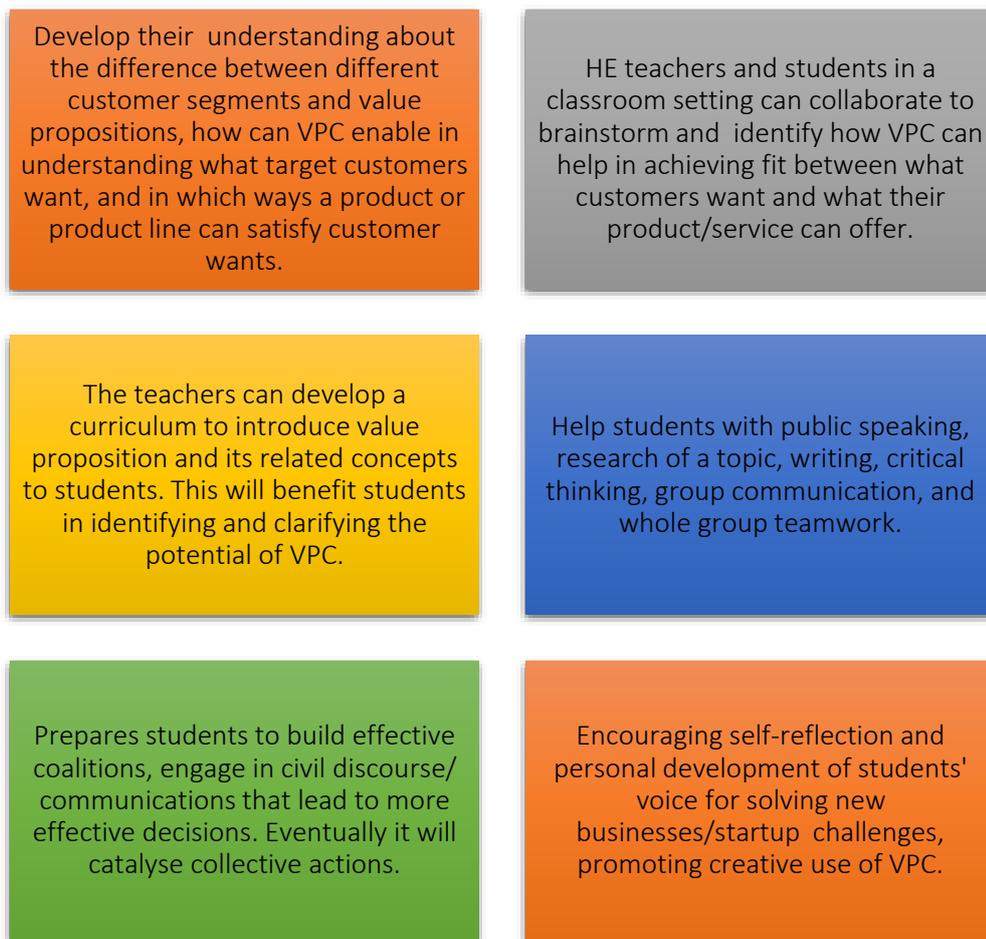


Figure 4: Benefits for Teachers and Students in Using the VPC

Using VPC model, HE teachers can get the courses ready such as preparing the requirements, description, course material, and instructor information. In addition to that displaying the course description, the number of students who are enrolled, ratings, and reviews feedback from students can be done. There are also some added features for the teachers, such as how to make good videos and to create their own fan base and to reach more students. There are some features for the students as well, such as system for taking notes, overlay the transcripts on the videos, used to create bookmarks and to communicate with HE teacher in Q/A.

- **Implementation**

- **Describe the Purpose**

- **General Overview:** The value proposition must first define the motivation for implementing VPC practises, as well as the difficulties that must be solved. The fundamentals of a proposition are simple to comprehend, such as why a customer should buy a product or service from a specific company. A value proposition should clearly explain how a product meets a need, communicate the intricacies of its added advantage, and explain why it is superior to competing solutions. The optimal value offer is short and to-the-point, appealing to a customer's most important decision-making factors.

constructed questionnaire or merely extract main points from their presentation of the tool.

- **Analyse the Data and Reflect on the Outcome**
 - **General Overview:** Once data is collected, creating, and delivering value proposition is the next step towards the planning strategy.
 - **Classroom Activity:** After aggregating the major points from the group presentations, the teacher has the option of providing feedback to each group after they have given, or allowing all the groups to present, collating the important points, and then providing feedback to each group at the conclusion. In either case, the teacher must provide feedback on the students’ performance during the task. The teacher and students may have a dispute in this final section of the activity. Depending on the number of groups formed in the first stage, the teacher may opt to divide them into two groups, one to discuss the benefits of VPC and the other to discuss the drawbacks. Each faction can strive to persuade the opposite side to agree with their viewpoint. The goal of this group exercise is to assist participants comprehend and appreciate the overall value of VPC.

To summarise, a VPC framework works best in clearly defining what does target customer segment needs, and how a specific product and or service can satisfy their wants.

- **Examples of Organisations with their Value Proposition**

Real-life examples should ideally drive every concept. Here are some of the examples of big corporate giants with their value proposition:

<p>VPC aims at achieving a fit between what the customer wants and what product/service can offer to overcome pains and generate gains. Here is an example of Tesla value proposition use case as a FIT, rather than Misfit.</p> <table border="1" data-bbox="387 1480 911 1671"> <thead> <tr> <th>Value Map</th> <th>Tesla</th> <th>Customer Profile</th> </tr> </thead> <tbody> <tr> <td> Products & services: – Model S – Model X – Model 3 </td> <td rowspan="3" style="text-align: center; vertical-align: middle;">FIT</td> <td> Pains: – personal mobility – regular long distance trips – far distant from others </td> </tr> <tr> <td> Pain relievers: – growing network of charging points – developed interior ergonomics – 15 minutes to charge 100% with supercharging stations </td> <td> Pains: – insufficient number of charging points – lack of luggage space – slow charging </td> </tr> <tr> <td> Gain creators: – 8 years battery warranty – reusable board – self-driving option </td> <td> Gains: – durable battery lifetime – brand recognition – interior ergonomics </td> </tr> </tbody> </table>	Value Map	Tesla	Customer Profile	Products & services: – Model S – Model X – Model 3	FIT	Pains: – personal mobility – regular long distance trips – far distant from others	Pain relievers: – growing network of charging points – developed interior ergonomics – 15 minutes to charge 100% with supercharging stations	Pains: – insufficient number of charging points – lack of luggage space – slow charging	Gain creators: – 8 years battery warranty – reusable board – self-driving option	Gains: – durable battery lifetime – brand recognition – interior ergonomics	
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<p>Amazon.com has evolved from an online bookstore to one of the most major online shopping platforms in the world. Amazon.com has developed from a struggling brand prior to the internet bubble bust in 2000, providing an excellent case study for analysing and explaining the potential for value proposition-driven innovation.</p>											

<p>As expected from Apple, a company known as much for its commitment to sleek, elegant product design as for its actual products, Apple reaffirms its value proposition in the copy for its iPhone line of products – specifically, the device’s design, the ease of use that has been a cornerstone of Apple’s design aesthetic since the launch of OS X, and the aspirational qualities that an iPhone supposedly offers the user.</p>	
<p>Unbounce’s value proposition is readily evident from the minute you arrive on the homepage, mainly the ability to develop, publish, and test landing pages without any I.T. help, as you might expect from a firm specialising in conversion rate optimisation.</p>	
<p>Slack has various advantages that support its basic value prop of making collaboration easier, which is the value prop of practically every productivity programme on the market.</p>	
<p>Uber’s distinctive value proposition, on the other hand, is something it does extremely well. With a single tap, client can summon a car to their location. Uber drivers are well-versed in the area and there is not direct cash involved in the transaction – all transactions are digital.</p>	

Table 1: Examples on the Use of VPC

- ***Additional Examples on the Use of VPC Tool***

Following are specific resources to understand VPC in more detail e.g., relevant articles.

- Articles:

- A Stakeholder Perspective of the Value Proposition Concept – [Link](#)
- Value Proposition Design: How to Create Products and Services Customers Want – [Link](#)
- Value Proposition Canvas: Identification of Pains, Gains and Customer Jobs at Farmers’ Markets – [Link](#)

- ***Links to General Learning Resources***

Following are general resources to understand VPC in more detail e.g., links to YouTube video clips.

- YouTube Videos:

- What is VPC? – [Link](#)
- What is VPC? – [Link](#)
- UBER’S VPC – [Link](#)
- Amazon’s VPC – [Link](#)

3.1.2 Business Model Canvas

- **Aim**

“By business model, we understand the logic to create, deliver and capture value for the organisation.” Alexander Osterwalder, Yves Pigneur, 2010. Business Model Canvas (BMC) allows to develop an in-depth understanding of businesses and develop connections between what ideas are and how to transform ideas into a business.



It looks at what kinds of customer decisions influence the use of their systems and enables the management to quickly draw a picture of what the idea entails, a quick overview of the business model, and is devoid of unnecessary details compared to the traditional business plan. It also allows the organisational workforce to get a clear idea of what the business will likely be in the near to far future. One of the main benefits of BMC is that it makes the idea(s) of the management easier to refer to and understand. It is easier to edit, and it can be easily shared with employees and other key internal and external stakeholders. It clarifies how different aspects of the business are related to each other.

HE teachers while teaching this tool to students in the classroom will need to explain each of the nine dimensions (i.e., value proposition, customer segments, customer relationships, channels, key activities, key resources, key partners, revenue streams and cost structure) in detail. The overall aim of their lecture on BMC should be to explain the overall concept of BMC to students, then its use and applicability. In the following sections, teachers will get a greater understanding on what is this tool is about (general) and how it can be used within the classroom to make students understand the concept. HE teachers can use BMC to guide a brainstorming session on defining their business model effectively.

- **Description**

A business model is simply a plan describing how a business intends to make money. It explains their customer bases, how students deliver value to them, and the related financing details and BMC enables them to define these different components on a single page. BMC is a strategic management tool used by managers to develop new business models and present existing ones, define, and communicate a business concept or idea fast and easily. They may envision and evaluate their business idea or concept with a one-page paper. This one-page document contains nine boxes representing distinct critical parts of a business. It works through the fundamental elements of a company or product, consistently organising a concept. The right side of the BMC is dedicated to the customer (external), while the left side is dedicated to the company (internal). The value proposition, which is the exchange of value between their firm and their consumer or clients, brings together external and internal elements. The business model canvas was initially developed by Alex Osterwalder and Yves Pigneur and introduced in their book 'Business Model Generation as a visual framework

for planning, developing, and testing the business model(s). Table 2 presents definitions of business model as perceived by several leading scholars.

Author	Definition of Business Model
Timmers (1998) – LINK	Architect and service flow, which includes a description of the company's activities and revenue sources.
Stewart and Zhao (2000) – LINK	How the business intends to make money and keep it long-term.
Amit and Zott (2001) – LINK	Structure that is ready to generate profit.
Plé et al., (2008) – LINK	A company's decisions to create a profit. These resources and knowledge are used to produce value through the firm's products, whether they are operated internally or externally.
Casadesus-Masanell and Ricart (2010) – LINK	How the company develops and distributes weight to its customers.
Osterwalder and Pigneur (2010) – LINK	The logic through which an organisation creates, delivers, and captures value.
Zott et al., (2011) – LINK	How a firm operates and produces value.
Nielsen and Lund (2012) – LINK	Relationships may make value at the operational, tactical, and strategic levels when the company's strategic choices are consistent.

Table 2: Business Model Definitions (*Adapted from Source: Bonazzi and Zilber, 2014*)

- **Key Features**

Osterwalder and Pigneur (2010) proposed nine key features of BMC:

Symbol	Components	Definition
	Value Proposition	Product and service packages and the values given to consumer segments.
	Customers Segments	A company's target is to achieve, serve, and provide value for various groups of people or organisations.

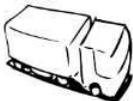
	Customer Relationships	Relationship types that a company may tailor to their consumer groups.
	Channels	How a business connects with and reaches out to its consumers to offer value.
	Key Resources	The most crucial resources for the business model to succeed.
	Key Activities	The most critical steps a firm must take for its business strategy.
	Key Partners	A network of suppliers and partners supports the business concept.
	Revenue Streams	A network of suppliers and partners supports a company model.
	Cost Structure	Costs associated with operating a company model.

Table 3: Business Model Components
(Adapted from Source: Osterwalder and Pigneur, 2010)

- **Value Proposition:** The Value Proposition is foundational to any business or product. It is the basic principle of value exchange between a company and its customers or clients. In general, a customer's value is exchanged for money when the business solves their problem or relieves their pain. Questions to ask when defining business/product:



- *What value do businesses deliver to their customers?*
- *What is the problem that the start-up is trying to solve?*
- *Why would someone need to solve this problem?*
- *What is the trigger for this problem?*

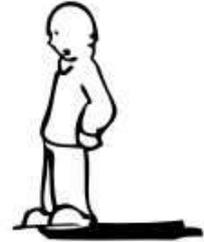
Tips for Value Proposition:

→ Looking at consumer segments and determining where the product or service addresses the issue for customers, based on Maslow's Hierarchy of Needs, is an intelligent method to tackle this for users or customers.

→ If you offer your product or service to another company, you are an essential partner in helping them achieve their Value Proposition for their clients.

→ It's critical to understand its goals for its customer segments and where business/product/service fits within the value chain.

- **Customer Segment:** Customer segmentation is the process of dividing a customer base into groups of people who have common characteristics, such as age, gender, hobbies, and purchasing patterns. Questions to ask when determining Customer Segments are:



- Who are our team solving the problem for?
- For whom are the businesses creating value for?
- Who are the people that will value our value proposition?
- Are there other solutions or businesses?
- What are the characteristics of different solutions?
- Does our value proposition appeal to who?
- Does it appeal to white-collar workers or people aged 15 to 28, or infants?
- What are the characteristics of the people who are looking for the solution or value proposition?

HE teachers need to also consider the market size and the number of individuals in the Customer Segment. This will assist students in understanding the market from both a local and macro level. A great place to start understanding the customer is to create customer personas for each of their Customer Segments. They can read the guide to [Persona Development](#).

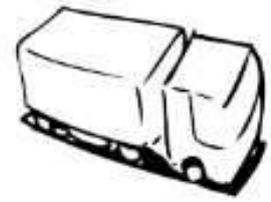
- **Customer Relationship:** Customer relationships are defined as how a business interacts with its customers e.g., events (one-to-many), third-party contractors, in-person (one-to-one), online, phone, and online. Questions to ask when determining Customer Relationship are:



- Do you meet with them in person?
- Or over the phone?
- Or is business predominantly run online so that the relationship will be online too?
- What type of relationship does each of our customer segments expect?
- How are they integrated with the rest of our business mode?
- How costly are they?

Creating a User Journey Map of consumers' interactions with the company is a practical step. HE teachers can use this map to clarify the contact points between businesses and their consumers and the kinds of communication utilised to communicate with them. This will also aid in the definition of operations as a business and the identification of automation prospects.

- **Channels:** Channels are defined as the avenues through which the customer meets the business and becomes part of the sales cycle. This is generally covered under the marketing plan for business. Questions to ask when determining different communication channels are:



- *How will you tell your customer segment about the value proposition?*
- *Where are your customers?*
- *Are they driving a car and listening to the radio?*
- *Are they at an event or conference?*
- *Are they on social media?*
- *Do they watch TV shows?*
- *How are the channels integrated?*
- *Which channel is most effective and cost-efficient?*

Understanding how to reach customers is so crucial to the business. Thus, HE teachers can make use of different channels and explain the concept of Channels within the BMC e.g., public speaking, guerrilla marketing, SEM (Search Engine Marketing), SEO (Search Engine Optimisation), blogs, social media, email marketing, networking, promotions, affiliates, unconventional pr, trade shows, community building, offline advertising etc.

- **Key Activities:** A business or product's activities to achieve the value proposition for consumers are the Key Activities of a business or product. Questions to ask when determining different communication channels are:



- *What activities does the business undertake to achieve the customer's value proposition?*
- *What is the resource used?*
- *Time?*
- *Expertise?*
- *Distribution of product?*
- *Technical development?*
- *Strategy?*
- *Offer resources (human/physical)?*
- *What actions does it take you and your staff to achieve value exchange?*

HE teachers can make use of designing, consulting, web development as different key activities while explaining the BMC tool to students in a classroom session.

- **Key Resources:** Key refers to the resources required by the business to do business. Questions to ask when determining different types of resources are:



- *What practical resources are needed to achieve the key activities (actions) of the business?*

- *What key resources does your value proposition require?*
- *What resources are most important in distribution channels, customer relationships, and revenue stream?*

HE teachers can use hosting, internet connection, people (staff), instruments (computers, oven etc.), places (office space, laboratories etc.), moveable property (bike, car etc.) as different key resources while explaining the BMC tool to students in a classroom session.

- **Key Partners:** Are a list of external firms, suppliers/providers, and or other entities needed to complete key activities, and offer value to the consumers. These partners are key to achieve the value the business promises to the customer/consumers. Questions to ask when determining different types of resources are:



- *Who are the key partners/suppliers/distributors?*
- *What are the motivations for the partnerships?*
- *Which key activities do each key partners perform?*
- *If the business cannot achieve their value proposition, who else does the management rely on?*

HE teachers can make use of different examples related to key partners while explaining the BMC tool to students in a classroom session. For example, if a grocery store requires to sell food items such as bakery products, the business owner will make use of the local baker to supply fresh bread to the store. HE teachers can make use of similar examples to explain to students in more detail.

- **Cost Structure:** These are businesses cost drivers. Business managers need to evaluate the costs of running their business according to their business model as determined by the key activities, resources, partners, and channels. Questions to ask when determining different types of resources are:



- *How much does it cost to achieve business's key activities?*
- *How does the cost structure affect the profitability margin of the business?*
- *How much does it cost to achieve the value proposition for customers?*
- *Are there additional costs to running a business e.g., insurance, etc.?*
- *What is the cost of my business?*
- *It is essential also to place a monetary value on time as a cost.*
- *How much would it cost you to hire you?*
- *What is the opportunity cost of running the business?*
- *What is the cost of my key resources and key partnerships?*

HE teachers can make use of different examples related to cost structures while explaining the BMC tool to students in a classroom session. For example, firstly, HE teachers need to explain to the students whether the chosen business example is cost driven, or value driven? Thereafter, they can then define the related characteristics e.g., fixed costs (salaries, rents, utilities), variable costs, and or economies of scale. HE teachers can make use of similar examples to explain to students in more detail.

- **Revenue Streams:** Revenue streams are the methods by which a business converts its value proposition or solutions to a customer's problem into the monetary benefit. It is crucial to understand how to price a business based on pain of buying in exchange for solving the customer's problem. Questions to ask when determining different types of resources are:
 - *For what value are our customers really willing to pay?*
 - *For what do they currently pay?*
 - *How are they currently paying?*
 - *How would they prefer to pay?*
 - *How much does each revenue stream contribute to overall revenues of the business?*

HE teachers can make use of different examples related to revenue streams e.g. firstly, HE teachers need to explain to the students whether the chosen business example is focused on fixed pricing (i.e., list price, product feature dependent, customer segment dependent, or volume dependent) or dynamic pricing (i.e., negotiation, bargaining, yield management, or real-time market) strategy or both strategies? HE teachers can make use of similar examples to explain to students in more detail.

- **Benefits**

BMC facilitates managers in understanding a business model in a structured way. Using this canvas will lead to insights about the customers, what value propositions are offered through different channels, and how company makes money. Managers can also use the BMC to understand the ins and outs of their own organisational business model or that of their competitors.

Following are specific benefits of BMC that HE teachers can experience in a classroom setting:



Figure 7: BMC Benefits

It is vital to stay ahead of the curve and developing a BMC instead of a business plan is far more appropriate. This tool is a tried and tested methodology for innovating in both startups and large enterprises, and well accepted among the business and management scholars whilst teaching across universities. The nine key features of BMC help business managers document an in-depth, succinct, and clear definition of their business. By focusing on facets besides product development, BMC also offers a competitive edge to launch a profitable startup.

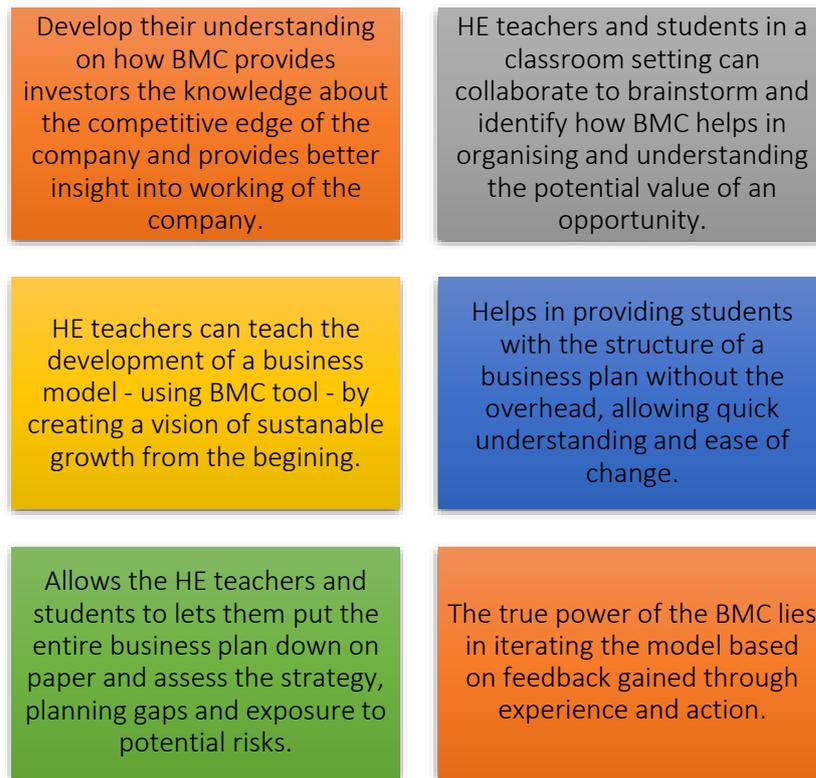


Figure 8: Benefits for Teachers and Students in using the BMC Tool

- **Implementation**

To introduce students to the nine key features of the BMC, it is suggested that HE teachers ask students a set of business model hypotheses and then place each one of them in the appropriate box of the BMC. Before beginning the implementation of BMC, students may also suggest finding the purpose of ideas with the “[Pilot your purpose](#)” tool. Entrepreneurship is not only about creating companies but also about helping yourself by helping others. It can be pointed out that students can use entrepreneurial skills no matter their career.

BMC implementation means that an organisation’s efforts consider profit, people, ideas, and businesses. The primary question is how companies may put BMC into effect, from theory to practice. HE instructors can use the following structure to explain how to use and apply this tool in a classroom setting:

- **Describe the Purpose/Problem Definition:**

- **General Overview:** To make the most efficient use of classroom time, students need to watch the introduction videos before the class.
 - Getting from Business Idea to Business Model – [Link](#)
 - Visualising Your Business Model – [Link](#)
 - 9 Steps to Creating a Successful Business Model – [Link](#)

Print enough copies of the [AirBNB Business Model Canvas](#) worksheets before the class. If using the [Google Docs version](#) for students to complete online, share this link with them.

- **Classroom Activity:** Ask students to individually fill out the AirBnB BMC: Travelers worksheet. Give them the first step to show how it works. Tell them, “The way this works is that you look at the hypotheses beneath the Canvas, and then write them into the Canvas where you think they go. For instance, write ‘Travelers’ in the Customer Segment box”. When they have filled out the AirBNB BMC: Travelers Canvas, have students pair up with someone who is not currently sitting next to them. They will each share their BMC, talking through any differences or any matches they are uncertain about.
- **Implement the Tool:**
 - **General Overview:** For implementing the tool, HE teachers can demonstrate these [slides](#), as students in the class proceed through their individual Canvases.
 - **Classroom Activity:** Once the students have understood the overall working of BMC, they can proceed further one by one through the boxes and ask a pair to share what they got. Students need to proceed in the following order i.e., Customer Segments, Value Proposition, Channels, Customer Relationship, Revenue Streams, Cost Structure, Key Activities, Key Resources, and Key Partners. HE teacher can move around the class and ask a new pair to talk about each successive box of the Canvas until all nine features are discussed. Encourage other groups to discuss any points of disagreement or uncertainty as progressing further. Ask students to fill out all the AirBnB BMC blocks: Hosts canvas in the same way. Take time to explain that many businesses do not have just one business model as a part of their success. Instead, many businesses, like AirBNB, are a multi-sided market. In this business model, the needs of the two parties must be met. HE teacher can highlight the popularity of this business model by pointing out that Uber, Doordash, Amazon all have this multi-sided market where the business has to keep multiple customers happy. At this point, students will have gained enough experience with the BMC and they are to apply in any other example. For homework, assign students to fill in the BMC for a venture they would like to validate, as well as identify the three riskiest hypotheses of their business model.
- **Collect Data after Tool Implementation:**
 - **General Overview:** BMC is about conducting high-level analysis without getting impeded in the details. It is a single-canvas visual representation of the whole business. While students are likely to be familiar with each of the nine building blocks (features), the BMC is appealing since it compresses them to a single page rather than a standard 42-page document. This makes it much easier to digest and evaluate and map out existing business models and new concepts.
 - **Classroom Activity:** HE teachers need to ask their students to fill out the BMC with their ideas. When they have filled out the BMC boxes, pair the students with someone not currently sitting next to them. They will each share their BMC, talking through any differences or matches they are

uncertain about. Reconvene the class and ask students to share the assumptions they filled in. Progress around the type, asking for students' beliefs for the boxes and discussing any discrepancies or disagreements. In this step, students will learn:

- Why assumption identification, and assumption validation, are critical to creating successful companies.
- Why iterations and experimentations are the keys to validating their business assumptions.
- How to communicate their business model validation process

○ **Analyse the Data and Reflect on the Outcome:**

- **General Overview:** It is critical to teach this vital step for analysing the data as it is one of the significant benefits of teaching the BMC over traditional business plans. Once entrepreneurs have a prioritised list of their riskiest assumptions, they can design experiments to test each of those assumptions in order of their prioritised risk.
- **Classroom Activity:** Ask students to check their validated blocks on their BMC versions. The actual learning from the tool occurs when students test their hypotheses with in-class exercises. These exercises help students deeply consider their initial ideas for the model. The activity also requires students to provide more details for each canvas element, which can be used later in the final business plan. But the goal of the BMC is to offer a plan on how to validate the hypotheses, not that they be perfect. Students may need help conducting their experiments, analysing the results, and making changes to their execution to analyse and understand the outcomes. In this step, HE teachers may guide to compare versions or coach students to their ideas. In this step, students will learn:
 - The pitfalls of business plan.
 - How can an entrepreneurial mindset impact their lives going forward?
 - Reflect on their business model validation process.

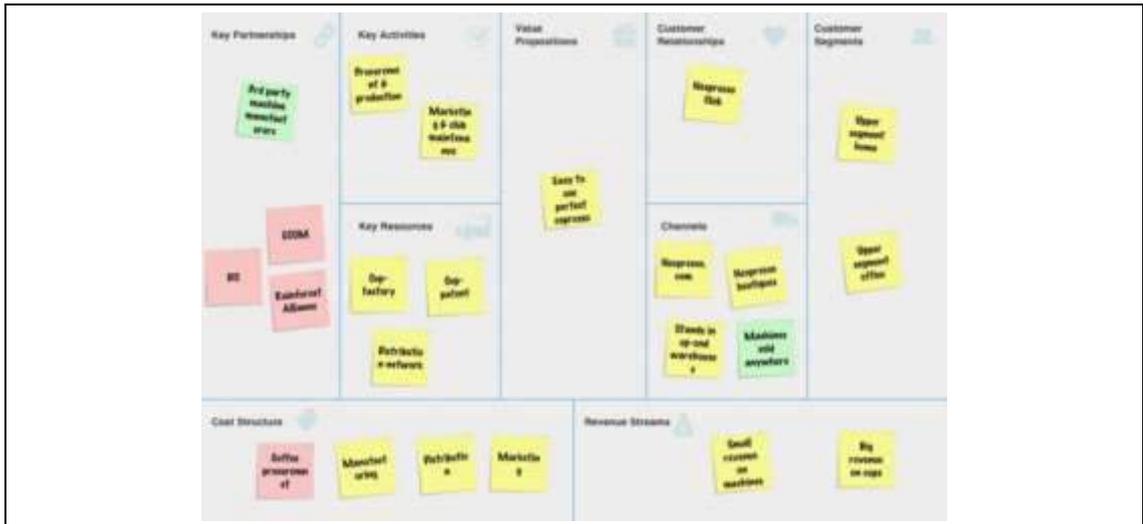
● **Examples of Organisations using BMC Tool**

Real-life examples should ideally drive every concept. Here are some of the examples of big corporate giants using BMC:

Nespresso, a fully owned daughter company of Nestlé, is a great example of a powerful business model. It changed the face of the coffee industry by turning a transactional business (selling coffee through retail) into one with recurring revenues (selling proprietary pods through direct channels).



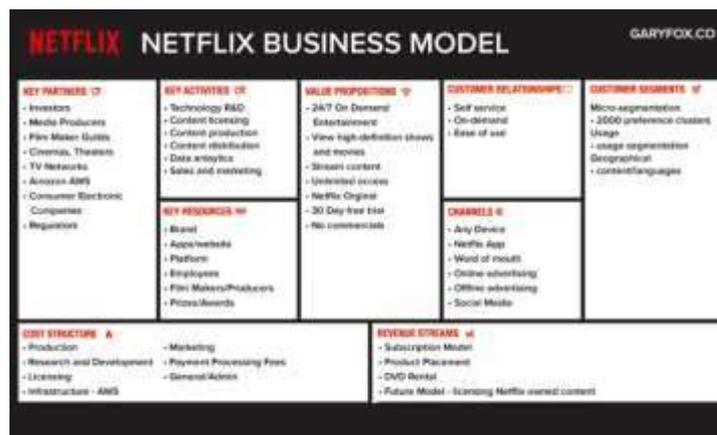
When the Nespresso business model is drawn out on the business model canvas, the overview looks more or less like this:



NETFLIX business model is replicated by several competitors. Netflix business model is a platform that offers on-demand streaming of video for a subscription fee.



Another way to understand Netflix business model is to use BMC. Here is an illustration of NETFLIX business mode canvas.



Amazon is known to be the largest online retailer worldwide that functions at a diverse pace in their product offerings.



Table 4: Examples of the Use of BMC

- **Additional Examples on the Use of the BMC Tool**

Following are specific resources to understand BMC in more detail e.g., relevant articles.

- **Articles:**

- Innovation and Business Model: A Case Study about Integration of Innovation Funnel and Business Model Canvas – [Link](#)
- From Theory to Practise: Innovation Roadmap (Turkish) – [Link](#)
- Osterwalder Business Model Canvas Matching – [Link](#)
- Business Model Generation: A Handbook for Visionaries, Game Changers, and Challengers – [Link](#)

- **Digital Tools to Generate BMC:**

- BMC with Strategyzer – [Link](#)
- BMC with Miro – [Link](#)
- BMC with Canvanizer – [Link](#)
- BMC with Ciz.io – [Link](#)

- **Links to General Learning Resources**

Following are general resources to understand BMC in more detail e.g., links to YouTube video clips and other weblinks.

- **YouTube Videos:**

- Getting from Business Idea to Business Model – [Link](#)
- Visualising Your Business Model – [Link](#)
- 9 Steps to Creating a Successful Business Model – [Link](#)
- Ceres Case Study – [Link](#)

- **Other Weblinks:**

- Five Big Benefits of the BMC – [Link](#)
- How to BMC Explained? – [Link](#)
- Teaching the Business Model Canvas – [Link](#)
- The 9-Step Business Model Canvas Explained – [Link](#)

3.1.3 Business Model Navigator

- **Aim**

In economic, social, cultural, or any other context, a business model outlines how an organisation develops, delivers, and captures value. Business model construction and modification is also known as business model innovation. Thus, Business Model Navigator (BMN) – or business model innovation – is a structured way to better understanding the key factors of business model success and supporting business model innovation. This model has



been successfully applied in several organisations to date e.g., ‘*An aspiring field such as New Space really benefits from the Business Model Navigator™ because the market will be defined by a variety of innovative business models – going through all the possibilities is a real competitive advantage!*’ – Dr Henning Roedel, NASA Ames Research Centre (Gassmann *et al.*, 2014).

HE teachers will need to explain why it is critical to know exactly which client groups are crucial to the company. Also, which ones will and will not be addressed by the existing business model. The overall purpose of their BMN lecture should be to communicate to students the broad concept of BMN, followed by its application and use. Through numerous procedures and activities, teachers will develop a greater grasp of the value proposition in action. BMN is made up of these processes and activities, as well as related resources and competencies, and their coordination along the company’s value chain.

- **Description**

According to Gassmann *et al.*, (2014), BMN is the power of recombination and creative replication by means of 55 business model patterns, which can serve as blueprints for any business model innovation efforts. The University of St. Gallen developed this Magic Triangle, which has four dimensions (Who-What-How-Why). The goal is to get clarity on the type of client segmentation, value proposition, value chain, and profit mechanism, as well as to make the business model understandable, all while setting the groundwork for future innovation. As adjusting one corner entails adjusting the other two, the triangle is known as a ‘magic’ triangle. In summary, a BMN defines who your customers are, what you are selling, how you produce your offering, and why your business is profitable. Who-what-how-why describes a business model of which the first two (who and what) address its external aspects and the second two (how and why) address its internal dimensions?

- **Key Features**

All four key features of BMN as explained as follows:

- **Who (i.e., the customer):** Every business concept caters to a specific clientele? As a result, it should be able to answer the query, “*Who is the customer?*”. We highlight the definition of the target customer as one fundamental dimension in building a new business model, based on the assumption that “*failure to correctly describe the market is a critical element linked with venture failure*”.
- **What (i.e., the value proposition):** The second-dimension outlines what the target consumer is supplied, or, to put it another way, what the customer values. The customer value proposal, or simply the value proposition, is a term used to describe this concept. It can be defined as a comprehensive perspective of a company’s bundle of customer-valued products and services.
- **How (i.e., the value chain):** A company must master several processes and activities to create and spread its value offer. The third dimension in the design of a new business model is comprised of these processes and activities, as well as the resources and competencies involved, as well as their orchestration inside the focus firm's internal value chain.

- **Why (i.e., the profit mechanism):** The fourth component, value, illustrates why the company model is financially sustainable, and hence is linked to the revenue model. In essence, it unites components such as the cost structure and applied revenue techniques, and it speaks to the fundamental question of each business, namely, how to make money.
- **Benefits**

Adopting the BMN has several advantages:

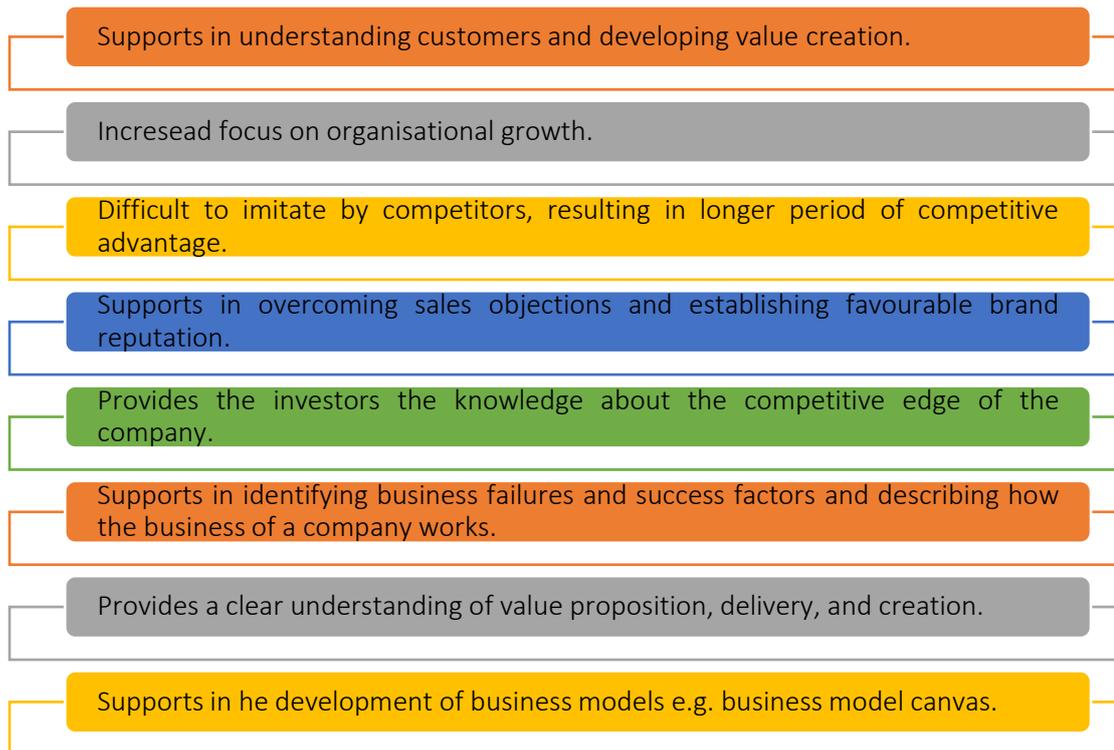


Figure 9: Benefits of BMN

By implementing BMN practices, organisations can reap favourable outcomes from these abovementioned benefits and acquire a significant competitive edge. From the latter point of view, HE teachers and students using this tool in classroom, following is a glimpse of how it will benefit them and enrich their understanding on the use of BMN.

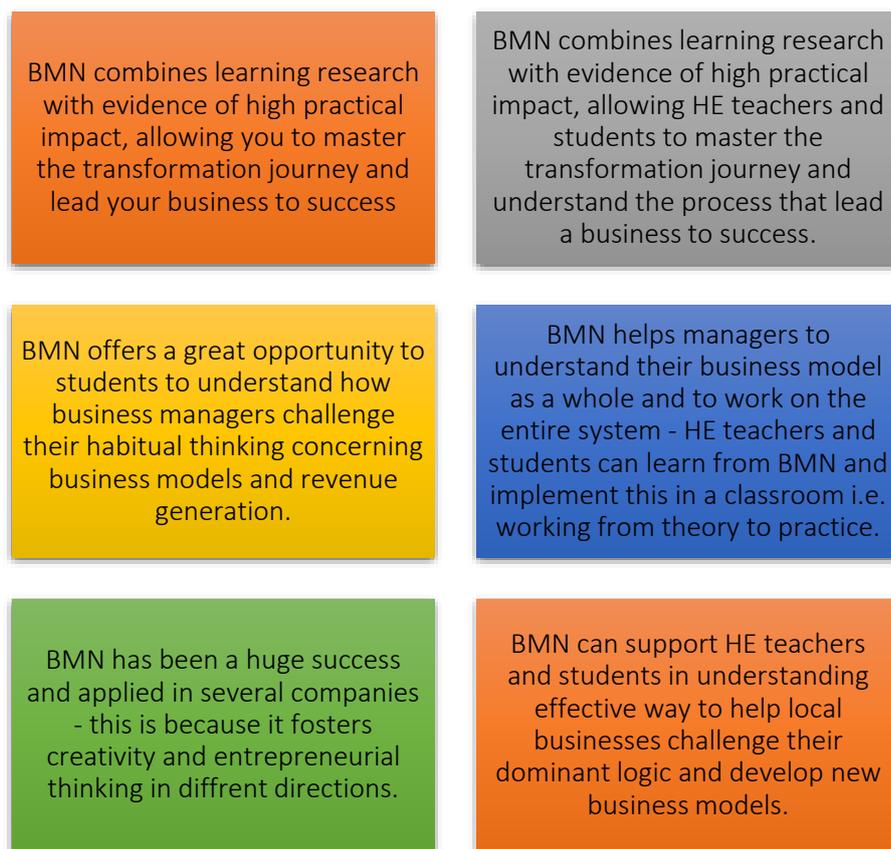


Figure 10: Benefits for Teachers and Students in Using the BMN Tool

- **Implementation**

The value concept is central to the BMN. One of the functions of a business model is to act as a link between a technology or an idea and its users. A business model, in simple terms, is a way of capturing and delivering value to customers. This mediating principle lies at the heart of the BMN, and it can be viewed as a source of strength. From theory to practice, the main question is how organisations can implement and make use of BMN. BMN is an action-oriented methodology that permits any company to break with its dominant industry logic and innovate its business model. It has been shown to work in all manner of organisations, industries, and companies. It builds on the central idea that successful business models can be constructed through creative imitation and recombination. HE teachers can explain the use and applicability of this tool in a classroom setting by the using the following steps:

- **Describe the Purpose/Problem Definition**
 - **General Overview:** In the start, management needs to describe the rationale for adopting BMN, what problem(s) needs to be addressed. Basically, the management needs to re-examine the motivation for implementing business model innovation practises, as well as the difficulties that must be solved. The fundamentals of a proposition are simple to comprehend, such as (WHO) is the target customer and what his/her needs, (WHAT) is the value proposition and with the help of

which products and services is it generated, (HOW) is the value proposition delivered and (WHY) is the business model profitable?

- **Classroom Activity:** A quick ten-minute summary of the BMN topic should be given at the start of the class lecture, restating the session objectives, and summarising the BMN idea. Important criteria for the *WHO* dimension are e.g., market growth, the relevance of the customer problem or need, or the strategic importance of the targeted customer segment for the company. Evaluation criteria for the *WHAT* dimension include, besides the added value per se, aspects such as the scaling or further development potential of the products/services offered. The maturity of the technology used, existing synergy effects, and the customer's own share in the value generation are criteria for the *HOW*-dimension. The customer's willingness to pay and the needed investment to introduce the idea to the market are criteria for the *WHY* dimension. are examples of questions that the teacher could ask the students. Some students may choose to volunteer their responses. Teachers must then form groups of 4 to 5 pupils utilising the knowledge gained above. As an activity, provide each group a list of organisations from which to choose — organisations that are directly relevant to marketing strategy. The goal of this classroom activity is for students to engage a group discussion within themselves to comprehend and describe the problem of why a particular organisation chose to use BMN. Each group can finish this conversation in 30 minutes.

- **Implement the Tool**

- **General Overview:** Once the purpose and problem are clearly comprehended, the next stage is to identify the type of actions that relate to each of the *WHO, WHAT, HOW* and *WHY*.
- **Classroom Activity:** Once the students have explored the organisation's website (any example) or the web in general, studied and understood their move to BMN, then students can start discussing and drafting points related to the organisation i.e., focusing on *WHO, WHAT, HOW* and *WHY*. Once the students have drafted points, the HE teacher can ask each group to present their findings to the whole class. The students in the group can share (his/her) idea in order to make their argument make sense and flow. They can then decide who will lead in presenting the overall findings. Presentation time for each group can be 10 mins. The students can also present their findings with respect to *WHO, WHAT, HOW* and *WHY*.

- **Collect Data after Tool Implementation**

- **General Overview:** Once management implements BMN practices, they can consider evaluating each department's positioning, resulting in collecting data (either via survey, focus groups, or interviews) to understand the outcomes of implementing BMN.
- **Classroom Activity:** Once all the groups in the classroom have presented their findings related to their chosen organisation, the HE teacher can collate the main points presented by each group, either by creating a

self-constructed questionnaire or merely extract main points from their presentation of the tool.

- **Analyse the Data and Reflect on the Outcome**
 - **General Overview:** Once data is collected, creating, and delivering is the next step towards the BMN.
 - **Classroom Activity:** After aggregating the major points from the group presentations, the HE teacher has the option of providing feedback to each group after they have given, or allowing all the groups to present, collating the important points, and then providing feedback to each group at the conclusion. In either case, the HE teacher must provide feedback on the pupils' performance during the task. The HE teacher and students might dispute in this final section of the activity. Depending on the number of groups formed in the first stage, the teacher may opt to divide them into two groups, one to discuss the benefits of BMN and the other to discuss the drawbacks. Each faction can strive to persuade the opposite side to agree with their viewpoint. The goal of this group exercise is to assist participants comprehend and appreciate the overall value of BMN, as well as the reasons why organisations choose to employ BMN practises and how they are applied by organisational leaders.

To summarise, a BMN tool is most effective when it is adopted as a new way of working, that is, when it is adopted, implemented, propagated, and actively exercised, rather than when it is just plugged in as an add-on or patch. However, BMN is one single tool that compliments the business canvas model i.e., while teaching the business canvas model, it is advisable to use the BMN tool as well. This combination of tools is the most used and referenced frameworks according to a quantitative literature analysis.

- **Examples of BMN based Organisations**

Real-life examples should ideally drive every concept. Here are some of the examples of big corporate giants:

<p>How TikTok makes money – Like any potential social media, TikTok business model has started with advertising to make money but increased two more revenues: app purchases (TikTok Coins) and e-commerce offerings.</p>	 <p>Tik Tok</p>
<p>Taobao.com – The brightest stone on Alibaba Group's crown, Taobao is their largest website, focused on consumer to consumer (C2C), providing small entrepreneurs with a clear road to offer their products to a web of consumers that reaches across the globe.</p>	 <p>Alibaba Group 阿里巴巴集团</p>

<p>How Starbucks makes money – Simply speaking, Starbucks makes money by selling coffee, tea, food, and other ready-to-drink beverages in its company-operated or licensed stores. Other revenues also come from royalty and licensing incoming, consumer-packed goods, food service, etc., since Starbucks products can be found in grocery stores, convenience chains, and other beverage selling places.</p>	
<p>How Microsoft makes money – The segment consists of products and services developed for productivity and information and represents about one-third of Microsoft’s revenue. Its flagship is the Microsoft Office software suite. Besides, there are LinkedIn, the professional social network, and Dynamics, the cloud-based solutions for business apps, such as ERP or CRM.</p>	
<p>It is true that 90% of Toyota’s revenue comes from automotive sales. But the company also generates revenue from other operations, such as financial services, investments, and machinery.</p>	

Table 5: Examples of Organisations using BMN

- ***Additional Examples on the Use of BMN Tool***

Following are specific resources to understand BMN in more detail e.g., relevant articles.

- Articles:
 - The Business Model Navigator – [Link](#)
 - The St. Gallen business model navigator – [Link](#)
 - Revolutionizing the Business Model – [Link](#)

- ***Links to General Learning Resources***

Following are general resources to understand BMN in more detail e.g., links to YouTube video clips.

- YouTube Videos:
 - Business Model Innovation – [Link](#)
 - Introduction to Business Model Innovation – [Link](#)
 - Business Model Navigator - Innovation & Entrepreneurship - From Design Thinking to Funding – [Link](#)

3.2 Sustainability / Environmental Issues Tools

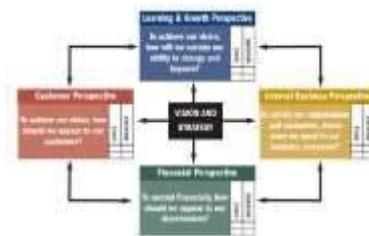
Wellbeing of nature and humans is closely linked with a healthy and sustainable environment. Environmental sustainability is the responsibility to preserve natural and renewable resources, social welfare, intergenerational decision making and safeguard global ecosystems to support health and wellbeing, now and in the future. Sustainability and environmental assessment tools help to understand a system and present the information in a way that can assist the decision-making process. However, eradicating environmental issues and incorporating sustainability and into an organisation's corporate strategy can raise a lot of questions, such as how sustainability can be measured? how can leaders make sustainability work for their business and ensure environmental issues are addressed? and how business leaders define sustainability for their corporation?

Following three tools explain how HE teachers can make use of sustainability tools and demonstrate how these tools are used by businesses to assess the profits they are making through their corporate sustainability solutions.

3.2.1 Sustainability Balance Scorecard

- **Aim**

A Sustainability Balanced Scorecard (SBS) aims to fulfil the central requirement of the sustainability concept, so that the businesses performance in economic, ecological, and social terms can be permanently improved. SBS is actually an extension of the balanced scorecard, which makes it possible to take into account strategic success factors that have a significant impact on the economic thriving of the business, not defined by financial parameters. Thus, the balanced scorecard creates a great starting point to the incorporation of the environmental and social aspects into the management system of a business, which has evolved into the SBS.



- **Description**

SBS is a strong tool for an integrated and value-based sustainability management of a company. This scorecard is built upon three pillars:

- **Environmental:** herein, the environmental aspects are important. Think of making eco-friendly products, climate change and fighting pollution.
- **Social:** social impact can vary from providing a safe working environment to programs focused on ecology awareness.
- **Economic:** of course, the economic factor, should not be forgotten here. Aspects such as cost saving, which results in reducing the carbon footprint, are very much of relevance here.

Figure 11 illustrates an example of the SBS:

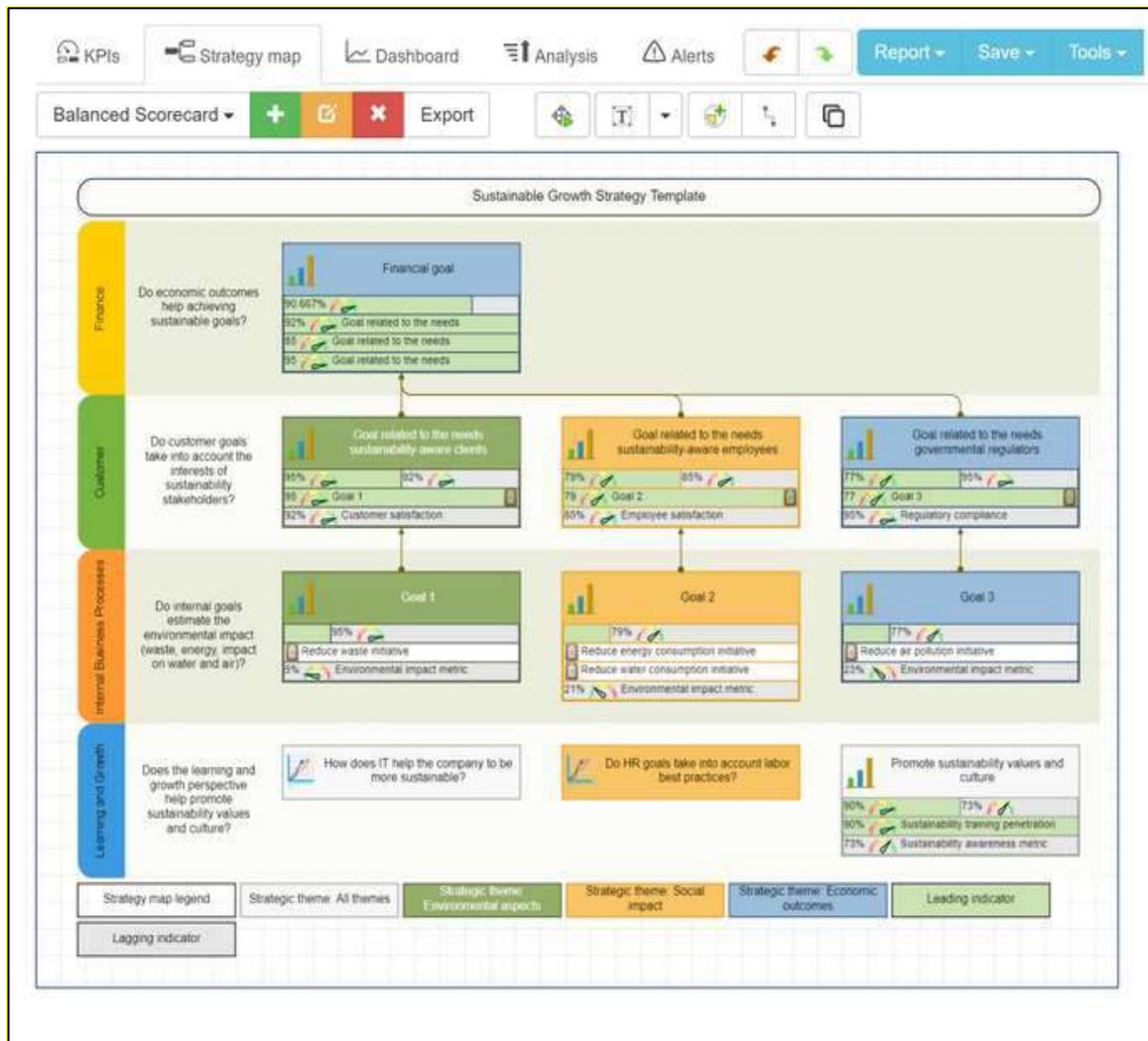


Figure 11: SBS Example

- **Key Features**

There are four key features of the Sustainability Balanced Scorecard, such as:

- **Structure:** There are three possible structures, which an SBS can have e.g., hierarchical, semi-hierarchical, and non-hierarchical (network).
 - Hierarchical structure is a structure based on the ultimate profit-driven objective, meaning the financial perspective.
 - Semi-hierarchical structure has the direct cause-effect links pointing upwards to the financial perspective, which allow other objectives stand for their own and not necessarily as a cause for ultimate financial goals.
 - Non-hierarchical structure is there when perspectives in a network configuration where all aspects of the scorecard are closely interconnected.
- **Value System:** This is dependent on the structure presented above. For example: semi-hierarchical SBS structures are more related to the social/political approach as they allow to balance the conflicting interests of different stakeholders.

- **Orientation:** A detail-to-general orientation as opposed to a general-to-detail one.
 - **Confinement:** SBS can be seen as an extension from the original balanced scorecard, which may provide less flexibility in approach.
- **Benefits**

SBS – an extension to the conventional balance scorecard – is a management tool that supports the successful implementation of corporate strategies. Figure 10 illustrates other benefits of using the SBS are:

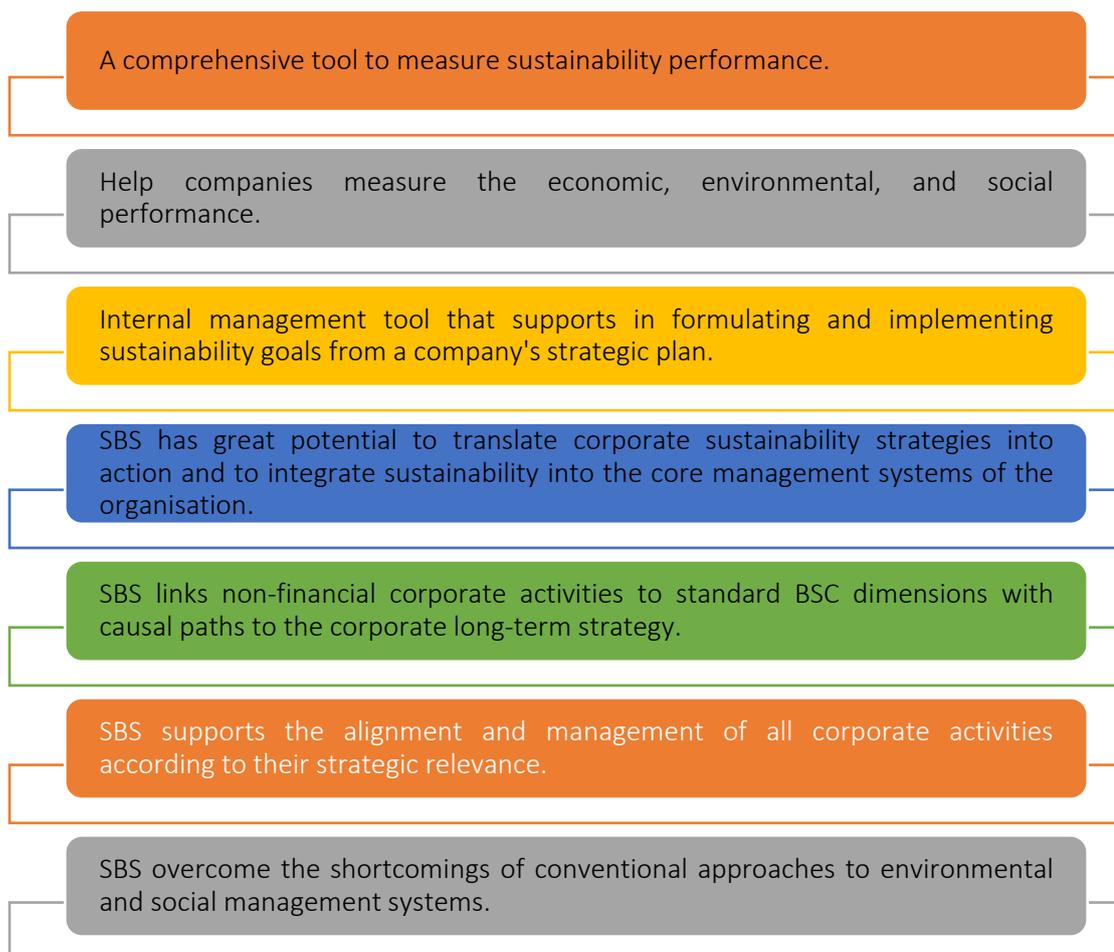


Figure 12: SBS Benefits

- **Implementation**
 - **Describe the Purpose/Problem Definition**
 - **General Overview:** Sustainability is a wide-ranging policy phenomenon in the global public/private discourse and is frequently related to three dimensions e.g., environmental, economic, and social. On the other hand, a sustainable business, or a green business, is an enterprise that puts negligible adverse impact or potentially a positive effect on the global or local environment, community, society, or economy. When starting a new business, it is important to pay close attention to

sustainability as well, even if it does not concern a social business. SBS is a great tool to get a clear overview and goals to contribute to the environmental and social wellbeing.

- **Classroom Activity:** Prepare a short presentation with an introduction of the SBS. The information and an example can be used from the content provided above. HE teachers need to ensure their students understand the aims and the features of the SBS well.

- **Implement the Tool (Gathering your Actions)**

- **General Overview:** Now the students are quite familiar with the overall information on the SBS, thus HE teachers can practice with them by making fictional ones. For this, HE teachers will need instructions provided below, pieces of paper and pens.
- **Classroom Activity:** First of all, let the students decide on which enterprise they would like to “start” for this activity and the nature of the strategically relevant environmental and social aspects regarding this business. After comes the process of constructing an SBS. First of all, formulating the SBS has to meet a number of basic requirements:
 - The process must lead to value-based management of social and environmental aspects.
 - Environmental and social aspects must be integrated with the overall management system in a company.
 - SBS must not be generic, but business-unit specific.
 - Social and environmental aspects of a business must be integrated according to their strategic relevance.

After considering these requirements, the formulation of a SBS can be done by these three major steps:

- The strategic business unit has to be chosen.
- Identification of the social and environmental aspects. Determining the relevance of social and environmental aspects for the chosen business unit’s strategy.

- **Collect Data after Tool Implementation**

- **General Overview:** From an organisational viewpoint, once the management implements SBS practices, they can consider evaluating each department’s positioning, resulting in collecting data (either via survey, focus groups, or interviews) to understand the outcomes of implementing SBS.
- **Classroom Activity:** Once all the groups in the classroom have presented their findings related to their chosen organisation, the teacher can collate the main points presented by each group, either by creating a self-constructed questionnaire or merely extract main points from their presentation of the tool.

- **Analyse the Data and Reflect on the Outcome**

- **General Overview:** Once data is collected, management will need to re-evaluate the overall organisational environment i.e., reflecting on and

understanding the implications of impact of SBS tool on environmental (planet/sustainability/eco-friendly products), social (safe working environment and well-being), and economic (cost savings) dimension.

- **Classroom Activity:** After collating main points from the group presentations, it is up to the teacher to either provide feedback to each group after they have presented, or let all the groups to present, collate the mains points and then provide to each group in the end. In either way, the teacher will need to provide feedback on how the students performed in the activity. In this last part of the activity, the teacher and students can have a debate. Depending on the number of groups developed in the first stage, the teacher can choose to put some groups on one side to discuss on the positives of SBS, whereas other groups can debate on the negatives. Each group can try to sway the opposing side to their point of view. The whole purpose of this group-based activity is to help understand and realise the overall value of SBS, reasons why organisations choose to implement SBS practices, and it is implemented by organisational management.

- **Examples of Organisations using SBS**

The organisations that would use SBS could be any organisations, which would like to set their focus on the sustainable side of their business. As sustainability becomes a hot topic more and more, there is a growing number of organisations that are implementing relevant measures in their businesses. This concerns small (social) enterprises, but also large companies, known to the most of us. Here are some real-life examples of big corporate giants:

<p>Dtex Solutions has its own production and design department in Pakistan, so the organisation has little direct external stakeholders such as suppliers. The organisation-specific core of the SBS Framework shows that Dtex Solutions is very busy with their sustainability strategy (Boerrigter, 2015).</p>	
<p>Tiszai Vegyi Kombinat (TVK) is one of the largest chemical companies in Hungary, had been using the traditional Balance Scorecard for over six years. However, over recent times, TVK has been committed to sustainable development and business excellence (Fülöp et al., 2014).</p>	

Table 6: Examples of Organisations using SBS

- **Additional Examples on the Use of SBS Tool**

Following are specific resources to understand SBS in a classroom setting in more detail e.g., relevant articles.

- Articles:
 - Corporate social responsibility and sustainability balanced scorecard: The case study of family-owned hotels – [Link](#)
 - Sustainability Balanced Scorecards and their Architectures: Irrelevant or Misunderstood? – [Link](#)
 - A Standalone Sustainability Balanced Scorecard – [Link](#)
- **Links to General Learning Resources**

Following are general resources to understand SBS in more detail e.g., links to YouTube video clips.

- YouTube Videos and other web sources:
 - Sustainability Balanced Scorecard (SBSC) and KPI – [Link](#)
 - Balanced Scorecard Fundamentals – [Link](#)
 - Example of Sustainability Balanced Scorecard with KPIs – [Link](#)

3.2.2 OpenLCA

- **Aim**

OpenLCA (Life Cycle Assessment) is a method for evaluating the environmental characteristics and possible consequences of a product, process, or service. This technique uses for:

- Creating a list of all significant energy, material, and environmental inputs and outputs.
- Analysing the potential environmental costs of selected information and output.
- To assist you in making a better-informed choice, you should interpret the results.

OpenLCA is a life cycle assessment and sustainability assessment tool also open-source software.

- **Description**

LCA (also known as life cycle analysis) is a methodology for examining environmental impacts associated with all phases of a commercial product's, processes, or service's cycle of life. For instance, in the case of a manufactured product, environmental impacts are examined from the extraction and processing of raw materials (cradle) to the product's creation, distribution, and consumption, and lastly to the recycling or final disposal of the materials used to create the product (grave).

OpenLCA is an open-source program. GreenDelta has been working on it since 2006. It is available for free as open-source software with no license fees. Anyone could access and modify the source code. Businesses use OpenLCA to find opportunities to minimise resource consumption and emissions, improve their company strategy, and make



intelligent decisions based on economic and environmental criteria. Furthermore, the software's open-source nature makes it ideal for managing sensitive data. If the database feature enables it, the software and any models developed can be freely shared.

OpenLCA can be used for several different applications, for example:

- LCA, Life Cycle Costing (LCC), Social Life Cycle Assessment (S-LCA).
- Carbon & water footprints.
- Environmental Product Declaration (EPD).
- The United States Environmental Protection Agency (EPA) Design for the Environment label.
- Integrated Product Policy (IPP).

OpenLCA is one of the most comprehensive tools for this purpose accessible today, and several enterprises and NGOs extensively apply it. OpenLCA offers the world's most extensive collection of data sets and databases for LCA software, with nearly 100,000 different data sets accessible for purchase and free.

- **Key Features**

OpenLCA is free and open-source sustainability and life cycle assessment program that includes the following features:

- Calculate your sustainability assessment and life cycle assessment effectively and easily.
- Identify critical factors throughout the life cycle, by process, flow, or impact category, display findings, and pinpoint them on a map with detailed insights into calculation and analysis results.
- Import and export capabilities are among the best in the industry, and sharing these models is basic.
- Social assessment and life cycle analysis are proper manners in the life cycle model.
- User-friendly interface; powerful and efficient repository and collaboration capability; user interface in various languages (currently developed)
- Improvements and new features are implemented regularly.

- **Benefits**

Figure 13 illustrates some specific benefits of OpenLCA in a classroom setting:

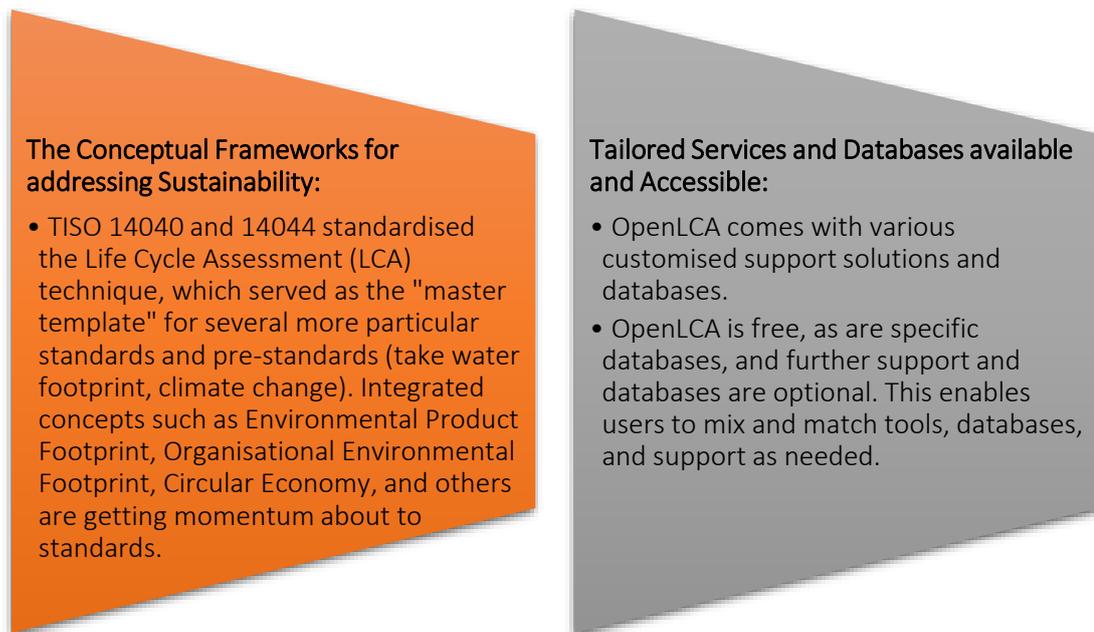


Figure 13: Benefits of OpenLCA

- **Implementation**

From theory to practice, the main question is how organisations can implement and use OpenLCA. HE teachers can explain the use and applicability of this tool in a classroom setting by using the following framework:

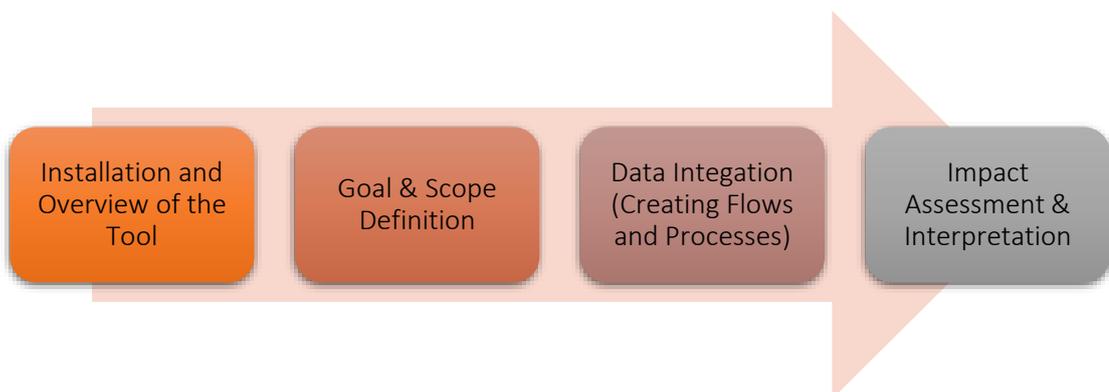


Figure 14: Framework for Implementing OpenLCA Tool

OpenLCA is an appropriate tool option for usage in institutions and education, and it is free software. Students can get the software for free and learn how to implement LCA by developing their models. With accessible LCA databases available, such as the European reference Life Cycle Database (ELCD) database, it is possible to create a completely free LCA study, without using the models and data. Even databases that are usually instead expensive offer free or low-cost teacher licenses. It provides an educational multi-user edition of the OpenLCA technical software support, specifically for use in a classroom setting. Students do not have to bother the lecturer with any issues in this area.

- **Installation and Overview of the Tool**
 - **General Overview:** The OpenLCA program is not a web-based online platform. For this reason, the program must be installed on the computer. HE teachers can use free manuals, and case studies for the lectures or request customised exercises for their classes. A good start could be watching online training from both OpenLCA forum platforms and YouTube. The installer version or the zip-archive version is effective for getting OpenLCA running on the chosen operating system. Follow the installation instructions after downloading the installer version from openLCA.org. If users download zip files instead, all users have to do is unzip them and run OpenLCA; there is no need for extra installation



Figure 15: Framework for Implementing OpenLCA Tool

- **Classroom Activity:** At the beginning of the class lecture, a brief, ten-minute overview of the Open LCA concepts, objectives, and benefits. As an activity, all groups should be given a list of clear data to choose from – data that are specifically related to the environment. The purpose of this classroom activity is for the students to have a basic knowledge about OpenLCA program and finish their installation and practice the software by themselves. In this part of the group-based activity, each student in the group can study the data by exploring the Open LCA Platform etc. This practice can be completed in 30 minutes by each group.
- **Goal & Scope Definition**
 - **General Overview:** OpenLCA, like other software, “just” provides numbers; students and researchers must evaluate them to extract valuable data and customise the message to a target audience. Before starting to deep-dive usage of the tool, users need to clarify their goals and the scope of the work.
 - **Classroom Activity:** As a next step of the activity, all groups should answer the following questions.

- What? Is that for a process? a product? or a service?
- Why? What are the Reasons to choose this data?
- To whom? Public & readership

This activity aims for the students to know about their goals and the scope of definitions.

○ Data Integration

- **General Overview:** The Databases should be created or imported to integrate data in OpenLCA. The [OpenLCA Nexus website](#) is an online resource that offers datasets optimised for usage with OpenLCA for free and for purchase. It includes global LCA data sources such as thinkstep (GaBi databases), the ecoinvent centre, and the European Commission's Joint Research Centre (ELCD). The following formats for importing databases are supported: Zolca, Ecospold1, Ecospold2, Excel, ILCD, SimaPro, CSV. Every database is structured the same way and contains the following elements:
 - **Projects:** comparison of product systems.
 - **Product systems:** a network of processes.
 - **Processes:** a set of interacting activities that transform inputs into outputs.
 - **Flows:** product, material, or energy flow between operations of the product system.
 - **Indicators and Parameters:**
 - **Impact assessment methods:** methods for environmental Life Cycle Impact Assessment (LCIA).
 - Social indicators: indicators for social LCA.
 - **Global parameters:** parameters that are available within the whole database.
 - **Data quality systems:** Indicators and scores to defining the quality of data.
 - **Background Data:** Flow properties, unit groups, currencies, actors, sources, and locations.
- **Classroom Activity:** As a practice activity, it can be used generic data to learn platform panel. Tell the students to import the OpenLCA database file "openlca4students.olca" in OpenLCA and the file "impact-methods.zip" (EcoSpold1) in the imported database. It will take 10 minutes to import. After importing the data, students need to identify the existing available flows and the ones that need to be created. In this step, Typical flows (i.e., steam, natural gas, water, etc.) can be directly taken from the OpenLCA inventory. Still, specific material flows (i.e., butadiene) usually need to be created. After finishing the creating flows, students will need to identify the processes. To determine the already available techniques and the ones that need to be made. This step is usually equivalent to the flows. This practice can be completed in 20 minutes by each group.

○ **Impact Assessment and Interpretation**

- **General Overview:** Although they may be downloaded for free and easily imported, impact assessment techniques are omitted by default in OpenLCA. In OpenLCA, you may change current impact assessment methodologies (impact categories and flows can be added or deleted; equivalence factors can be altered). It is also feasible to develop new ways for assessing effect. Many functions are offered in OpenLCA to analyse findings and monitor the source of environmental impacts. Such as various results and influence analyses and Sankey Diagram.
- **Classroom Activity:** Practising can be made from sample cases for impact assessment and interpretation. After data integration, creating flows and processes, creating a product system is necessary to adapt the design of a particular method to the specific case study. To do so, the “provider linking” should be “only link default providers” to get just the providers (processes) that we have selected and not the first one. To calculate the results, the proper impact assessment method should be chosen. Getting the value will be available in the “impact analysis” tab. Here are sample cases for students:
 - **Shaver Models:** creating a comparative cost analysis from a consumer perspective for shaver models. A few prices, e.g.:

Product	Price
disposable shaver, 2 blades	0.89 EUR for 5 pieces
tap water, incl. wastewater treatment	5EUR/m ³ (=> 0.005 EUR/kg)
shaving foam	2.69 EUR for 200ml

Table 7: Shaver Model Prices

Let students describe their procedures. This practice can be completed in 15 minutes by each group.

- **Corn Production:** To calculate regionalised impacts of corn production, Import the database “*regionalised_lcia4students*”. Bind the parameters in the LCIA method to the shapefiles parameters. Then calculate regionalised LCIA results of the process “corn grain; at harvest in 1996; at the farm; 85%-91% moisture” for the US states of Nevada (NE), Iowa (IA), Illinois (IL). Which state has lower environmental impacts? Let students find the best answer. This practice can be completed in 10 minutes by each group.

To be more clear in the classroom, teachers can check and read the detailed manual from [here](#).

- **Examples of OpenLCA based Organisations**

Real-life examples should ideally drive every concept. Here are some examples of corporates:

<p>beLCA is an Italian team of building, energy, and life cycle assessment specialists who use and support OpenLCA. They are also our Italian partner, providing OpenLCA training and services to Italian clients.</p>	
<p>A server-based Ghent University OpenLCA is used for around 150 accounts, which is unique to the knowledge. They created a multi-user environment for accessing the ecoinvent database in OpenLCA by giving each student their unique login.</p>	
<p>OpenLCA is the LCA tool of choice for a research group at Oregon State University's Department of Biological and Ecological Engineering (BEE), which has published multiple peer-reviewed research publications based on OpenLCA work. They developed new LCIA methodologies based on GBEP measures and are currently working on a massive project studying the Food Energy Water Nexus at a regional level. They use Nexus databases, such as ecoinvent, and other accessible databases like NREL/US LCI.</p>	
<p>Since 2012, the Life Cycle Assessment Centre for Excellence (LCACE) of the US EPA's Office of Research and Development's National Risk Management Research Laboratory has been a partner and user of OpenLCA. Since then, LCACE has collaborated with GreenDelta to develop OpenLCA (see Supporters) and establish it as the official LCA program for the US EPA Office of Research and Development and other US EPA offices.</p>	
<p>Within the LCA courses for Bachelor and Master students in environmental engineering, the Hochschule Darmstadt in Germany uses OpenLCA. Once the teachers completed initial web-based training, they provided additional case studies and activities in the lectures.</p>	
<p>The Vehicle Modular-LCA Kit, abbreviated as the Modular-LCA Kit or Kit, is a simplified LCA software built in the Volkswagen group (VW) with the purpose of supporting target setting for vehicle environmental balance.</p>	

Table 8: Examples of Organisations using OpenLCA

- ***Additional Examples on the Use of OpenLCA Tool***

OpenLCA can be used to build complex systems and analyse the life cycle impacts. Several case studies are available online for your reference. Following are specific resources to understand OpenLCA in a classroom setting in more detail, e.g., relevant articles.

- **Articles:**

- Implementing simplified LCA software in heavy-duty vehicle design – [Link](#)
- ICT for environment in life cycle applications OpenLCA -- A new open source software for life cycle assessment – [Link](#)
- European Platform on Life Cycle Assessment – [Link](#)
- Life Cycle Data Network — Handbook for data developers and providers – [Link](#)
- Environmentally conscious manufacturing and product recovery (ECMPRO): A Review of State of the Art – [Link](#)
- Definitions of LCA – [Link](#)
- Open LCA Manuel – [Link](#)
- Project with Open LCA Software – [Link](#)

- **Similar Digital Tools like OpenLCA:**

- SimaPro – [Link](#)
- GaBi Sphera – [Link](#)
- Umberto – [Link](#)
- Brightway – [Link](#)

- ***Links to General Learning Resources***

Following are general resources to understand OpenLCA in more detail, e.g., links to YouTube video clips.

- **YouTube Videos:**

- OpenLCA Official YouTube Channel – [Link](#)
- Detailed Introduction to OpenLCA & Case Study - by ERG – [Link](#)
- How to create processes, flows, and product systems in OpenLCA (Part 1) – [Link](#)
- How to analyse LCA results in OpenLCA (Part 2) – [Link](#)
- Case Study: PET water bottles – [Link](#)
- Case Study: Ethanol vs gasoline – [Link](#)
- Case Study: Organic vs conventional carrot production – [Link](#)

3.2.3 Triple Bottom Line

- **Aim**

Triple bottom line (also abbreviated as TBL or 3BL) is a business concept that represents a manifold balance of responsibility. It aims “to measure the level of financial (profit/prosperity), social (people/human capital), and environmental (planet/sustainability) commitment to corporate social responsibility, and impact and performance of an organisation over time”.



HE teachers while teaching this tool to students in the classroom will need to explain each of the three dimensions (i.e., financial, social, and environmental) in detail. The overall aim of their lecture on TBL should be to explain the overall concept of TBL to students, then its use and applicability. In the following sections, teachers will get a greater understanding on what is this tool is about (general) and how it can be used within the classroom to make students understand the concept. While teaching students about the challenges to environmental sustainability will necessarily introduce some risk of overload, teachers can limit this by being sure to discuss environmental success stories. For example, this may include discussion of environmental policies or movements that have succeeded in mitigating pollution, conserving resources, or promoting ecological resiliency.

- **Description**

John Elkington (a business writer and founder of the management consultancy *SustainAbility*) coined the concept of TBL in 1994. Elkington argued that the conventional way of measuring the corporate success – is its net income, i.e., the “bottom line” of its profit and loss account – does not provide a holistic view of an organisation’s actual value and overall performance. In the latter case, an organisation (multinational or SME) can well be financially successful yet may harm the social or ecological environment in which it is operates. Lack of focus on human capital and planet will hold back organisational development and have a severe impact on its success. In such cases, organisations truly cannot account for the full cost of doing business.

It is thus advocated that to ensure the pinnacle of an organisation’s prosperity and attainment, it should expand its ways of measuring corporate performance by adding two more “bottom lines” to the original one. Instead of simply measuring their economic (i.e., net income) bottom line, organisations should also focus and report on a social bottom line, i.e., on their engagement towards welfare endeavours and social equity and inclusion, as well as on an environmental bottom line, i.e., on their ecological impact including green innovation and carbon neutrality. Ensuring the adoption, implementation, and diffusion of TBL concept at its core – is categorically a clear indicator of how well an organisation is meeting its Sustainable Development Goals (SDGs). TBL is not about disregarding the organisational profits or its financial prosperity, rather it encompasses supplementary metrics into an organisation’s overall

health picture. An organisation must be financially healthy and stable, and equally successful for people (internal and external stakeholders) and planet to thrive. All three (profit, people and planet) must work in tandem for an organisation to fulfil its TBL commitments.

- **Key Features**

TBL differs from traditional reporting frameworks as it includes social and ecological aspects that are often difficult to measure. The notion is that by enhancing in any one sector, organisations improve overall. TBL is primarily based on three key features/pillars or commonly referred to as the “three Ps” – profit, people and planet.

- **Profit** – In a typical capitalist economic environment, an organisation’s success greatly relies on its financial stability and performance, or the revenue it generates for the shareholders. Strategic business planning initiatives and key business decisions are prudently designed to maximise profits whilst decreasing expenditures and mitigating internal and external risks. The latter view was mainly the thing of the past, as many organisations’ strategic objectives ended there. In the context of TBL, organisations do not merely focus on generating profits for their shareholders, but also how they can facilitate and contribute to wider society and environment (e.g., stimulating economic development, creating wealth by rewarding workforces justly, assisting a network of local suppliers with its business, engendering innovation, and reimbursing its rational share of taxes to government). With this focus, now purpose-driven leadership in most leading multinational organisations have realised that they have the authority to use their businesses to positively transform the world without hindering their financial stability and overall performance. In many cases, adopting sustainability initiatives has proven to drive business success i.e., Ben & Jerry’s social mission, Lego’s pledge to sustainability, and Starbucks’s commitment to ethical sourcing, are some of the leading examples. In the end, it is all about making financially prudent but ethically driven decisions about how and where to source materials, products, or labour.



- **People** – This bottom line highlights the societal impact, or its commitment and assurance of service towards people and the wider community. TBL in this context, gauges an organisation’s impact on human capital. However, before moving into further discussion, it is vital to distinguish between an organisation’s shareholders and stakeholders. From a conventional perspective, organisations have mainly focused on creating value for those who own shares of the organisation. Whereas, with the mounting external pressures for achieving



SDGs, organisations have gradually embraced sustainability practices, with this stance, they have transformed their focus toward creating value for all stakeholders impacted by business decisions, including customers/consumers, vendors/suppliers, workforce (internal and relocated), and wider community. As such, TBL acknowledges the interdependency of all the human dealings, connections and collaborations that facilitate the organisation to operate. The latter can transform into activities e.g., ensuring rational appointment practices and promoting volunteerism in the workplace, provision of quality healthcare benefits, offering professional development activities, facilitating flexible work schedules, and developing a safe and healthy work environment.

- **Planet** – This bottom line is about making a positive impact on the planet. Since the birth of the industrial revolution in 1750 up until 1914, many large industries and manufacturing organisations contributed towards a staggering amount of environmental degradation – this has been the key driver of climate change. Whilst organisations have traditionally been the greatest contributors to climate change, they also have the power to drive positive change. For instance, several business leaders are recognising their onus towards implementing corporate social responsibility practices in their organisations. However, it is not the multinationals who should be the sole contributors, small and medium size businesses (who are the backbone of every economy) also need to ensure they engage in reducing ecological footprint. Regardless of whether big or small, every business recognises that the lesser environmental impact an organisation has, the lengthier it can thrive. Thus, transforming business operational practices like not producing products that are unsafe or unhealthy for the planet and the people, but it also includes reducing consumption, waste, and emissions. It involves specific actions, such as using renewable energy sources, reducing energy use, disposing of toxic materials safely and adopting a host of green corporate policies and practices are steps in the right direction.



- **Benefits**

Innovative companies have shown time and again that it is possible to do *well* by doing *good*. TBL does not essentially value societal and environmental impact at the expense of financial profitability and success. Instead, many organisations have reaped increased financial benefits in the long-term by committing to sustainable business practices. According to Willard (2012), sustainability is for those who aim to race to the top. The business benefits of implementing sustainability practices via TBL framework are measurable and factual – the return on investment from aggressively enhancing organisational-wide sustainable development knowledge and practices makes other traditional investment prospects seem insignificant. By focusing on implementing sustainability strategies, businesses can benefit from:



Figure 16: TBL Benefits

By implementing TBL practices, organisations can reap favourable outcomes from these abovementioned benefits and acquire a significant competitive edge. Benefits from more aggressive and creative attention to environmental and social projects creates a win-win situation for organisations, society, and planet. From the point of view, HE teachers and students using this tool in classroom, following is a glimpse of how it will benefit them and enrich their understanding on the use of TBL.



Figure 17: Benefits for Teachers and Students in Using the TBL Tool

- **Implementation**

Implementing TBL signifies that an organisation is considering profit, people, and planet in its initiatives. From theory to practice, the main question is how organisations can implement TBL. HE teachers can explain the use and applicability of this tool in a classroom setting by the using the following steps:

- **Describe the Purpose/Problem Definition**

- **General Overview:** In the start, organisational leadership needs to describe the rationale for adopting TBL practices, what problem(s) needs to be addressed. Basically, the leadership needs to re-examine what is meant by ‘success’ — both at its most granular level and on a corporate scale. The type of business and related product and service offering, main revenue drivers will help in clarifying why and how to proceed in implementing TBL. The problem definition should be addressed/defined from the point of view of the overall financial position of the organisation, well-being of the workforce, and to what extent is the organisation contributing to the environment and wider community.
- **Classroom Activity:** At the beginning of the class lecture, a brief, ten-minute overview of the TBL topic restates the lecture’s objectives and summarises the concept of the TBL. The teacher may choose to pose questions to the students, e.g. “What is Sustainability?” and “What are the three Ps?”. Students may choose to volunteer some answers. Next, by using the above understanding, teachers need to create groups of 4 to 5 students each.
 - As an activity, all groups should be given a list of organisations to choose one from – organisations that are specifically related to environmental, social, and economic issues.
 - The purpose of this classroom activity is for the students to have a group discussion within themselves to understand and define the problem as to why a specific organisation opted to be a TBL based organisation. What made them a TBL organisation? What aspect(s) of TBL is covered by the organisation and how? In this part of the group-based activity, each student in the group can study about the organisation by exploring their website, the web in general, etc. This discussion can be completed in 30 minutes by each group.

- **Implement the Tool (Gathering your Actions)**

- **General Overview:** Once the purpose and problem are clearly comprehended, the next stage is to identify the type of actions that relate to each of the 3Ps. For example, here are some examples of TBL in action:

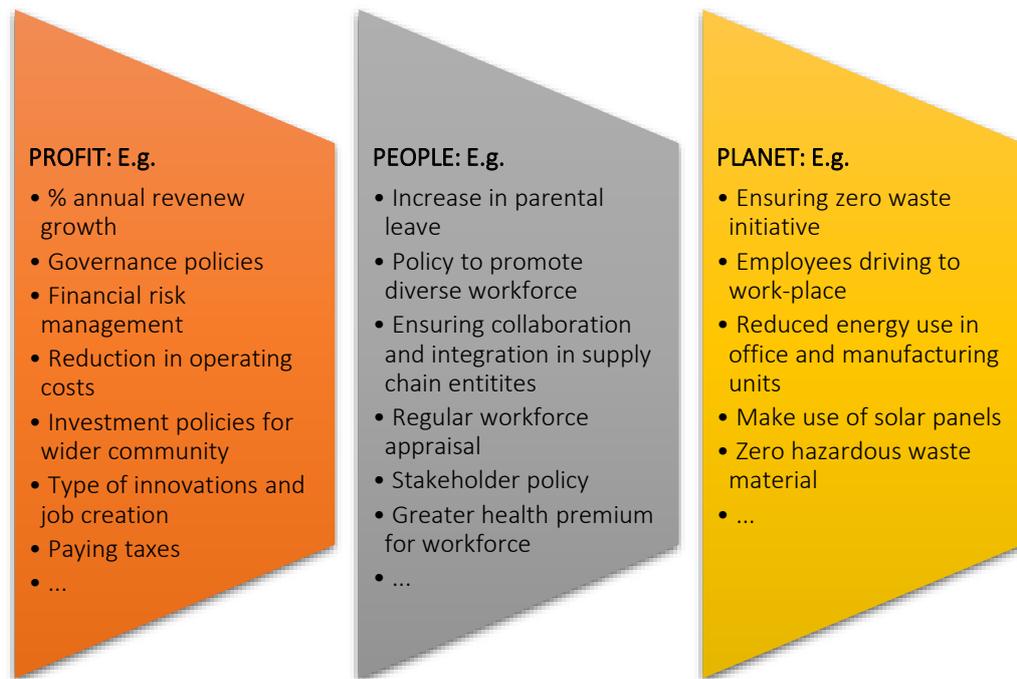


Figure 18: Examples of TBL in Action

Implementing TBL at its core will ensure sync and strengthening of each of the Ps. Also, actions from one ‘P’ may overlap with the actions of the other ‘P’, e.g., reductions in the operating costs can be better for the environment, as is risk management.

- **Classroom Activity:** Once the students have explored the organisation’s website or the web in general, studied and understood their move to TBL, then using the examples like ones presented in Figure 4, students can start discussing and drafting points related to the organisation. Once the students have drafted points, the HE teacher can ask each group to present their findings to the whole class. The students in the group can share (his/her) idea in order to make their argument make sense and flow. They can then decide who will lead in presenting the overall findings. Presentation time for each group can be 10 mins. The students can also present their findings by identifying potential positive and negative impacts of general infrastructure with respect to 3Ps.

	People	Planet	Price
Positive Impact	<i>e.g., increased accessibility, safety, and well-being</i>	<i>e.g., removal of contaminants, provides wildlife habitat</i>	<i>e.g., economic growth, creating jobs, paying taxes</i>
Negative Impact	<i>e.g., visually unpleasant, dislocation of homes/businesses</i>	<i>e.g., increased surplus and flooding, loss of natural habitat</i>	<i>e.g., higher user fees, increased capital expenditure</i>

- **Collect Data after Tool Implementation**
 - **General Overview:** Once leadership implements TBL practices in its true sense, they can consider evaluating each department's positioning, resulting in collecting data (either via survey, focus groups, or interviews) to understand the outcomes of implementing TBL.
 - **Classroom Activity:** Once all the groups in the classroom have presented their findings related to their chosen organisation, the teacher can collate the main points presented by each group, either by creating a self-constructed questionnaire or merely extract main points from their presentation of the tool.

- **Analyse the Data and Reflect on the Outcome**
 - **General Overview:** Once data is collected, leadership will need to re-evaluate the overall organisational environment i.e., reflecting on and understanding the implications of impact of TBL framework on financial (profit/prosperity), social (people/human capital), and environmental (planet/sustainability) dimension.
 - **Classroom Activity:** After collating main points from the group presentations, it is up to the teacher to either provide feedback to each group after they have presented, or let all the groups to present, collate the main points and then provide to each group in the end. In either way, the teacher will need to provide feedback on how the students performed in the activity. In this last part of the activity, the teacher and students can have a debate. Depending on the number of groups developed in the first stage, the teacher can choose to put some groups on one side to discuss on the positives of TBL, whereas other groups can debate on the negatives. Each group can try to sway the opposing side to their point of view. The whole purpose of this group-based activity is to help understand and realise the overall value of TBL, reasons why organisations choose to implement TBL practices, and it is implemented by organisational leaders.

To conclude, a TBL framework works best when embraced as a new method of operating i.e., adopted, implemented, diffused, and essentially practiced in reality, rather than merely brought in as an add-on or a plugged-in patch.

- **Examples of TBL based Organisations**

Real-life examples should ideally drive every concept. Here are some of the examples of big corporate giants:

Coca Cola is aiming to recycle every bottle by the year 2030.	



<p>Unilever is aiming to “reuse”, “recycle” or “compost” 100% of plastic packaging by the year 2025.</p>	
<p>Lego is committed to reduce its carbon footprint and is working towards 100% renewable energy capacity by 2030.</p>	
<p>Starbucks has been socially and environmentally focused since its inception in 1971. They have hired more than 26,000 veterans since 2013 and is committed to hiring 5,000 more per year going forward.</p>	
<p>DHL is on a mission to reduce all of their logistics-related emissions to zero by 2050.</p>	
<p>Mars has a sustainable cocoa initiative called Cocoa for generations. It requires cocoa farmers to be fair trade certified to ensure they follow a code of fair treatment to workers providing labour. In exchange for certification, Mars provides productivity technology and buys cocoa at premium prices.</p>	
<p>Ben & Jerry's is founded on and dedicated to a sustainable corporate concept of linked prosperity. The company opposes the use of recombinant bovine growth hormone (rBGH) and genetically modified organisms (GMOs) and fosters myriad values such as fair trade and climate justice.</p>	

Table 9: Examples of Organisations using TBL

- ***Additional Examples on the Use of TBL Tool***

Following are specific resources to understand TBL in more detail e.g., relevant articles.

- Articles:

- A New Framework for Teaching the Triple Bottom Line: The Sustainability Triangle and the Sustainability Index – [Link](#)
- Sustainability and triple bottom line: key issues for successful Spanish school principals – [Link](#)
- The formula one Australian grand prix: Exploring the triple bottom line – [Link](#)

- **Links to General Learning Resources**

Following are general resources to understand TBL in more detail e.g., links to YouTube video clips.

- YouTube Videos:
 - Sustainability in Business – [Link](#)
 - TBL: Meaning and Concept – [Link](#)
 - Nike’s TBL in Innovation – [Link](#)
 - TBL: One Mindset – [Link](#)

3.3 Pitching and Digital Storytelling

Business leaders leverage the single most powerful tool of human persuasion: Effective Pitching with Digital Storytelling – a stimulating move towards creativity and innovation. Conventional storytelling uses physical tools and materials to convey information and make a point, whereas digital storytelling accomplishes the same thing via digital tools like *StoryMapping*, *Microsoft Sway* and *Animaker*. With these tools, digital stories at their best can be designed to be highly engaging and emotionally compelling, the better to make a connection with a target audience.

Following three tools explain how HE teachers can make use of pitching and digital storytelling tools and demonstrate to students on how these tools are used to capture and hold the audience’s attention throughout the narrative as well as way to get marketing messages across.

3.3.1 User Story Mapping

- **Aim**

User Story Mapping (USM) is a visual exercise that aims to support product managers, and their development teams define the work that will create the most delightful user experience. It is used to improve teams’ understanding of their customers and to prioritise work. In user story mapping, teams create a dynamic outline of a representative user’s interactions with the product, evaluate which steps have the most benefit for the user, and prioritise what should be built next. For agile organisations, it provides an alternative to building a flat list of backlog items or working from lengthy requirements documents.



- **Description**

Software leader Jeff Patton is often credited with having developed and shared extensive knowledge around user story mapping. USM employs the concept of user stories – which communicate requirements from the perspective of user value – to validate and build shared understanding of the steps to create a product users love.

Teams write user stories in a format that captures business value and can be completed within a development iteration (usually called a sprint).

- **Key Features**

USM starts with a decision about what medium to use for building the story map. It can be done with simple physical resources – such as a wall or whiteboard and sticky notes – or with a variety of software tools that are available to create a virtual map. Virtual planning may be helpful for distributed teams. Regardless of the medium, teams will want to take the following steps:

- **Frame the Problem** – What is the problem your product solves for customers, or what job does it help them do? Taking a goal-first approach is critical in mapping the work that follows, and teams need to ensure they are mapping the customer’s goal. This is true even if teams are building enhancements to an existing product. The user story format (As a [type of user], I want to [action] so that [benefit].) can be helpful in thinking about product interactions from a user’s perspective.
- **Understand the Product’s Users** – Who is the target audience for your product? There is likely more than one. Different audiences can have different goals and ways of interacting with your product. Starting this exercise with a set of user personas can ensure that teams share an understanding of the target audience and build stories from that point of view. It also eliminates wasted effort on edge cases that are not a fit with your target audience.
- **Map User Activities** – All users who interact with a product will likely do so through a series of common activities. These activities — also referred to as themes or functions — form the backbone of the user story map. For example, users of an ecommerce product may want to search items for sale, view items by category, put items into a shopping cart, and complete a purchase. These activities will comprise the stories across the top of the map, which the team will then break down into smaller user stories.
- **Map User Stories Under Activities** – With the backbone in place and major themes defined, the team can now build out the skeleton of the map by breaking down each activity or theme into smaller user stories. For example, under the shopping cart activity, there might be stories like, “As a shopper, I want to edit and delete items in my cart so I can change my mind before I purchase.”
- **Flow and Prioritise** – With the high-level themes and detailed user stories in place, the next step is to prioritize stories, ranking them vertically so that the most important ones are at the top. Then, teams map how users flow through the product — typically from left to right. If a product has multiple types of users, teams may want to map different scenarios for each. These actions help teams decide which stories are vital and which ones are less important to delivering a delightful product experience to the target audience(s).
- **Identify Gaps, Dependencies, Technical Requirements, and Alternatives** – The story map gives teams the ability to envision upfront the potential issues that may slow them down later, such as bottlenecks, dependencies, technical

architecture, or missing information and capabilities. Identifying these risks before design or development work begins can help teams minimise and mitigate them, enhance usability, and come up with alternative solutions.

- **Plan Sprints and Releases** – This is where teams turn a visual exercise into executable work. With stories prioritised from the top down, teams can see the work that will deliver the most value in the shortest time and group these stories into development sprints and product releases. Teams will create horizontal “slices” across the map, grouping stories by priority within each critical user activity. It is important to consider that this is not about identifying what is required for a minimum viable product; rather, it is critical for identifying the most important work to be completed to create a delightful customer experience.

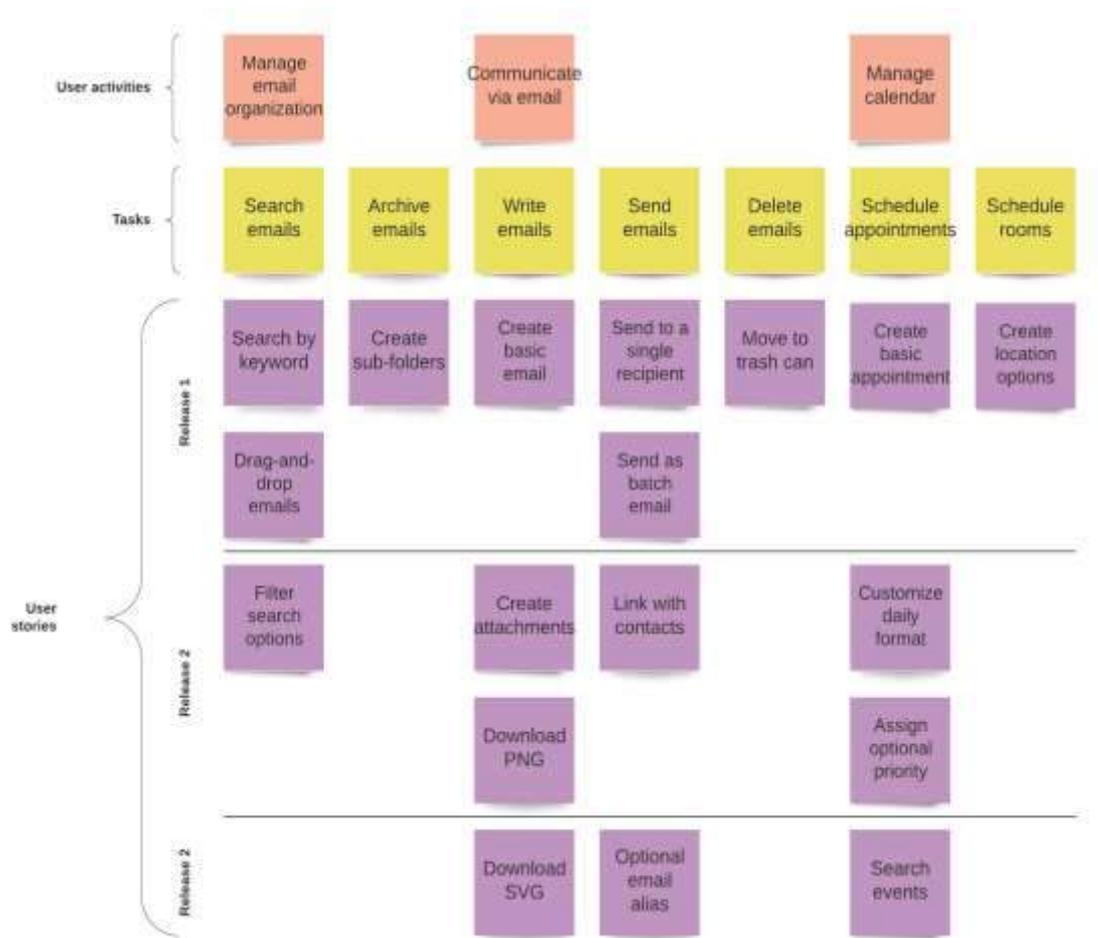


Figure 19: A View of USM Tool

- **Benefits**

The following are some of the ways that story mapping helps teams improve their processes for building products users will love.



Figure 20: Benefits of USM

- **Implementation**
 - **Describe the Purpose/Problem Definition**
 - **General Overview:** the teacher should start by explaining by the problems that USM solves. In the talk [Essentials of Agile User Story Mapping](#) at Twitter John Walpole gives an anecdote of what happened at Twitter when there was a poor understanding of what to build, and how USM would have been prevented. The teacher should tell this story or perhaps come up with a different story from their own experience.
 - **Classroom Activity:** The teacher should ask the students if they have ever experienced a situation where the wrong product was built, or perhaps

the students know a situation where this happened in products that they're using.

- **Implement the Tool**
 - **General Overview:** In this step, the tool should be implemented. This means that the students will apply the tool on a specific problem. Specific instructions should be given by the HE teacher for students to proceed with this activity.
 - **Classroom Activity:** Once the purpose and problem are clearly understood by everyone, we can start implementing the tool. The HE teacher should instruct the students to make groups. Each group should come up with a product they would like to build. Then the groups should apply USM to gain common understanding of the product and its features they want build.
- **Collect Data after Tool Implementation**
 - **General Overview:** After implementing, each group should extract the main features that were decided on in their USM session.
 - **Classroom Activity:** Each group should present their USM to the classroom. Here it is important that both the main features are presented, but also the timeline in which each feature is to be implemented. The students should also state what is the priority of each feature and why was it decided to prioritise certain features?
- **Analyse the Data and Reflect on the Outcome**
 - **General Overview:** Once data is collected, it's important to reflect on the outcomes.
 - **Classroom Activity:** The teacher should give feedback on each USM. There's often not a single right approach, so it is important to ask for the motivations between each decision. Together with the rest of the class, improvements should be discussed. To be clear, it is not only teachers that should give feedback. This should be a collaborative process.
- **Examples of Organisations using USM**

Real-life examples should ideally drive every concept. Here are some of the examples of big corporate giants:

<p>Twitter is using User Story Mapping to clarify the needs of users and create common understanding in their teams.</p>	
<p>Amazon uses User Story Mapping to be sure to always prioritise the right tasks. After adopting this method, less time was spent building low priority features that customers were not really waiting for.</p>	

Table 10: Examples of Organisations using USM

- **Additional Examples on the Use of USM Tool**

Following are specific resources to understand USM in more detail e.g., relevant articles.

- Book and Articles:
 - User Story Mapping: Discover the Whole Story, Build the Right Product – [Link](#)
 - Towards the Definition of Domain Concepts and Knowledge through the Application of the User Story Mapping Method – [Link](#)
 - User Story Mapping-Based Method for Domain Semantic Modelling – [Link](#)
 - The User’s Journey: Storymapping Products That People Love – [Link](#)
 - Digital story mapping to advance educational atlas design and enable student engagement – [Link](#)

- **Links to General Learning Resources**

Following are general resources to understand TBL in more detail e.g., links to YouTube video clips.

- YouTube Videos:
 - Essentials of Agile User Story Mapping at Twitter – [Link](#)
 - How to do User Story Mapping – [Link](#)
 - Agile Product Backlog with User Story Mapping – [Link](#)
 - How to Create a User Story Map to Make Customer Focused Roadmaps – [Link](#)
 - How to Create a User Story Map – [Link](#)

3.3.2 Microsoft Sway

- **Aim**

Microsoft Sway (MS) is the new app from the Microsoft Office family of products that aims to make easy the creation of interactive reports, stories, presentations, newsletters, and many more. Its built-in design engine makes interactive, creative, and eye-catching results that are easy to share with family, friends, classmates, and colleagues.



Integrating this tool in class can be beneficial for both HE teachers and students. Concerning HE teachers, they can create more interesting presentations and show students how to improve their own presentations and other documents such as reports, resumes, portfolios and others. On the other hand, HE students, by using this tool, would develop their creativity and designing skills through more interactive presentations, reports, and others. In addition, this tool can be used also in the future careers of HE

students since they can create portfolios, business presentations, resumes, and newsletters.

- **Description**

An image is worth a thousand words. Visual aids in reports, presentations, or any documents are essential because they are eye-catching, interesting, and more captive for the receivers. Being creative and able to create interesting and interactive content can be challenging and really difficult for some people, resulting sometimes in frustration. In fact, creativity is actually one of the main skills that employers are looking for in employees as it can be beneficial in so many ways in the labour environment. Yet, many people tend to believe that they are not creative enough or find it difficult to create interactive content when they haven't received any kind of related training (e.g., graphic design, Adobe Photoshop).

The first tools that someone could think of concerning the creation of presentations would be PowerPoint and Prezi. These two are similar to Microsoft Sway, yet this tool has a variety of options and features to choose from to create the best design possible. Unlike PowerPoint, for example, Microsoft Sway combines many elements since it is not only for presentations and has templates for inspiring and helping the user.

- **Key Features**

As mentioned above, one of its advantages is the variety of purposes that this tool offers, since it can be used for many reasons. Its key features are:

- **Provision of templates** – for each result, Microsoft Sway offers templates in order to facilitate the user. It even distinguishes some templates based on their purpose (e.g., presentation vs business presentation) and their topic (there is a search engine where users can search based on the topic of their preference).
- **Possibility to add pictures, text, videos, and audio recordings** – this key feature allows users to make their document as interactive as possible.
- **Possibility to add content from other sources** – it allows users to add videos from online platforms (such as YouTube) and to import files already developed in other Microsoft Office apps (for example, users can upload a word document e.g., a resume, and then improve it on Microsoft Sway).
- **Autoplay slides** – it puts the slides in the correct order and keeps playing independently.
- **Easy navigation through the website** – The website is divided in different sections e.g.:
 - The Home Page – it includes tutorials (How to Sway), examples (The Universe and Contoso Sales Training), and related links.
 - My Sways – the list of already developed documents associated with the account signed in. Here, Sways that belong to other users' creations but were shared with the user are also demonstrated.
 - Start from a template – provision of a variety of templates.
 - The storyline and design features – Storyline is the space where users are able to edit their design and change what they don't like. On the

other hand, design is the space where a preview of the final product is provided, and it changes instantly based on the changes developed in the storyline space.

- **Benefits**

The benefits of using Microsoft Sway can be various in any kind of situation, whether preparing a presentation for a university class, developing a resume for a job application, or creating a newsletter for an update in the office. Yet, using it in the classroom can be helpful for HE teachers since classes can become more interesting and interactive through the support of elements such as videos, maps, sound clips, documents, questionnaires. In addition, this tool can help students improve their skills. More specifically:

Creativity Skills: HE teachers as well as students, while using this tool for creating their documents, can also develop their creative skills in order to create interactive and eye-catching content

Imagination and Curiosity Skills: The built-in design engine suggests new ideas and designs to users. This can trigger the imagination and curiosity of students and help them improve their skills related to this topic.

Verbal Communication Skills: By creating interactive presentations, students will be challenged to present their content in class, and improve their verbal communication skills.

Non-Verbal Communication Skills: By the same feature, students will also practice, develop and improve their non-verbal communication skills such as body language, body posture, and facial expressions.

Teamwork and Collaboration Skills: Microsoft Sway allows users to share their creations with others. This engages students and helps them work together in order to deliver the best result possible.

Open-Mindedness and Acceptance: Students will become more open to discussing and accepting new ideas by working together.

Productivity: The feature of templates can help students' productivity since they can create creative designs fast and effortlessly.

Figure 21: Benefits of MS

- **Implementation**

Before implementing this tool in class, it would be wise for the HE teacher to prepare a presentation to show students what Microsoft Sway can actually do. In addition, this tool should be used frequently as its constant use will help students get familiar with this tool and continue using it in other classes and maybe in the future.

- **Describe the Purpose/Problem Definition**

- **General Overview:** HE teacher should start the class by introducing the tool and convincing students of why it is beneficial for them to use it. To do so, it would be wise to describe and raise a problem related to the classroom's topic as well as to explain that the solution may be this specific tool. Depending on the class's topic or progress, HE teachers can suggest that students to use this tool for an already planned presentation. Another suggestion may be to link it to a more entrepreneurial topic since Microsoft Sway has different templates concerning business-related topics and TechSTER focuses also on the entrepreneurial dimension of students' skills and future.
- **Classroom Activity:** HE teacher should start the class by explaining how important it is to have great virtual aids not only during the academic but also the professional career. Tools such as PowerPoint and Prezi help people develop great content, but they may be a little bit old-fashioned and basic. The HE teacher should introduce Microsoft Sway and explain why it may be a better option here. Then, the HE teacher should divide students into groups and introduce an imaginary scenario:

“Think of a company that you would like to develop in the future. To become a reality, it needs funding, whereas, to get this financial aid from potential investors, you should present your potential company as well as its aims through a business presentation by using the tool of Microsoft Sway. The purpose of this activity is to make your potential investors (in this case the rest of the class) give you the funding needed through the most convincing and interesting presentation (of 5-10 minutes). Be careful! No matter how interesting and interactive this presentation would be, it should remain strictly professional.”

- **Implement the Tool**

- **General Overview:** The following step is to implement the tool, meaning its practical use by students. Specific instructions should be given by the HE teacher for students to proceed with this activity.
- **Classroom Activity:** HE students should continue with the implementation of the tool by following instructions from their teacher. Instructions can be as followed:
 - Creation of accounts on Microsoft Sway. An email account on Microsoft (e.g., Hotmail, Outlook) is enough.
 - Brainstorming of around 10 minutes between students in each group should be held to decide on a potential company and the structure of their presentation.

- Selection of the “business presentation template” and navigation through the different tools provided. *If students have questions on using a tool or what tools are available, additional resources (tutorial, guide for students) are provided below.*
- Provision of time (30 to 40 minutes) for students to prepare their presentation and be ready to present it to the rest of the class.

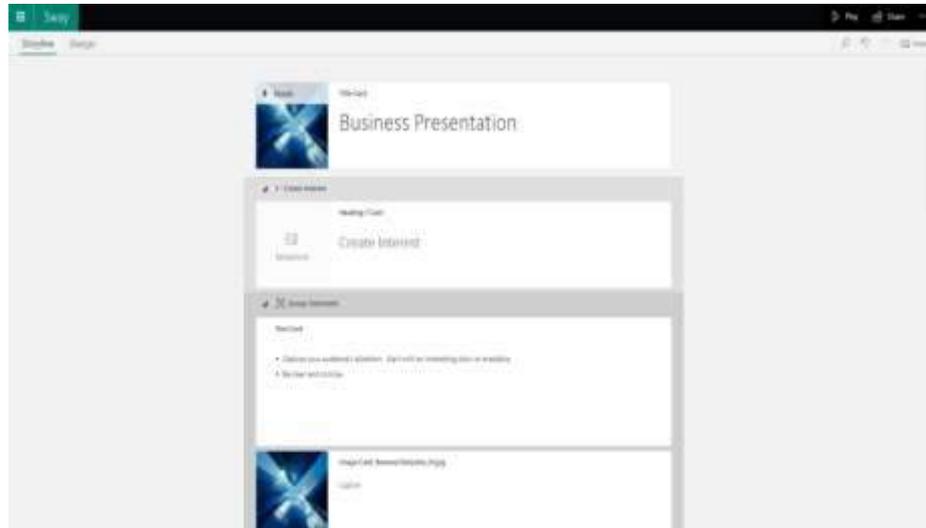


Figure 22: A View of MS GUI

- **Collect Data after Tool Implementation**
 - **General Overview:** After implementing of the tool, users need to collect the data generated from the tool before they proceed to their analysis.
 - **Classroom Activity:** Each group will then proceed with presenting of their potential company (5-10 minutes). The rest of the class should listen carefully in order to discuss later whether they were convinced by the presentation, provide feedback, and explain which elements of the presentation had a positive impact on them and which ones should have been avoided.
- **Analyse the Data and Reflect on the Outcome**
 - **General Overview:** In this final step of the activity, users of the tool should reflect on the tool, its usability, its benefits, and weak points, as well as on the possibility of using it in the future.
 - **Classroom Activity:** After all presentations, HE students should discuss and decide (in around 15 minutes) which presentation was more convincing based on the content and the design of the presentation, presenters' skills and then, give feedback on the elements that they did not like on the presentations. This activity should finish by a short brainstorming session in which HE students reflect on the tool and extract the positive and negative aspects of this tool.

- **Examples of Organisations using MS**

Small companies or big well-known companies need visual aids and presentations in order to demonstrate their work to the public. Below, examples of companies using Microsoft Sway are given:

<p>Maudsley Learning used Microsoft Sway to create an engaging promotional brochure to share the centre's learning and events in London.</p>	
<p>SDA Lighting used Microsoft Sway to show lighting principles for the office of the future in the company's blog and industry white paper.</p>	
<p>Susan Taylor at Charter One Realty (real estate) has been using Microsoft Sway to make real estate listings stand out in an interactive and modern way.</p>	
<p>Cupcakes Actually used Microsoft Sway to illustrate their creations and the modern and professional formatting that they use, reflects on the quality of their cupcakes.</p>	

Table 11: Examples of Organisations using MS

- **Additional Examples on the Use of MS Tool**

Following are specific resources to understand MS in more detail e.g., relevant articles.

- Articles:

- Microsoft Sway in classroom with useful links for teachers and students – [Link](#)
- Engineering students' readiness and preparedness on teaching materials with Microsoft Teams and Microsoft Sway – [Link](#)
- Two Ways of Using Microsoft Sway to Teach English in Vocational Education – [Link](#)
- MS for Education – [Link](#)
- 7 ways businesses can benefit from using Microsoft Sway – [Link](#)

- **Links to General Learning Resources**

- YouTube Video –

- Tutorial, Teacher/Staff Guide – [Link](#)
- YouTube video – Tutorial, Student Guide – [Link](#)
- How to use Microsoft Sway – Beginner's Guide – [Link](#)
- Overview of Microsoft Sway | Introduction & Tutorial – [Link](#)
- Designing Using Microsoft Sway – [Link](#)

3.3.3 Animaker

- *Aim*

Animaker is a web application designed to create movies, gifs, presentations, and voice recordings. This tool allows to prepare different types of videos (explanatory, educational, promotional videos storytelling etc.) and engage the users to develop soft skills such as creativity and innovativeness while its applications.



The implementation of Animaker by HE teachers needs the explanation the way to access the tool, how does it work and how it can support classroom tutoring. The benefits of tool application, activities and actions that are possible to be taken while using the software should be emphasized to encourage students to realise own projects in Animaker. The additional way to underline the functionality of Animaker is to present the existing resources created in this tool and opinions of other people using the software and being pleased by its facilities.

- *Description*

Animaker is a DIY (do it yourself) online video creation app with a smart feature that meets the growing demand for animated movie making. Animaker allows the users to create quick movies, infographics, animated presentations, and other animated items for different purposes. The software is completely web-based and does not require to install anything. It uses a simple drag and drop interface to allow the user to add or edit elements. Animaker is self-made animation video maker, first launched in an open beta version in 2014 by Animaker Inc., a video-based Software-as-a-Service (SaaS) company founded by RS Raghavan. The software was officially launched based on a freemium model in 2015.

Animaker lets the user to collaborate with other people and create animated presentations with a simple drag-n-drop interface. With access to visual tools, multi-user collaboration features, and the world's largest animated library of images, characters, audio, and other supportive files, the Animaker is the ideal creative solution to stay ahead in content creation efforts. Several templates are available to get started with the application if the user is not sure how the video should look like. Additionally, the software is built on HTML5 and allows users to create animated videos that can be exported to Facebook, YouTube or downloaded as an MP4 file. The tool is also available as a Chrome extension in the Chrome Web Store.

Animaker is offered as a freemium software and uses a subscription-based pricing model. The free version allows to have access to limited options. If this is not enough, it is possible to purchase a monthly or annual subscription. There are available four packages at different prices and facilities – Basic, Starter Pro and Enterprise. To view the more detailed description about Animaker of each package user should use the [link](#).

- **Key Features**

Animaker is a useful “drag-and-drop” animation tool, which offers many features to its user. Figure 23 presents the key features that support in delivering user the professional and studio-grade innovation solutions in a simple and straightforward package.



Figure 23: Key Features of Animaker

- **Benefits**

Animaker is the online animation designing software, which brings many advantages while its utilisation. The user does not need advanced knowledge about this tool. To start making an animation video it is required to log to the tool using the official webpage <https://www.animaker.pl/>. While working with the software the user has access to many features allowing to edit and make video without having to deal with complicated interface. This brings many benefits for those, who want to start to develop specific projects using the variety of options the software offers. The scope of advantages coming from using Animaker is presented on Figure 24.

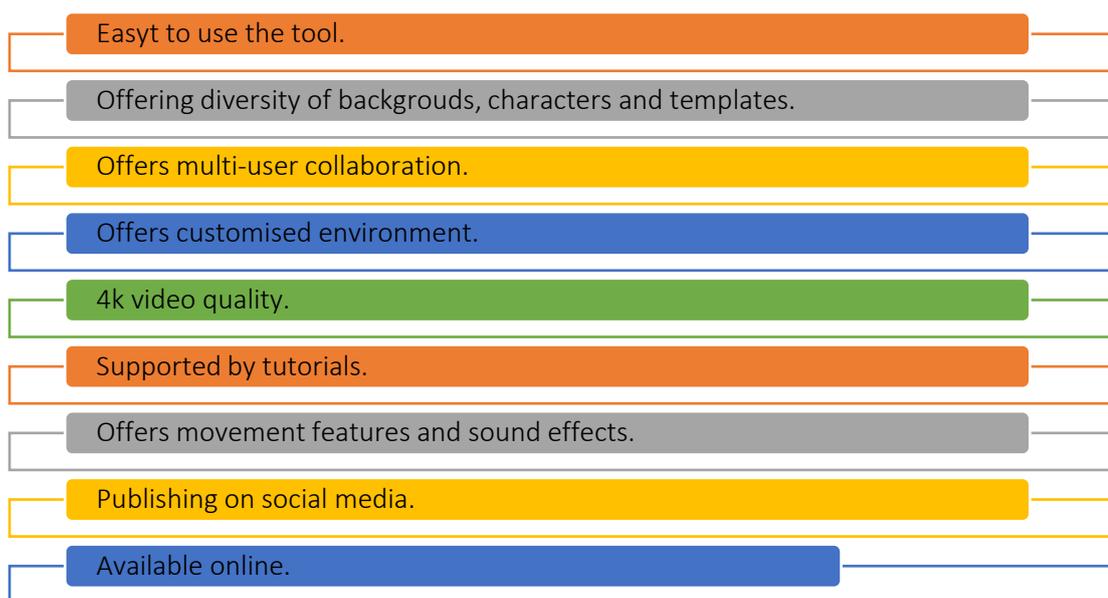


Figure 24: Animaker Benefits

The software ensures many features in one tool, which supports the users in multimedia resource creation. It gives the ability to create excellent videos worthy of publishing on Facebook, YouTube, or LinkedIn without the need for a graphic arts education. There are variety of backgrounds, templates, and music effects available in the largest video asset library, which can be used and edited while creation of unique and appealing videos on Animaker. Moreover, the users can review and use the basics videos to inspire.

The software is easy to use, however, there are also several tutorials available that can be used to learn the whole tool. In relation to competitors, it has similar functionalities as the biggest ones, such as the possibility of loading elements from computer (images, audios, videos) and using them in edition. The user does not have to download any software. The tool is available online and projects are stored on the cloud and can be accessed at any time. There are plenty of options regarding design and animations that are useful to stimulate creativity during development of multimedia resources, both as individual projects and in cooperation with others. In case of supporting students Animaker allows to:

- extend students' knowledge regarding technology by creating videos in any areas,
 - share information regarding any topic (business, education etc.), and
 - engage students in developing visual competences and soft skills.
- **Implementation**

Applying Animaker as a tool supporting the classes is very useful if HE teachers aims to increase the student's creativity and show the different ways of presenting information. It might be a good idea to introduce Animaker as a solution offering innovative visualisation approach and features allowing to prepare animations attracting people and better focusing the attention of the audience at the topic presented. The animation made in Animaker can refer to the different aspects of conducted classes. It can present the results of conducted projects or progress of realised tasks, new/modernised products designed and/or developed by students, and new kind of services or business concepts.

The general idea of implementing Animaker by HE teacher in the classroom is presented on Figure 25. The process should start from describing the aim of the tool and explaining the general premises for the use of the tool during classes. This should be supported by expressing the offered options. HE teachers should arrange the topic to offers the students possibility to apply Animaker. Students should design scenario of animation as a basis of future work. The scenario should consider not only the concept of videos developed or being developed, but also given constraints (i.e., time constraints). After preparing the plan students should create animation in Animaker. The results of students' work should be presented and discussed with the HE teacher and other students.

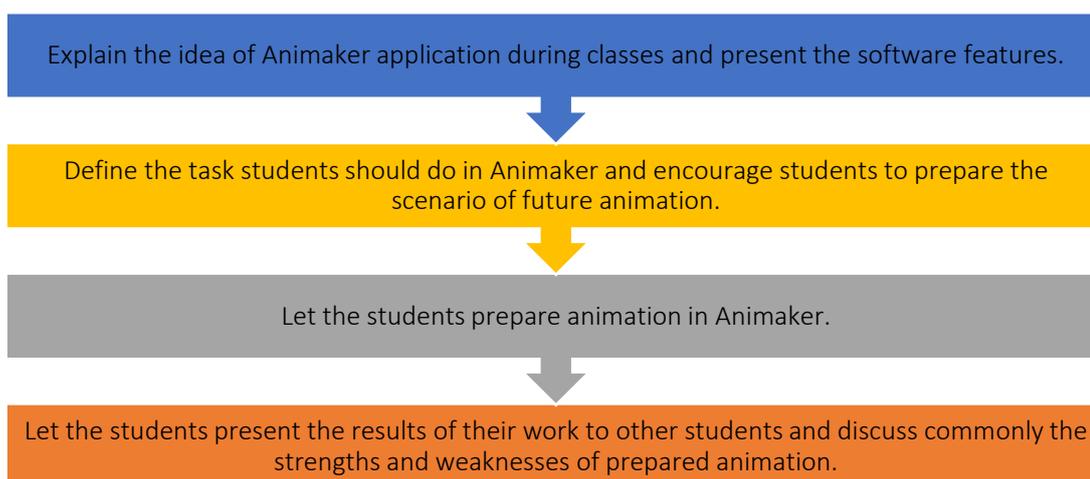


Figure 25: Procedure of Implementing Animaker in a Classroom Session

- **Describe the Purpose/Problem Definition**
 - **General Overview:** Students should understand the idea of implementing the tool during classes and become familiar with the tool.

HE teacher should present how to log on to the tool, what are the main facilities available and how to use them in practise.

- **Classroom Activity:** HE teacher should present Animaker facilities to students. He/she logs to Animaker's online account available from www.animaker.com and provide the presentation of the tool. The screens of Animaker interface are presented on Figure 26. HE teachers must include the created animations to show different ideas for preparing videos and underline the used effects and their influence to support visualisation. Additionally, the way to create own animation should be discussed, including the access and utilisation of video assets library resources.

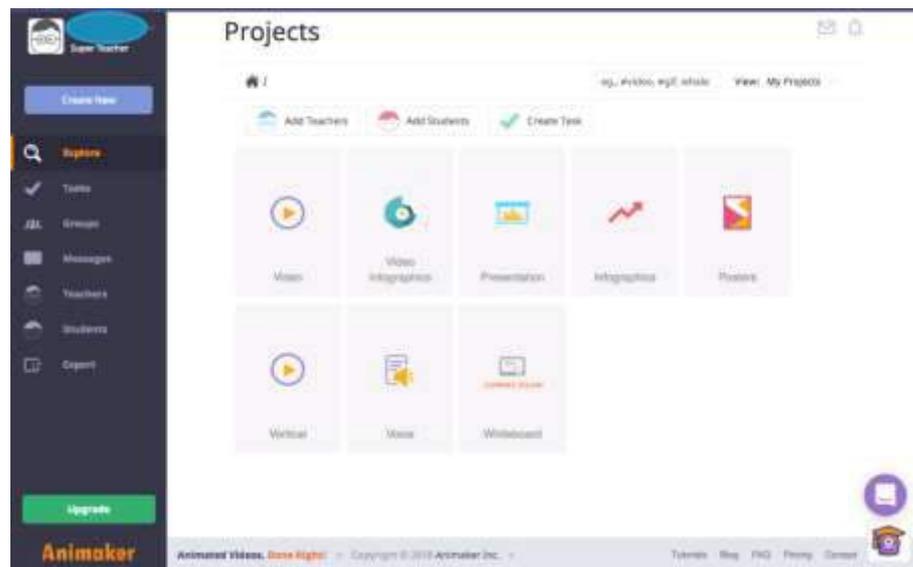


Figure 26 (Part A): An Example of Animaker Interface (Source: [Link](#))



Figure 26 (Part B): An Example of Animaker Interface (Source: [Link](#))

Students assist the teacher using their computers. They set up an account on the Animaker website and try to use the functions described by the teacher to create some visualisation effects. The activities dedicated to explaining how to start working with Animaker should take around 20 minutes.

○ **Implement the Tool**

- **General Overview:** Once the students are acquainted with Animaker app they should start working on their own animation. The task posted by the HE teacher should be developed in Animaker. HE teacher indicates the role of the scenario for the purpose of creating the animation.
- **Classroom Activity:** HE teacher should define the task and engage student to prepare animation in Animaker to develop the given task. Teacher should also explain that the animation should not be accidental but rather should tell a story to convince the audience about its mission and relevance. While preparing the presentation students should consider some issues like:
 - potential audience of prepared visualisation (to whom the animation is intended),
 - length of visualisation,
 - needed resources (graphics, backgrounds, music effects, etc.) coming from existing Animaker library or own resources,
 - the plan, how to present the materials (storyboard describing the next scenes).

The idea of this step is to focus on preparation of all material, which will be helpful and let them to provide the future animation. The activities in this step should be completed with the concept of visualisation not shorter than 30 seconds and no longer than 1.5 minutes. Each student should work individually about 20 minutes to be ready to start the animation process.

○ **Collect Data after Tool Implementation**

- **General Overview:** Students should prepare the animation on the basis of elaborated scenario and gathered resources.
- **Classroom Activity:** Each student should prepare animation in Animaker taking into account the time constraints (0,30 – 1,30 min). HE teacher should assist students and support them in technical issues. Students should prepare the animation referring to a given task within 25 minutes. The elaborated video should be ready to be shown to other students and the teacher.

○ **Analyse the Data and Reflect on the Outcome**

- **General Overview:** After working individually on animation, the result is presented to the audience. Students and teacher should review the animation and shortly discuss its strengths and weaknesses.
- **Classroom Activity:** Students should present their animations. Each presentation should be finished by short discussion considering:
 - whether the topic was clearly presented?

- was the animation easy to understand?
- what attracted the most attention from the students?
- which animation effects fits best to strengthen the message?

The activity is finished after all students' presentations and indicating general guidelines referring to positive effects of animation, elements might disturb given presentations and those having positive impact. Students and teacher should commonly propose and analyse the favourable and unfavourable visualisation effects. The discussion on individual animations and the summary guidelines should be completed within 25 minutes.

- **Examples of Organisations using Animaker**

Animaker helped over 10M people in creating great videos. There are several global leading brands, who have shown their trust and used Animaker, in particular:

The company is officially indicated at Animaker official webpage as a unit that trusted and utilized Animaker for business purposes.	
The company was supported by Raghav (Animaker CEO & Founder) to run their video marketing campaigns.	
The company belongs to the publicly announced clientele of Animaker using the tool in business activity.	
Siemens belongs to the group of companies indicated as one applied the Animaker as video software to support the presentation processes.	
Neil Patel, the crazyegg CEO & Founder recommended to use Animaker instead of spending tons of money on a video production agency. He underlined the simple drag-and-drop interface and the ease of learning.	
The NOKIA employees used Animaker for internal communication. It helped to describe complicated processes in an easy, funny, and understandable way. Animaker made NOKIA presentations lively and engaging.	

Animaker supported PHILIPS Healthcare to create videos that have greatly improved the education of NICU patients to help provide care for newborn babies in the NICU.	
The Hillary Rodham Clinton School of Law at Swansea University used Animaker to create studio-quality explainer videos to promote the courses offered by the school to the UK and international students in both English and Welsh languages.	

Table 12: Examples of Organisations using Animaker

- ***Additional Examples on the Use of Animaker Tool***

Following are specific resources to learn to apply animation and Animaker in a classroom setting:

- Web Resources:
 - Animaker and its suite of products have Big Plans in 2022! – [Link](#)
 - Invitation Video Maker – [Link](#)
 - Promo Video Maker – [Link](#)

- ***Links to General Learning Resources***

Following are general resources to learn, how to start working with Animaker and create own animation:

- YouTube Videos:
 - What is Animaker? DIY Animated Video Making App – [Link](#)
 - Technology in the classroom – Animaker – [Link](#)
 - Animaker Tutorials – [Link](#)
 - How to make animated videos [Tutorial for beginners] – [Link](#)
 - How to make Animations on Animaker – [Link](#)

3.4 Creativity and Problem Solving

Thinking creatively makes you a better problem-solver, which has far-reaching benefits in both your work and personal life. Expressive, creative thinking helps us challenge our own assumptions, discover new things about ourselves and our perspective, stay mentally sharp, and even be more optimistic. In STEM industries like biomedicine, stimulating creativity by asking open-ended questions and creating fictional scenarios helps professionals find innovative solutions to health problems (Rodríguez *et al.*, 2019). For example, these questions encourage medical professionals to experiment and discover new ways of solving a persistent problem. Through creative thinking, professionals in any field can discover unique answers to pressing problems. Many business leaders see creativity and innovation as something

unpredictable. However, with the right tools, you can tap into creative thinking whenever you want.

Following three tools explain how HE teachers can make use of creativity and problem-solving tools and demonstrate to students on how these tools are used to foster their creativity and support in problem solving.

3.4.1 IdeaBoardz

- **Aim**

IdeaBoardz is a team collaboration tool. It is simple and easy to use. It enables to create and maintain boards, and to collect data.

HE teachers can use IdeaBoardz for remote collaboration, ideation and brainstorming, research and design, planning, and organising online workshops.



- **Description**

IdeaBoardz is a tool that allows students in class to add sticky notes, known as ideaz, to the IdeaBoardz. Users can create an unlimited number of IdeaBoardz based on various topics designated by the teacher. Within the IdeaBoardz, users can add different columns to create sub-topics. IdeaBoardz can support communication, collaboration, social knowledge building and brainstorming both inside and outside the classroom.

- **Key Features**

IdeaBoardz application works well with student activation methods during classes. It allows teams to collectively brainstorm, gather inputs, reflect and retrospect. It enables online collaborative work. It is also handy for teams to collect inputs over some days and then meet to discuss them. It can also be used by student teams working on larger projects (those lasting 3/4 weeks or more). It can be used to retrospectively review the work of teams, while building their discussion and process improvement skills. The IdeaBoardz board have some filtering and ordering features if there is too much information on it. You can export the information of your board to a pdf document or to Excel. Each submission also has a "Vote Up" button that can be used to vote up ideas. Stickies cannot be customised regarding size and color; these options are automatically configured.



Figure 27: Key Features of IdeaBoardz

HE teachers can involve students in a board by simply sharing a link to its URL through e-mail, messenger, or other communication channel.

- **Benefits**

IdeaBoardz is not only a retrospective tool. It can be used for brainstorming exercises like six thinking hats, pros-cons, risks-opportunities. Enables a set of collaboration features for brainstorming and retrospectives so working in cross-functional teams is easier. Another important benefit of IdeaBoardz is that it is a 100% free of charge. It can be used in any way and there are no additional paid options.

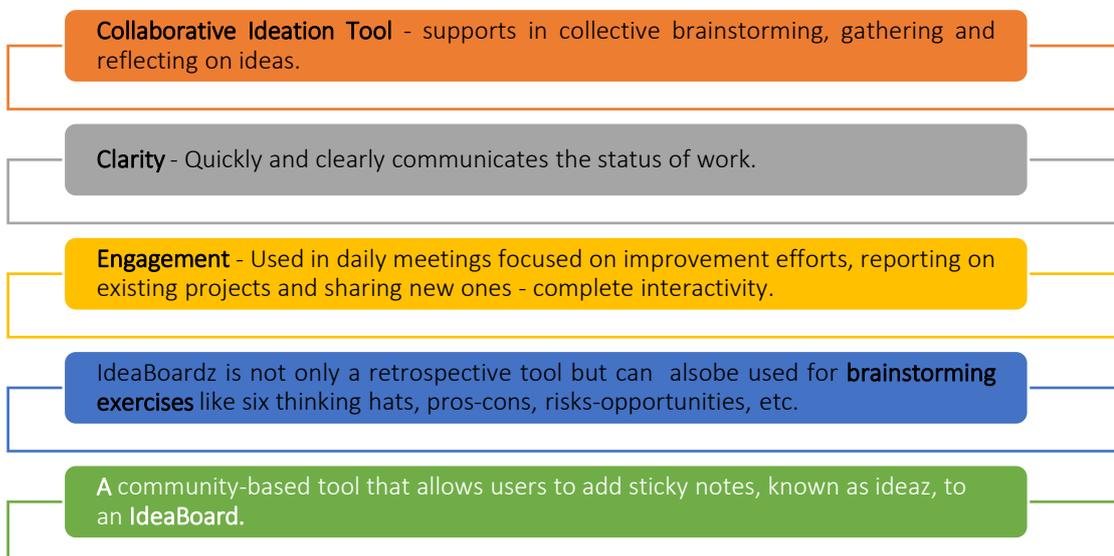


Figure 28: Benefits of IdeaBoardz

- **Implementation**

- **Using IdeaBoardz for Retrospective Exercise:** Retrospectives are an important part of the agile process of developing a new product and especially software. They can therefore be used as a tool for larger (e.g., longer than 3/4 weeks)

student projects. The executive team should regularly take some time to reflect on what is already working well and what is not yet and make any necessary adjustments.

Retrospective participants – Everyone involved in the students’ project + 1 facilitator (if possible).

It is important to go back to the very beginning to make sure that people are thinking about the bigger picture and are not fixated on the last 2-3 days of work, which may be freshest in their minds. It is also helpful to build a shared understanding among everyone in the group, as some team members may have joined or left the project at different times and not be aware of the full picture. The facilitator leads the group through the timeline process and draws important events on the board. Once everyone is on the same page, you can move on to analysing what worked well and what did not. It is good for people to do this individually so that everyone can put forward their own ideas and not be too manipulated by the group.

Once you get to the group phase, IdeaBoardz is an excellent tool, replacing ‘sticky notes’ in an electronic/online environment. So, the HE teacher leads the discussion by asking students for their ‘worked out well’ and transcribing them one by one onto the IdeaBoardz. The transcribing by the HE teacher allows the team to focus on the discussion and to maintain some coherence and organisation of the transcribed notes. The conversation flows quite naturally as others agree or disagree with a point and add their own comments. The HE teacher needs to pay attention and make sure that every student has a chance to speak.



Figure 29: IdeaBoardz for Retrospective Exercise (1)

In the second step move on to the ‘didn’t go well’ issues and eventually establish a list of key lessons. This category is where you get the most value from the exercise. Eventually team may create list which may be apply also to future projects. An unquestionable advantage of brainstorming is the possibility of obtaining a large number of different solutions to a given problem in a short

time, as well as stimulating students to creative thinking. Thus, this method is useful if the teacher needs several ways to solve the problem to continue the lesson, or to test how useful the previously mastered knowledge is. In problem-based lessons, brainstorming in a way that is attractive to the student will allow to collect hypotheses, each of which is deeply embedded in the student's mind. Brainstorming allows students to develop listening skills while refraining from criticising others' statements.

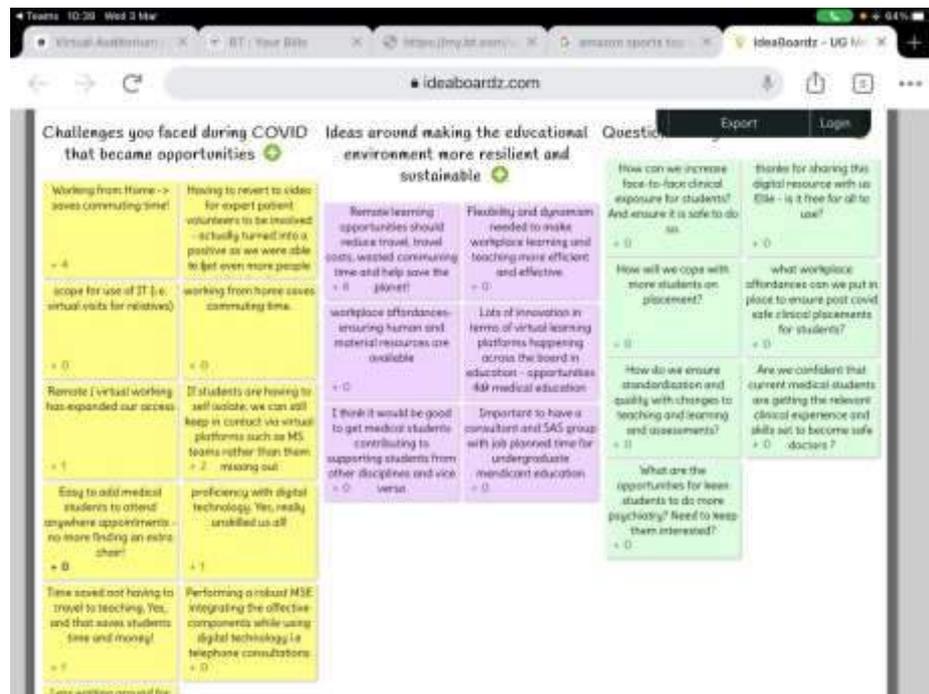


Figure 30: IdeaBoardz for Retrospective Exercise (2) (Source: [Link](#))

- **Using IdeaBoardz for Six Thinking Hats Methods:** Six Thinking Hats and the associated idea parallel thinking provide a means for groups to plan thinking processes in a detailed and cohesive way, and in doing so to think together more effectively. Is a strategy that teaches students be flexible thinkers. Students learn about six different types of thinking they can apply to any situation, represented by different colored hats:

- White Hat: "the Factual Hat" – facts perspective
- Red Hat: "the Hat for the Heart" – feelings perspective
- Blue Hat: "the Conductor's Hat" – process perspective
- Green Hat: "the Creative Hat" – creativity perspective
- Yellow Hat: "the Optimist's Hat" – benefits perspective
- Black Hat: "the Judge's Hat" – cautions perspective

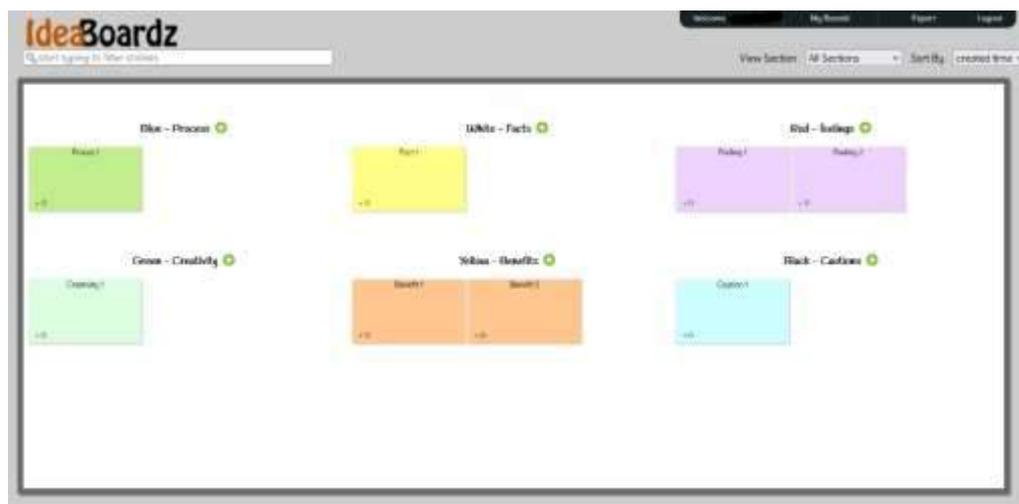


Figure 31: IdeaBoardz for Six Thinking Hats Methods

- **Using IdeaBoardz for the SAMR Model:** Here is an example of how IdeaBoardz might fit within the SAMR model ([Link](#)):
 - **Substitution** – Students write their thoughts on virtual Ideaz instead of using actual sticky notes.
 - **Augmentation** – Students can engage in the discussion on IdeaBoardz over an extended period of time, as well as asynchronously. Users can also merge two ideaz into a single note if they are similar and like or, “thumbs up” individual ideaz to show their agreement with an idea.
 - **Modification** – Students can search across the ideaz for specific text or words and also export the content of the IdeaBoardz for future reflection.
 - **Redefinition** – Students can engage in idea sharing, brainstorming, and knowledge building with people from around the world in real time

- **Using IdeaBoardz for the “Three Lights” Technique:** A very interesting example of using the IdeaBoardz application is the Three Lights technique – we use three pieces of paper in the colors green, yellow and red. Students put the corresponding color on the IdeaBoardz board for self-assessment and to inform the teacher:
 - green – I am doing great, I understand everything
 - yellow – I have some doubts
 - red – I do not understand anything, please help.

Students are constantly informing the HE teacher about their mastery of the topic. If the teacher instructs the students to self-assess using the lights, he/she can use the information for mutual teaching. He can ask the ‘green’ students to explain their doubts to the ‘yellow’ students, while the ‘red’ students can explain everything again. Another variant of this technique is to use only two lights, green and red, to express agreement or disagreement. With the light technique,

the teacher can have continuous and full control over the teaching process, and students can signal for help at any time.

- **Using IdeaBoardz for the “Four Cards: A, B, C and D” Technique:** Another example of using the IdeaBoardz is the "four cards: A, B, C, and D" technique. The teacher asks students a question with four (or three) different possible answers. The students, after thinking about it (preferably in pairs), decide which answer they choose by writing on the board beforehand. More important than the decision to choose is the need to justify it and present that justification to other students. Through this technique students learn to work in pairs, make and justify their own decisions. It also requires all students to engage with the lesson topic.
- **Using IdeaBoardz for the “Exit Interview” Technique:** The IdeaBoardz application can also be used for the so-called Exit Interview. It allows you to collect students’ opinions on various topics, especially on what they have learned from the lesson. It also provides suggestions for questions that HE teachers can ask students to get their feedback on how they should teach the lesson:
 - What was most important to me in this lesson?
 - What was understandable and what was not?
 - What question would I like/need to ask about this topic?
 - What would I like to learn more about this topic?
 - What should be our next step?
 - What surprised me?
 - What was unclear to me?
 - What helped me learn and what hindered me?
 - What would I like to do again?
 - What topics would I like to revise before the test?
 - What will I be able to apply in the future and in life?

- **Examples of Organisations using IdeaBoardz**

Real-life examples should ideally drive every concept. Here are some of the examples of big corporate giants:

Table XI (Chicago, US) uses IdeaBoardz to perform effective retrospectives within an agile software development process (Link).	
Mob Mentality Show” TV Show - Christoph Lucian and Austin Chadwick which deals with product development uses IdeaBoardz for stickies (Link).	

<p>Urban Assembly (New York, US) – the charity that runs 20 secondary schools in NY - uses IB for discussions in virtual meetings, including knowledge sharing and brainstorming (Link).</p>	
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Table 13: Examples of Organisations using IdeaBoardz

- ***Additional Examples on the Use of IdeaBoardz Tool***

Following are specific resources to understand, learn and use IdeaBoardz in a classroom setting in more detail e.g., relevant articles.

- Articles:

- How to use IdeaBoardz – [Link](#)
 - Voting Features: IdeaBoardz – [Link](#)
 - How to run an Effective Retrospective – [Link](#)
 - IdeaBoardz is Wonderful for Collaboration – [Link](#)

- ***Links to General Learning Resources:***

Following are general resources to understand IdeaBoardz in more detail e.g., links to YouTube video clips.

- YouTube Videos:

- How to Create and Use IdeaBoardz – [Link](#)
 - IdeaBoardz Overview – [Link](#)
 - Retrospectives – How to run retrospectives for distributed agile teams – [Link](#)
 - Brainstorming – Generate More Ideas with IdeaBoardz – [Link](#)
 - Voting feature – How to Create and Use IdeaBoardz – [Link](#)

3.4.2 Mibo

- ***Aim***

Mibo is a new video chat tool made for (informal) online meetings, social mixers, and networking by which you can work around freely in a 3D world. It aims to offer *an interactive, modern, and innovative online space for groups of people who would like to exchange ideas, build relationships, communicate openly and comfortably even through a screen.*



HE teachers can use this tool in the classroom to, first of all, get to know their students in a more informal and fun way. Then, it can be used between students for group activities to improve their communication, collaboration, problem-solving, and team-

working skills. In the following sections, this online tool will be explained, and its features will be presented, followed by a more detailed guide on how it can be implemented during classes. In addition, this tool can also be found useful by HE students after their graduation, as it is also very appropriate for companies.

- **Description**

The COVID-19 pandemic has changed our lives in so many ways. One of them is the rapid technological turn for gatherings, whether professional meetings, university lectures, or school classes due to social distancing. Experts claim that even when the pandemic is over, the use of online tools for these kinds of purposes will continue to exist thanks to time-saving, cost-effectiveness, easy access, and more. Yet, online gatherings fall short of face-to-face ones as personal and human contact is decreased.

This setback is what Mibo aims to tackle since it works differently than other video chat tools. The typical feature of one window per person in an online call does not exist. Mibo provides a persona for each user who can move around and talk to different people who have joined the online meeting. Through its innovative features, users can have a new experience of online meetings.

- **Key Features**

Mibo differs from other online meeting and conferencing tools as its innovative and creative features can offer a more realistic online meeting. More specifically, the key features of Mibo are:

- **Virtual place** – Users are not just in virtual windows. They are allowed to move around in a virtual place that can be a classroom, an office, or the beach. As a result, users feel closer to one another and more like at a real-life social gathering, therefore, more at ease to speak openly and comfortably.
- **Move and groove** – This feature allows users to move around and speak to different people who are also in the same call. Users are the ones who decide where to go and to who to talk to. In addition, users cannot see themselves, only others, making them feel immersed and at ease.
- **Walk and talk** – Audio intensities vary based on proximity therefore, users need to be close to each other to have a conversation. At the same time, they can still hear the other users as background buzz, like in real life.
- **Fun and friendly** – Mibo offers a variety of games and playful activities (e.g., listening to music, playing poll) that can help users socialize without forcing it. This allows users to get to know each other better and develop team spirit.
- **Come back week after week** – Users and administrators can create and schedule team socializers for users to come back at a regular basis.
- **Throw virtual parties** – Users can throw parties for birthdays, milestones, or just important events for the group.
- **Share your screen during workshops, social events and meetings** – users are free to share their screen, share a point and demonstrate their opinion by additional visual representation.

- **Benefits**

Mibo provides the possibility to have online social gatherings in a different and more fun way. However, following Figure 32 provides benefits for a HE teachers for using it in the classroom.



Figure 32: Mibo Benefits

- **Implementation**

Implementing this tool in a classroom means that technology is used as a primary resource of the class. Therefore, the course should be held online. Even though no advanced digital skills are required to work with Mibo, yet students should still be given some time to get more familiar with the tool and its features.

- **Describe the Purpose/Problem Definition**

- **General Overview:** A problem should be given to students as an introduction. This problem can be a reflective question or a

controversial topic for which, students should discuss between them to find the solution or a common opinion between them. To do so, students should be divided into groups and participate in online brainstorming sessions. This is exactly where Mibo should be introduced and used, for students to navigate through the online space of Mibo until they find the one group that suits them. They will be given a specific amount of time to discuss and then all together will share their group's ideas and have an overall discussion.

- **Classroom Activity:** At the beginning of the class lecture, HE teachers should give the students a problem or raise a reflective question related to their field. No matter what this problem/question is, it should be composed in a way that will lead to a discussion between students. HE teachers will then introduce Mibo as the online tool to be used for the brainstorming sessions between students and explain its differences to a standard online tool (e.g., the possibility to navigate through the online space, change groups, hear other groups in the distance). Then, clear instruction should be given to students to proceed with the tool implementation.

○ Implement the Tool

- **General Overview:** For implementing of the tool, the theoretical part will be replaced by practice, and students will have the opportunity to use the tool, therefore, a clearer image of what this tool actually is.
- **Classroom Activity:** HE professors will proceed with instructions to the students to use Mibo for their brainstorming sessions. Instructions can go as followed:
 - Division of class in groups of 4 to 5 students each.
 - Creation of students' accounts and entrance in the room already prepared by the HE teacher* (**The HE teacher that will use Mibo in class, should create an account and an online space ready for use by students beforehand. After a confirmation email for the account creation, a new one is sent for setting up a room).*
 - Provision of sometime (5 minutes) for students to navigate the online space. Instructions will be given to them on how to move around as shown below.

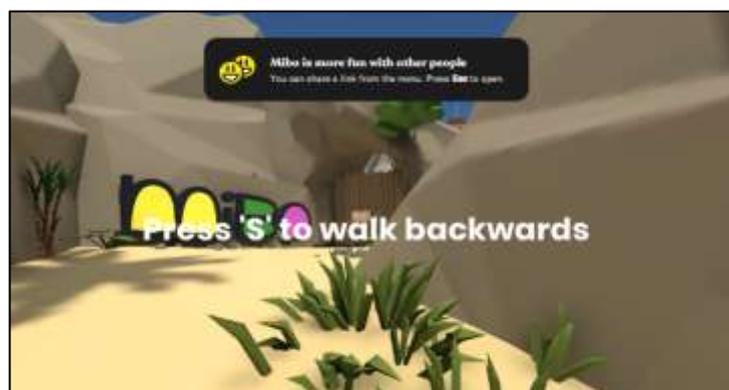


Figure 33: Guidelines on Using the Online Space



Figure 34: Reminder on how to Navigate through the Online Space

- Navigation through the online space and creation of small groups. The HE professor will then provide time (15 minutes) for students to discuss and brainstorm with the purpose of finding a solution to the problem raised. The HE teacher will be able to go through the different groups and help or provide guidance. In addition, students are also able to go around and talk with other groups to hear other opinions and reconsider what was already decided between their groups. However, at the end of these 15-minute sessions, students should return to their primary group.
- **Collect Data after Tool Implementation**
 - **General Overview:** After the tool’s implementation, it is now time to collect all the conclusions resulting from discussions and brainstorming to conclude on the solution or opinion of the problem raised at the beginning of the class.
 - **Classroom Activity:** Once the 15-minute sessions are completed, each group has to extract the main points considered or heard from others and conclude (in 5 minutes) on a main outcome or solution of the problem before presenting it to the rest of the class.
- **Analyse the Data and Reflect on the Outcome**
 - **General Overview:** After the tool’s implementation, it is now time to collect all the conclusions resulting from discussions and brainstorming to conclude on the solution or opinion of the problem raised at the beginning of the class.
 - **Classroom Activity:** Once the 15-minute sessions are completed, each group has to extract the main points considered or heard from others and conclude (in 5 minutes) on a main outcome or solution of the problem before presenting it to the rest of the class.

- **Examples of Organisations using Mibo**

Real-life examples should ideally drive every concept. Here are some of the examples of big corporate giants that use Mibo for online meetings and gatherings as well as for team bonding between colleagues.

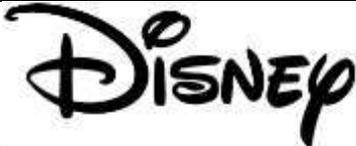
Disney is using Mibo for online meetings and gatherings.	
Unicef is using Mibo for online meetings and gatherings.	
Netflix is using Mibo for online meetings and gatherings.	
Google is using Mibo for online meetings and gatherings.	
Microsoft is using Mibo for online meetings and gatherings.	

Table 14: Examples of Organisations using Mibo

- **Additional Examples on the Use of the Mibo Tool**

Following are specific resources to understand Mibo in more detail e.g., relevant articles.

- Video by the International School of Business in Arnhem (the Netherlands) that used Mibo for ice-breaking activities to their new students – [Link](#)
- Mibo Resources: Getting Started – [Link](#)

- **Links to General Learning Resources**

Following are general resources to understand Mibo in more detail e.g., links to YouTube video clips.

- YouTube Videos:
 - Welcome to Mibo – [Link](#)
 - Get to know Mibo – [Link](#)
 - How Mibo revitalised the after-work Friday drinks online – [Link](#)
 - Simple tutorial for facilitating and leading a group in Mibo – [Link](#)

3.4.3 MindMeister

- *Aim*

This tool supports brainstorming, project planning, taking notes, collaboration in a team, as well as teamwork productivity. It develops the creativity and a free flow of ideas. Users can share the prepared or updated mind maps in real-time with other users across in-browser and mobile apps, both privately with an unlimited number of users or publicly.



HE teachers, while implementing this tool to students in the classroom will need to explain the way to access the tool, how does it work and how can it support the topics. In general, a vital issue is to present the idea of mind mapping which is a useful technique that involves creating a visual diagram to capture and structure information, ideas, or concepts and is directly supported in MindMeister. HE teachers should indicate the benefits the tool can bring during considering new ideas or exploring a concept in a more in-depth way. Developing a mind map with MindMeister might be a very good way to arrange a thought and keep things organised. While teaching students about the applicability of MindMeister, teachers can present some examples of already created mind maps and give some recommendations and insight, which might be helpful to create own mind map, order topics, underline the presented information and commonly develop the map. Teachers can also organise the brainstorming session with the students by giving them task and present the result in mind map created in MindMeister.

- *Description*

MindMeister is the first tool from MeisterLabs, developed by Michael Hollauf and Till Vollmer in 2006. It is a completely web-based mind mapping software that runs in any standard web browser. MindMeister and is dedicated to online mind mapping, allowing students to visualize and share their ideas. MindMeister enables the user to conduct the brainstorming sessions, take notes, plan projects. With this tool, students can conduct interactive sessions with their colleagues and come up with new ideas. MindMeister is a product offered in the SaaS model (Software as a Service), which distinguishes the program on the mind mapping market, where most programs are installed on a computer hard drive. MindMeister works only online and requires a stable network connection, preferably with a high-speed connection, to work.

Created mind maps are saved automatically in the cloud, online, and can be accessed from anywhere, as long as there is a connection to the internet. Aside from the web app, MindMeister also offers native mobile apps for iPhone, iPad, Apple Watch and Android devices, which means it is possible to present created maps also using mobile devices. MindMeister enables live co-creation of mind maps by multiple users. The created mind maps can be shared on social media. The other option is publishing the maps on public channel on the producer's servers. Mind map recipients have in this case the opportunity to comment on created mind maps, and the authors can interact

with them. In addition to that, the view counter for created mind maps is available to verify the number of views.

MindMeister is offered for free as well as in paid plan. Using the MindMeister in the freemium model (Basic), in which the user sets up a free account, allows to have access to limited options. If this is not enough, it is possible to purchase a monthly or annual subscription. MindMeister offers three packages at different prices – Personal, Pro and Business. The difference between features available in free and paid plan presents the Figure 35.

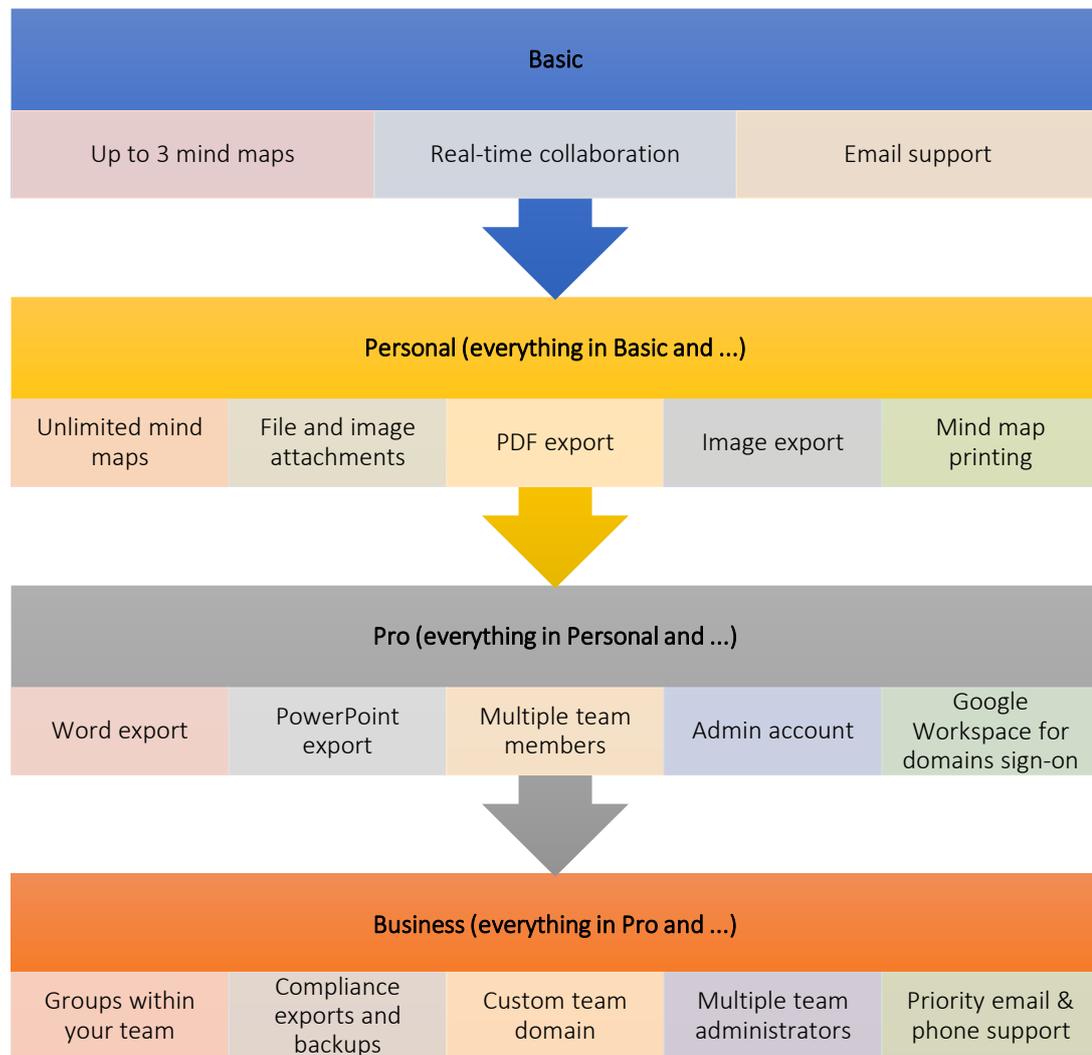


Figure 35: MindMeister Plans and Facilities to Use the Tool

- **Key Features**

MindMeister as a mind mapping app helps to visualise ideas into a map so that it can be easily comprehended. It is a useful tool as it offers flexibility and freedom in creating mind maps. MindMeister offers many features, which enrich the possible actions the user can take while applying the software during classes. MindMeister is intuitive and fast as possible to ensure that the user can fully concentrate on the creative task at hand. Unlike traditional mind mapping tools, MindMeister lets brainstorm in real-time

with an unlimited number of users. Collaborators do not need an account to enter a map and give their input.

Users can arrange maps created differently by using existing text formats and adding links, photos, and notes from local storage, or link out to documents, articles and more on the web. There are available predefined mind map templates, which can be chosen and adapt to the user needs. The templates are divided to the categories, in which the user can find:

- Productivity,
- Business,
- Education,
- Lifestyle,
- Technology,
- Events.

The user can add colours and styles to the maps improving readability and comprehension. It can be shown relationships between any two mind map topics. The user can customise the style, shape, and start/endpoints of connection line. Additionally, the whole map can be displayed in three map layouts: mind map view, org chart, or list. The program has a optimal internal search engine for elements that are on the mind map and a search engine for previously created mind maps, which is especially useful when the database with mind maps is extensive. Thanks to working in the cloud, i.e., on external servers of the software supplier, the user keeps all effects of his/her work in one place. This is conducive to good organisation and the ease of finding created mind maps. Additionally, MindMeister records every change the user implements and enables to return to the mind map at every stage of its creation. Thanks to this history option, the user can quickly restore the last "good" version of mind map.

The tool offers the possibility to quickly create a presentation based on created map using the presentation wizard or a manual option. If the created mind map is well illustrated with graphics and symbols, it also can easily replace PowerPoint presentations. The user can also switch between the visual and linear with Outline Mode and view mind maps as bulleted lists or bulleted lists as mind maps.

MindMeister allows to export the mind map to several formats, e.g.:

- .jpg /.png – mind map graphic.
- .pdf – contains a mind map and its transcriptions sorted by bullet points.
- .rtf – text document - contains only the text entered in the mind map ordered by bullet points.

There is also available to export the mind map to other program formats, in which one can also create mind maps. The following formats are available:

- XMind.
- FreeMind.

- MindManager.

MindMeister features enables to print mind maps like posters. This feature allows to print mind maps in print formats from A0 to A4. The printing options are very useful for complex mind maps because the user can print the whole map divided into A4 sheets, and then pin it together to see the image in full. To facilitate cooperation between users, the MindMeister app gives the ability to link mind maps to the Meister Task solution for project and task management. Elements from the mind map can be transformed into a task and assigned to its implementation to a selected team members. This functionality allows to quickly move from an idea/concept to project implementation. The other option to support the maps common development and analysis is integration with MeisterNote or MS Teams. If the MindMeister map is embedded into a document in MeisterNote, users can view changes to the map in real time via MeisterNote. Adding MindMeister to the team account allows to sign up to MindMeister using their Office 365 domain and start mapping in MS Teams.

- **Benefits**

MindMeister offers a huge range of facilities to apply the tools during classes. Teachers can support the many activities referring to structure, analyse and discuss concepts, ideas and information using this mind map creator. The tool can be utilised while organizing brainstorming, project planning and meeting management. The biggest advantage of MindMeister is that the user can manage created content however he/she likes, in accordance with the authors point of view. User can choose the content, format, fonts to adapt the mind map to own needs.

MindMeister works flexibly. When the creator or the people with whom the mind map has been shared want to make some changes, they can do so online at any time. It is possible, because MindMeister works online and does not require to download any software. The results of common work MindMeister allows to export to various formats such as PDF, MS Word, MS PowerPoint. Maps can also be sent in an email or printed straight from the app.

The key features which cause that the MindMeister is worth to apply during classes are as following:

- **Speed** – the program works smoothly online and lets fast generate, modify, and develop the mind map.
- **Working in the cloud** – user can always access the program when is connected to the Internet and does not depend on one computer.
- **Mind map interactivity** – thanks to online work, the created map is fully interactive and allows to quickly use the resources available on the Internet.
- **Platform for sharing mind maps** – each user can share the created maps on his/her public channel and enrich the community of mind mapping enthusiasts.

The official MindMeister website convinces to its application and emphasizes four crucial tool characteristics that distinguish this solution. They are presented on Figure 36.

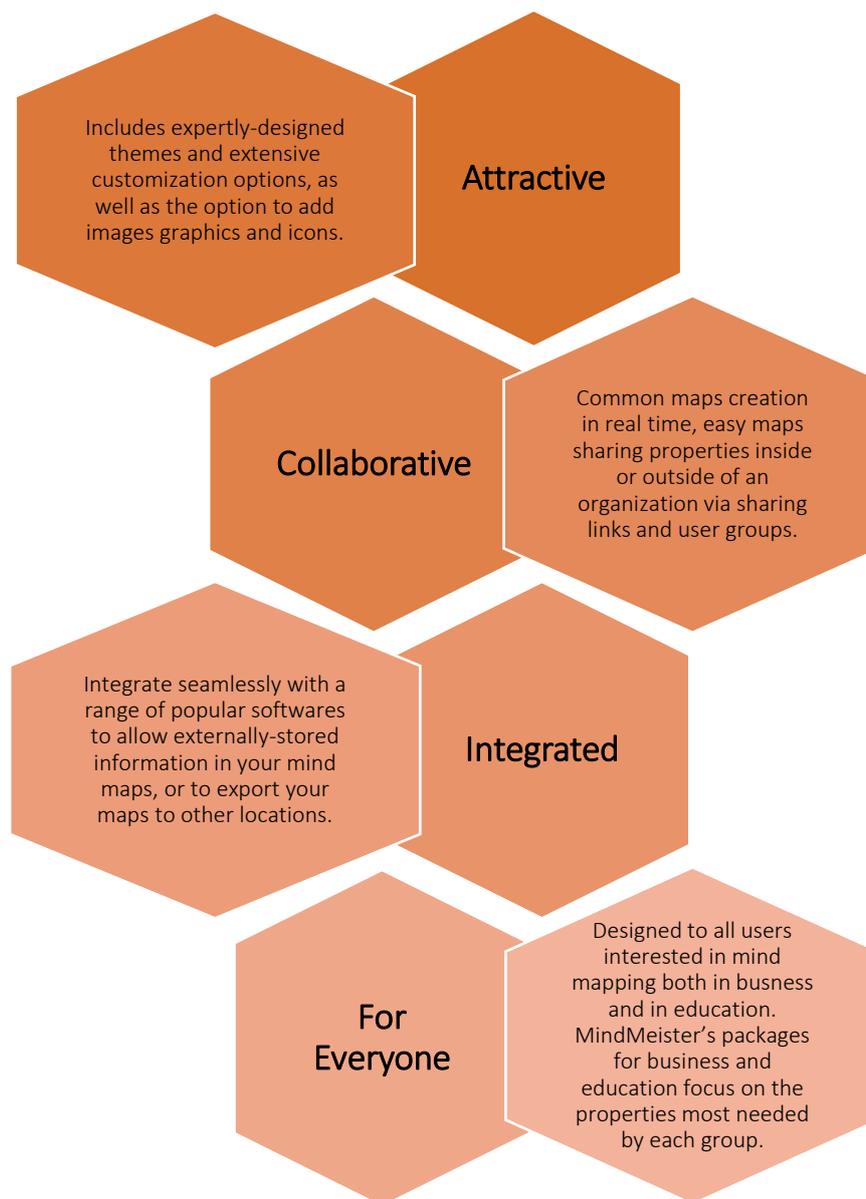


Figure 36: MindMeister Characteristics Emphasizing the Benefits of Tool Application

- **Implementation**

Applying MindMeister as a tool supporting the classes is quite easy even for inexperienced users. However, it requires the students to present from one side – the role and idea of mind mapping and from the other side – the way to work with the tool. HE teachers should visualise some examples of existing mind maps to ease the understanding of mind map creation process. After explaining the tool facilities and the background of mind mapping, HE teachers should define the problem specified to the students in the class and organise brainstorming sessions, which in effect will be the general idea of mind map referring to the problem stated. The specified topics presented in a commonly created mind map can then be individually developed by students. After some time, spending for individual work with mind map, HE teachers

can organise common discussion to analyse the added sub-topics, notes, connections and links or photos. Teacher and students can together decide, if some changes or supplementary information are required to finalise the map creation. The general idea of implementing the MindMeister by HE teacher in the classroom is presented on Figure 37.

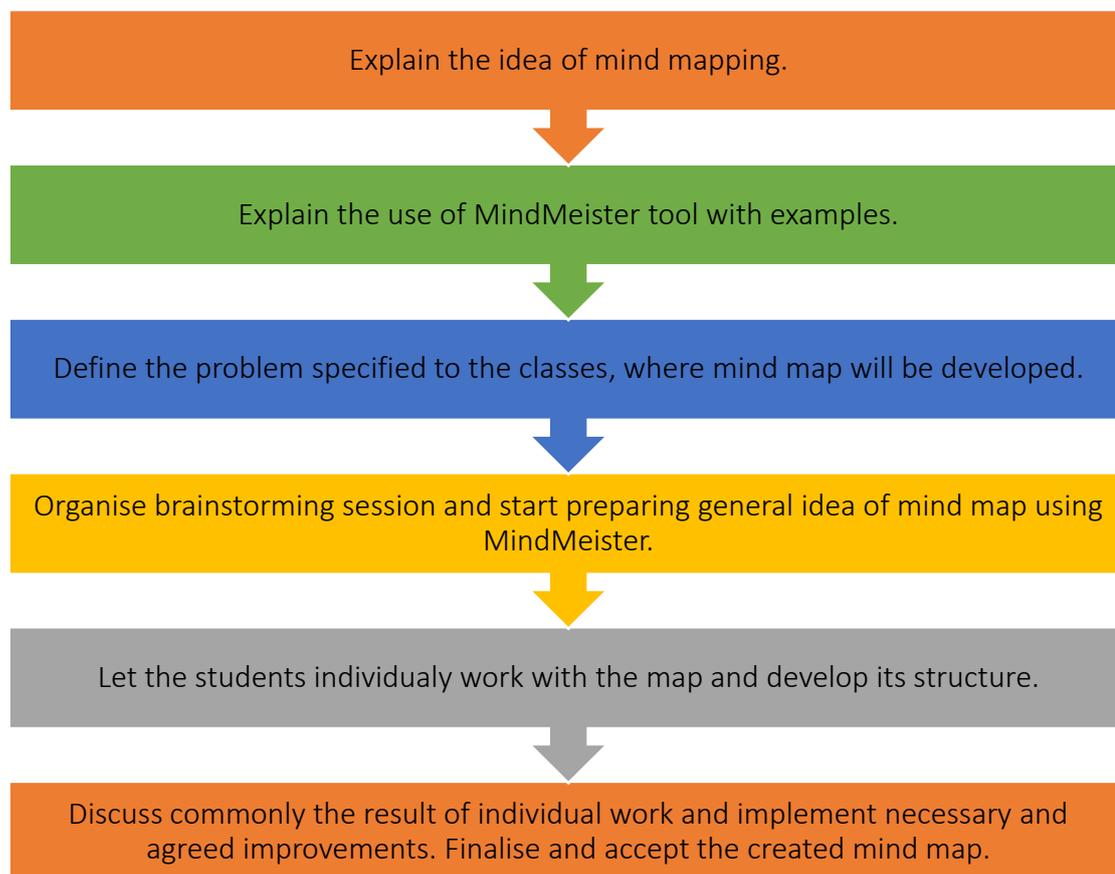


Figure 37: The Procedure of MindMeister Application in the Classroom

- **Explain the idea of mind mapping:**
 - **General Overview:** Students should understand what the aim, role and crucial activities is while applying the mind mapping. Teacher should briefly present the definition, key elements of mind mapping process and indicate the role of main idea/topic and sub ideas/sub-topics and the associations between them.
 - **Classroom Activity:** At the beginning of the class, teacher can explain the idea of mind mapping and benefits of using this too. Teacher can present the definition of mind mapping and key elements that students follow during mind map creation. Teacher can also indicate that mind mapping is useful organisational technique that involves creating a visual diagram to capture and structure information, ideas, or concepts. While presenting the idea of mind mapping, the teacher can specify that a mind map is a diagram for representing tasks, words, concepts, or items linked to and arranged around a central concept or subject using a non-linear graphical layout that allows the user to build an intuitive

framework around a central concept. A central concept is linked via lines to other concepts which in turn are linked with other associated ideas. Additionally, the key steps to make for an effective mind map are explained:

- **Step 1:** Determination the central idea/concept, core reason one wants to focus on when creating a mind map. There is one key concept, often expressed graphically as an image or by short name.
- **Step 2:** Adding branches to the main concept. These are the sub-ideas or information that emanate from the central idea. The main branches which flow from the central image represents the key themes. Sub-ideas that directly branch out from the central idea are known as first-level associations.
- **Step 3:** Exploration topics by adding more branches. There is created the more in-depth structure in which the organisation of sub-levels is provided. The exploration each of the themes in depth is reflected by adding child branches to capture information and add more details.
- **Step 4:** Adding visual effects, i.e.g. images, colours text size. The name of branches, connections should be emphasized with an array of different colours. Images and/or symbols can be added to the content. All visual elements should underline she created structure, emphasize important points, and let to engage people in mind map exploration.
- **Step 5:** Revisiting and analysing the created mind map to put things in order and make final revision.

The activity referring to the mind mapping idea explanation should be finished in 10 minutes.

- **Explain the use the MindMeister tool with examples:**
 - **General Overview:** Students need to familiarise themselves with the use of the tool. HE teacher can present how to log to the tool, what are the main facilities available and how to use them in practice.
 - **Classroom Activity:** Teacher can present the MindMeister facilities to students. He/she displays on screen the MindMeister webpage and provides the presentation of the software. Teacher includes in the presentation the already existing mind maps to show the results of mind mapping process. The screens of one of the examples of mind map created in MindMeister are presented on Figure 38 and Figure 39 (Part A & Part B).

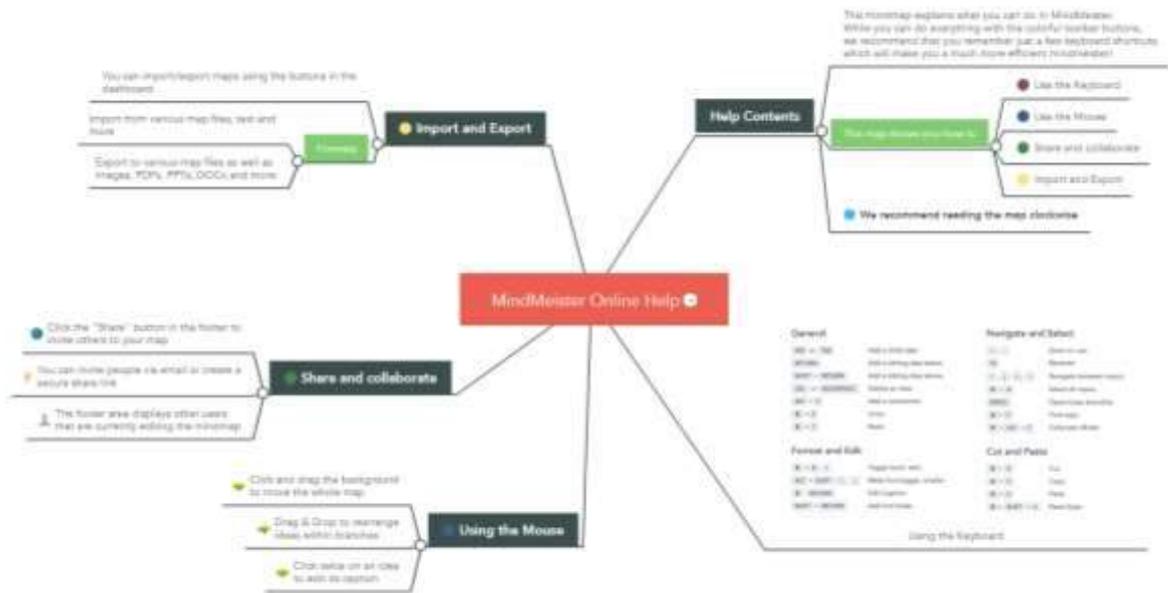


Figure 38: An Example of Mind Map “MindMeister Online Help” created in MindMeister Software (Source: [Link](#))

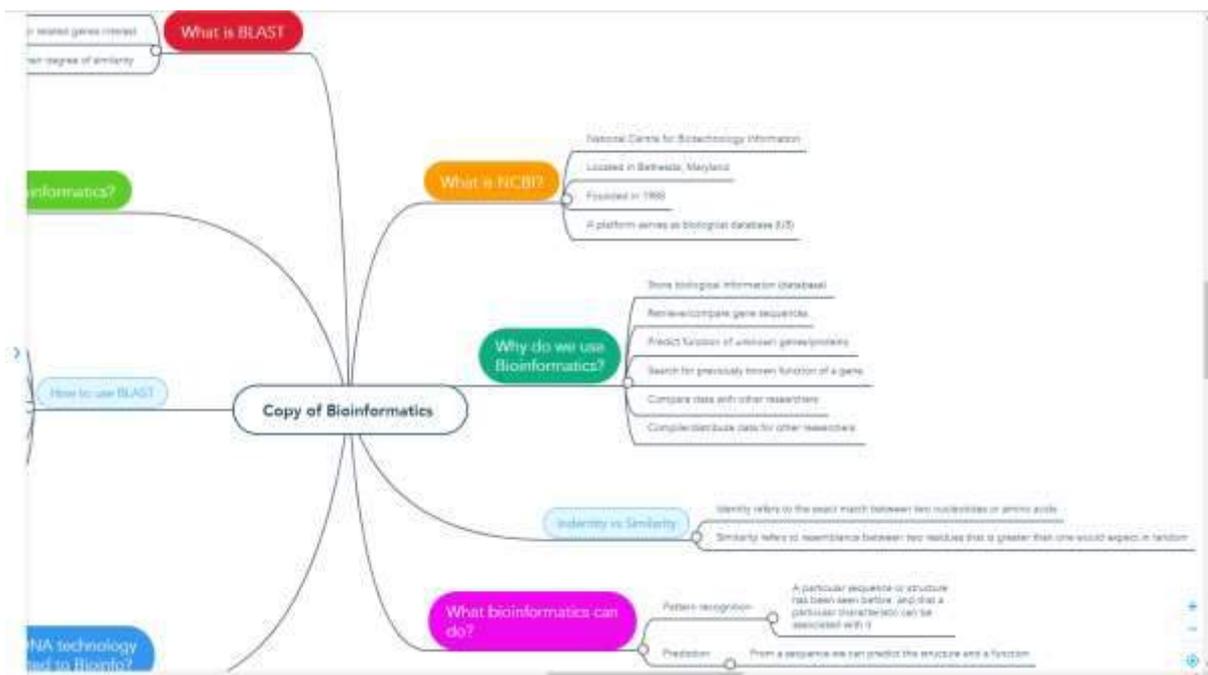


Figure 39 (Part A): An Example of Mind Map “Copy of Bioinformatics” created in MindMeister Software (Source: [Link](#))



Figure 39 (Part B): An Example of Mind Map “Copy of Bioinformatics” created in MindMeister Software (Source: [Link](#))

Students can assist the teacher using their computers and try to use the basic MindMeister functions explained by the teacher. The following steps are required to start working with the tool:

- User should sign up for MindMeister by link: <https://www.mindmeister.com/mm/signup/basic>. After participating he/she has access to the home page and can review all created mind maps.
- To create a new map the user, need to click the “My New Mind Map” button. The mind map editor will be available. In the middle of the page, there will be seen a main topic section, where the topic of the created mind map should be entered.
- Once the user has created the main topic, the possibility to add sub-topics by pressing the tab key is available. After adding all the sub-topics, the mind map creation can be finished by clicking “enter”. Clicking enter one more time allows to create another topic. Added in this way topics are in mind map recognised as related topics.
- With the help of the two keys mentioned above – enter and tab, user can create the main topic and related topics.
- Removing or adding related topics can be done by using “connect” to add a topic and “disconnect” to remove it.
- MindMeister also allows to add labels and change the colours of connections.
- The finished mind map can be shared with students, teachers and other participants involved in learning process, so they can share their ideas and comments.

The activities on use of MindMeister should take 15 minutes to complete.

- **Define the problem specified to the classes, where mind map will be developed:**
 - **General Overview:** Once the students are acquainted with mind mapping approach and MindMeister software they should start working on the problem/concept/idea posted by the teacher. Teacher should define the main topic and engage student in map creation.
 - **Classroom Activity:** HE teachers need to determine the topic, which will be the basis of map development and refers to classes. He/she explains that one map will be created commonly on a given subject. MindMeister is available and ready for map creation. The screen with MindMeister is presented for the audience. The general idea is entered and displayed as a new mind map. Teacher organizes the brainstorming session with students. Teacher indicates that the general idea and main branches will be developed commonly. The sub concepts proposed by students are continuously introduced to MindMeister and presented to review. The activity should be finished when the main concept is developed by first or the second level associations, because it will be the basis for students' individual work. The common development of mind map should take 10 minutes.

- **Let the students individually work with the map and develop its structure:**
 - **General Overview:** Students should participate in development of already created general map. They should have the opportunity to work individually, focus on one of proposed sub concept and add new related items.
 - **Classroom Activity:** The specified topic presented in a commonly created mind map should be in this step individually developed by students. Teacher decides which concept will be develop by which student. If the group of students is larger than number of concepts, they can work in pairs. Students within 10 minutes will add additional sub-topics, notes, connections to the specified for them concept. They should add some visualisation effects to better express the progress of their work.

- **Discuss commonly the result of individual work and implement necessary and agreed improvements. Finalise and accept the created mind map:**
 - **General Overview:** After working individually with the mind map, the effort is presented for common discussion and necessary improvements. Students and teacher can propose changes in developed individually items or given connections. These actions should lead to achieve satisfied effect of mind mapping process.
 - **Classroom Activity:** Teacher and students should commonly discuss the effects of their work from previous steps. HE teacher organizes common discussion to analyse the added sub-topics, notes, connections, visualisation effects and ask for proposed changes. Teacher and students can together decide, if given improvements allows to achieve better quality of mind map. The agreed changes are implemented to

mind map. The activity should finish by acceptance of created mind map. The discussion and improvements should be done within 10 minutes.

- **Examples of Organisations using MindMeister Tool**

Real-life examples confirm that MindMeister is a tool applied in business. The table below presents the example of business application:

<p>BigBangThemes uses MindMeister and MeisterTask to manage their distributed team and never miss a deadline (e.g., Link).</p>	
<p>Dream Harvest uses MindMeister to create game design documents and share their vision in a meaningful way (e.g., Link).</p>	
<p>Renshi uses MindMeister and G Suite for Work to improve performance of personnel and -profitability for their clients' businesses (e.g., Link).</p>	
<p>Jasmine Powers uses MindMeister and G Suite to plan and implement effective content marketing strategies (e.g., Link).</p>	
<p>Ulistic uses MindMeister as a formal part of their Coaching and Consulting services (e.g., Link).</p>	
<p>NewOrbit uses MindMeister and MeisterTask to deliver outstanding Agile software projects (e.g., Link).</p>	
<p>Grupo JHR use MindMeister, MeisterTask and G Suite apps to manage projects collaboratively across their four different businesses and offices (e.g., Link).</p>	

Table 15: Examples of Organisations using MindMeister Tool

- **Additional Examples on the Use of MindMeister Tool**

Following are specific resources to understand and to apply the MindMeister tool in a classroom setting:

- MindMeister for Education: Teaching and Studying with Online Mind Mapping – [Link](#)
 - Lesson Planning with Mind Maps – [Link](#)
 - Teach Effectively, Study Efficiently. Mind Map for Education – [Link](#)
 - Education. Improve Engagement. Raise Student Achievement – [Link](#)
 - Mr. Valentin Uses MindMeister in the Classroom to Engage and Inspire Students – [Link](#)
 - Donna Nicholson Arnott Is a Student Who Uses MindMeister to Process Large Amounts of Information Despite Her Dyslexia – [Link](#)
- ***Links to General Learning Resources***

Following are general resources to learn, how to start working with MindMeister and create own mind map or utilize the existing ones:

- MindMeister Tutorial Videos library – [Link](#)
- Getting Started with MindMeister – [Link](#)
- Getting Started with MindMeister: Create Your First Mind Map – [Link](#)
- How To: Use Connections in the all-new MindMeister – [Link](#)
- MindMeister: Full Review | Mind-mapping tool – [Link](#)
- Database of the interactive mind maps – [Link](#)
- MindMeister app (in polish) – [Link](#)

3.5 Cooperation and Workflow Organisation

With the development and proliferation of the Internet and disruption technologies, the demand for electronic and online commerce has increased. This has, in turn, increased the demand for business process automation. An automatically generated workflow can save time and resources needed for running online businesses. In general, due to the interdependencies between their activities, multiple business organisations will need to work together by collaborating and coordinating their activities with each other. This gives rise to the need for workflow collaboration across organisations. Current systems for workflow collaboration are only capable of reconciling existing workflows of the collaborating organisations. Collaborative tools and platforms enable dispersed teams to work effectively together and cooperate e.g., from brainstorming with digital sticky notes to planning and managing agile workflows.

Following three tools explain how HE teachers can make use of cooperation and workflow tools and demonstrate to students that the integration of collaboration and communication tools with workflow software enables increased service efficiency by reducing information silos and the conventional business friction points of time, space, and organisational structure.

3.5.1 Miro

- **Aim**

Miro (previously known as Realtimeboard) is an online and collaborative whiteboard platform, which team members can access anywhere in real time. It enables teams to collaborate effectively by supporting communication and using different tools. It offers ready-made templates to get work started. The tool also enables to develop notes and designs, shift things around, and connect through embedded video calls or online chats. The tool also comes with a series of pre-built templates that can inspire or serve as a starting place for your own project work.



HE teachers can use Miro for remote collaboration, ideation and brainstorming, research and design, strategy and planning, agile workflows, mapping and diagramming, online workshops, and problem solving.

- **Description**

Miro is a scalable, secure, cross-device online whiteboard platform integrated with the most popular tools such as Google Drive, Dropbox, Trello, Jira, Rally, Slack or Google Contacts. It is offered in a free version, which allows you to work for an unlimited number of people but on up to 3 whiteboards, and in three paid versions: *Team*, *Business* and *Enterprise*. What sets Miro apart from other similar services of its kind is the seemingly endless list of whiteboard versions that HE teachers and their students can use. Here are some of them:



Brainstorming & ideation templates

Show all 17 templates >



Affinity Diagram Template



Customer Touchpoint Map Template



Fishbone Diagram template



Likert Scale Template



Mind Map Template



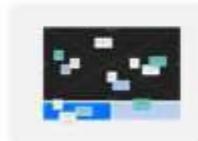
Idea Funnel Backlog

Research & design templates

Show all 13 templates >



Research Template



Empathy Map Template



User Flow Template



UX Project Canvas Template



Working Backwards Template



User Persona Template

Strategy & planning templates

Show all 10 templates >



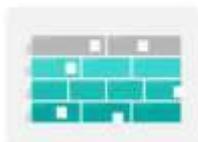
Strategy Diamond Template



Value Chain Template



RACI Matrix Template



Strategy Map Template



Go-to-market Strategy Template



Porter's Five Forces Template



Figure 40: Different Types of Services Offered by Miro

- **Key Features**

Miro differs from other whiteboards in that it has many unusual features. The ones that can be useful for an HE teacher are:

- **Multiple users can work at the same time** – the application allows multiple participants to work at the same time, moreover you can follow the movement of the mouse of each of them. Thanks to this everyone can actively participate in creating a diagram, add their ideas or make comments.
- **Ready-made templates** – Miro gives the HE teacher a set of ready-made templates enabling, among other things:
 - User story mapping.
 - Creating a roadmap.
 - Analysing problem sources in the “Mind Map” model.
 - Conducting a team retrospective.
 - Organising brainstorming with the use of mind map.

From a wide range of layouts, the Teacher can choose the best one for the needs of the lesson.

- **Time control during classes** – Miro has the ability to turn on a stopwatch, which will inform each participant (displaying on the screen) that the time of individual activities is running out and decisions need to be made about the next steps - this is a very useful functionality, thanks to which a teacher can use time effectively during classes with students.
 - **Logical division of the project** – Miro allows for grouping issues in a special frame, which can be easily navigated through on the side panel. A clear structure of collected information allows easy navigation between particular notes. What is more, Miro allows you to create a tree of projects in which individual tables are stored. Such a model makes it possible, for example, to share entire boards between teams
- **Benefits**

The advantage of Miro is that it works on multiple platforms, it works on Android devices, iOS devices, and is free to download on all Windows and macOS systems. Some users may prefer the in-app versions, especially if they love working with touch screens. The app also supports the general use of styluses (S Pens, Apple Pencils, and so on). The undeniable advantage of the Miro app is the ability to track changes made by other team members in the present tense. With this digital whiteboard, everyone can work on the same thing at the same time. And since all team members can see new changes in real time, everyone can stay on top of the ongoing project. Some of the most cited benefits include:



Figure 41: Benefits of Miro Tool

- **Implementation**

- **Describe the Purpose/Problem Definition**

- **General Overview:** With more and more work being done remotely, it's more vital than ever for teams to be able to successfully communicate and collaborate. The latter is true, especially in the recent pandemic case, where people across the globe were forced to work remotely. Like many other online collaboration tools that promote digital communication, Miro is one such tool that enables brainstorming and collaboration with team members remotely. Every organisation – public or private – made use of different collaboration tools.
- **Classroom Activity:** At the beginning of the class lecture, a brief, ten-minute overview of the Miro topic restates the lecture's objectives and summarises what is Miro and how it benefits HE teachers and students while online collaboration. The teacher may choose to pose questions to the students, e.g., "what is online collaboration?", "what are the different types of digital collaboration tools?", "which collaboration tool is better and effective?" and "how can Miro be used to create mind maps?" Students may choose to volunteer some answers. Next, by using

the above understanding, teachers need to create groups of 4 to 5 students each.

○ **Implement the Tool**

- **General Overview:** Once students are clear on what is the purpose of online collaboration and or using tools to digitally communicate, it is time to implement Miro using different examples.
- **Classroom Activity:** As an activity, all groups should be given a list of examples to choose one from. Herein, we explain how Miro can be used and implemented in a HE classroom setting using different examples e.g., Mind Map. HE teacher can also provide other examples.

– **Using Miro to Create a Mind Map:**

A mind map is a diagram used to visually organise information. A mind map is hierarchical and shows relationships among pieces of the whole. It is often created around a

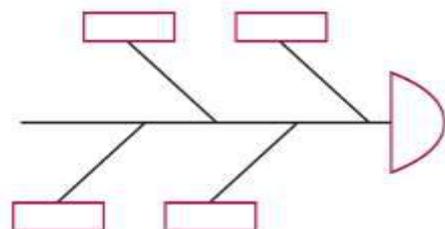


single concept, drawn as an image in the centre of a blank page, to which associated representations of ideas such as images, words and parts of words are added. Major ideas are connected directly to the central concept, and other ideas branch out from those major ideas. The teacher can use the Thinking Map in Miro in different phases of the lesson, e.g.: in the *introductory phase* – introduce the lesson topic by recalling knowledge related to the topic, referring to the previous topic/chapter by reviewing, repeating, and consolidating the knowledge learned. In the *main phase* – discuss on the notes that complement and extend the knowledge and that follows the phase of working with the book, source materials, or the teacher’s oral lecture, focus on team problem solving and develop a form of cross-range exercises to provide support for communication exercises.

Miro can be used and implemented in a HE classroom setting also to use Ishikawa Diagram:

– **Using Miro to Create an Ishikawa Diagrams:**

Ishikawa Diagrams (also known as Fishbone Diagrams) help to identify possible causes for an effect or problem. Can be used in class to answer the following questions that often arise in troubleshooting: What are the potential causes of the problem? What category of process inputs is the greatest source of variation in the output of the process? HE teacher



can use the Ishikawa Diagram in class for problems where several causes are suspected or where we are unable to identify a

potential cause at all. The Ishikawa Diagram can also be applied to everyday problems or disputes in class. It helps to focus attention on the problem rather than on personal comments or personal skirmishes.

- **Collect Data after Tool Implementation**
 - **General Overview:** Once the implementation of Miro tool is clear, they can consider evaluating each department's positioning, resulting in collecting data (either via survey, focus groups, or interviews) to understand the outcomes of implementing Miro.
 - **Classroom Activity:** Once all the groups in the classroom have presented their findings related to their chosen organisation, the teacher can collate the main points presented by each group, either by creating a self-constructed questionnaire or merely extract main points from their presentation of the tool.

- **Analyse the Data and Reflect on the Outcome**
 - **General Overview:** Check with the students what features they have explored in Miro and what they like the most to work on, to gain more skills with this Tool. You can have a rating session and eventually create a top 3 or top 5 of the Miro features, which you could explore with your students deeper. Thus, they will have the most benefit of this tool.
 - **Classroom Activity:** Let your students form groups based on one the Miro's feature's top 3 or top 5 and ask them to prepare a presentation about that feature with some examples. Thus, they will already learn everything about the feature of their preference and will be able to experiment with it already for the examples. By seeing the presentations of other groups, the students will get to learn the use the other Miro's features preferred by the students.

- **Examples of Organisations using Miro Tool**

Real-life examples should ideally drive every concept. Here are some of the examples of big corporate giants:

Cisco - Miro is used to customise project templates and uses full flexibility to create any board (Link)	
Skyscanner a metasearch engine and travel agency (Edinburgh, Scotland) uses Miro to work across multiple sites around the world. Usage of Miro improved their productivity (Link)	
SapientNitro (Australia) - Miro, enables multiple designers to collaborate on the same ideas at the same time. It is also used to discuss projects within a broad, cross-functional team that spans the entire organisation (Link)	

Table 16: Examples on the Use of Miro Tool

- ***Additional Examples on the Use of Miro Tool***

Following are specific resources to understand Miro in a classroom setting in more detail e.g., relevant articles.

- Articles:
 - What is Miro and How to Use Miro for Virtual Collaboration – [Link](#)
 - Miro Visual Collaboration Tool for Startups and Teams – [Link](#)
 - Google Meet getting another whiteboarding option with third-party ‘Miro’ tool – [Link](#)

- ***Links to General Learning Resources:***

Following are general resources to understand Miro in more detail e.g., links to YouTube video clips.

- YouTube Videos:
 - Getting Started with Miro – [Link](#)
 - Miro Whiteboard - Participants Quick Start Guide – [Link](#)
 - An Overview of Miro - Our Favourite Tool for Remote Collaboration | RealTimeBoard Miro Review – [Link](#)

3.5.2 Wonder

- ***Aim***

The aim of the Wonder.me tool is to provide online space where groups can meet and talk. Wonder.me aims to create meaningful spaces, where memories can



be created, like the space/environment where someone had an interesting conference and will remember it for a long time, but then online. Wonder.me wants also for its users to connect in a more spontaneous and fluid way, thus calling their concept, fluid togetherness.

The Wonder.me tool can come in handy for both HE tech teachers and HE students. HE teachers can interact with colleagues and students through this interactive video conference tool, which often could save time for both.

- ***Description***

When receiving a link for a Wonder.me chat and opening the link, you will be asked to make a screenshot for own avatar (which you can change for an existing picture afterwards, for example). After typing name and other details, you will get to the Wonder.me room, where you see your own avatar and the avatars of the others in a (certain) space. You can move your avatar to the avatars of others and by clicking on their avatar/spaces with avatars, you can start a conversation, after which you and your conversation partner(s)'s avatars will be placed into a circle. You can leave the circle to

end the conversation. On the right side, there is an opportunity offered to chat. First, to all who are near your avatar, but also to everyone who is inside the room. You can send the message to everyone in the room, but also privately to someone or to everyone within the circle.

- **Key Features**

Wonder.me offers the opportunity to broadcast, offering the presenter the stage, but then online. While broadcasting, the others are muted. There is a limit of 6 people joining this feature, which makes it perfect for the presentations, “welcomings”, but also panel discussions. One of the most important features, is areas. Areas allow to have your participants in the same small “sub-spaces”, because they should be talking about a certain specific subject, while the participants in the other area will talk about a different subject. There is the possibility to create a maximum of 15 areas and to edit them whenever you want.

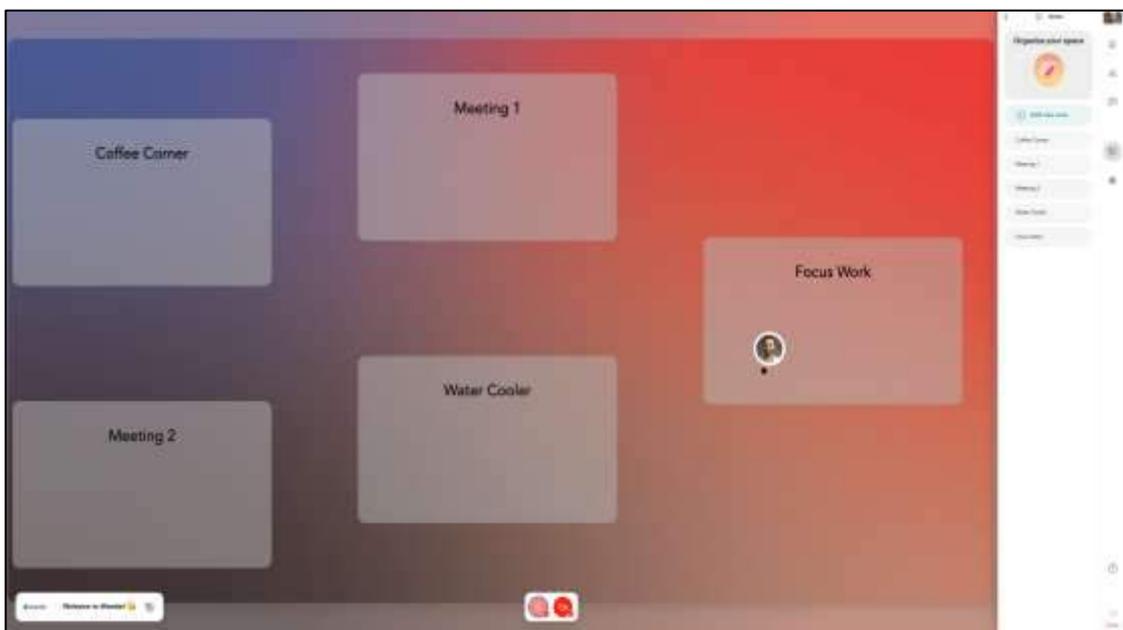


Figure 42: Example of Areas in Wonder.me (Source: Wonder.me)

Another important feature, which makes Wonder.me exceptional when comparing to other video conferencing tools, is **The Icebreaker Question**. This specific feature creates a great opportunity for a host to invite the guests to share something about themselves to prevent awkward opening of meetings for example. Other guests will be able to see each other’s answers when they hover over someone’s avatar in a space.

- **Benefits**

Both private sector and educational institutions are largely using video conferencing tools, which enables them to be in contact with colleagues and accomplish their goals collectively. Although video conferencing tools will not replace the face-to-face contact and the impact made by that, Wonder.me aims to provide its users everything to do that as much as possible. In case of educational institutions, Wonder.me offers the

opportunity to still work in groups (on certain projects for example), but then digitally. This can be done by using the Areas in a Space where every student and the teacher are included. Not only is Wonder.me a great tool for the moments already set (scheduled classes or meetings), but it works very well for the moments 'in-between'. Wonder.me is also a very simple hands-on tool that is easy to understand and to use, but also a very interactive one, which will be more appealing to use for the students, than the static video conferencing tools already available.



Figure 43: Wonder.me Benefits

- **Implementation**
 - **Describe the Purpose/Problem Definition**
 - **General Overview:** Sometimes it is not possible to provide classes face to face or to chat with your colleagues at your institution's premises. The tools that provide the video conferencing possibilities often offer just that and do not go beyond the need to simply interact. How can you provide classes during which the students have to make groups for example?
 - **Classroom Activity:** Introduce Wonder.me to your students, which can be simply done by sending the students the link needed and providing them with a quick introduction on how Wonder.me works by only showing them Wonder.me landing page, as working with Wonder.me is very easy.
 - **Implement the Tool (Gathering your Actions):**
 - **General Overview:** For HE teachers and students to work with Wonder.me, they will need to create a Space for their class. For this purpose, they will need to move right on the top and click: **Create a Space**, as illustrated below:



Figure 44: GUI to Create a Space on Wonder.me

After this step, HE teacher and students will be asked to give their Wonder Space a name:



Figure 45: Naming the Wonder Space

Following this step, HE teachers and students will be presented with the following four questions:

- **What best describes the company you are working with?**
 - Where you can answer with Educational Institution
- **What do you want to use this Wonder Space for?**
 - You can choose here for Lectures and Classes for example.
- **How many events does your company organise per year?**
 - You can choose from 0 up to >12.
- **How many guests do you typically host per event?**
 - You can choose here from 1-14 guests up to >1000, so also a 15-29 range.

After the questions, your Space to provide a lesson or a workshop for example is ready. After entering your name and e-mail, you will receive a link to your Space, which you can provide to your students:



Figure 46: GUI to Add Details

After this final step, HE teachers will immediately receive the link for the space that can be used by the students to enter. At the same time, the browser loads to the space, where HE teachers can decide on their microphone settings and upload or take a picture right away for their avatar. After completing the latter step and entered name, HE teachers will get a couple of pop-ups explaining their space and how avatars can be moved in a space.

Besides that, HE teachers can create Areas (up to 15 of them), which can be filled with students working on a certain theme, there can be Circles in each Area, meaning that there is a conversation going on between at least two up to 14 people. A Circle will be created when one avatar gets close to another avatar, wanting to talk. When a Circle is full and somebody else wants to enter, it will be only possible, when someone leaves the Circle. There is no limit to how many Circles or people can be in one Area. This is how it all can look like:

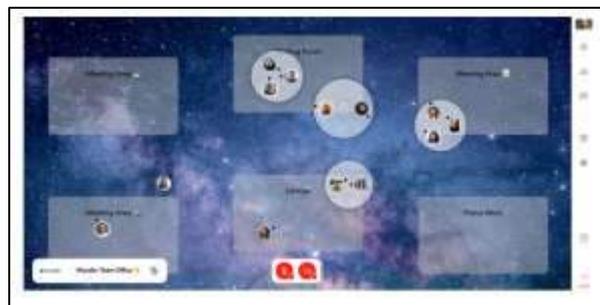


Figure 47: Wonder.me GUI with Student Groups in Circles

When having your Space created, you can choose from numerous backgrounds to make your space more interactive. You can also upload own image for this matter. This will make the class or the workshop more fun and less static for the students this way. One other quite beneficial example of Wonder.me features, which is great in class: you can send a message to anyone in a Space, but also anyone in a Circle or a private message to a certain student. A very nice feature to use with your students is also the Space Editor, where you can provide access to another teacher to co-host a class or a workshop for instance. You can also start a class with an ice breaker question, relevant for a certain class you aim to provide:

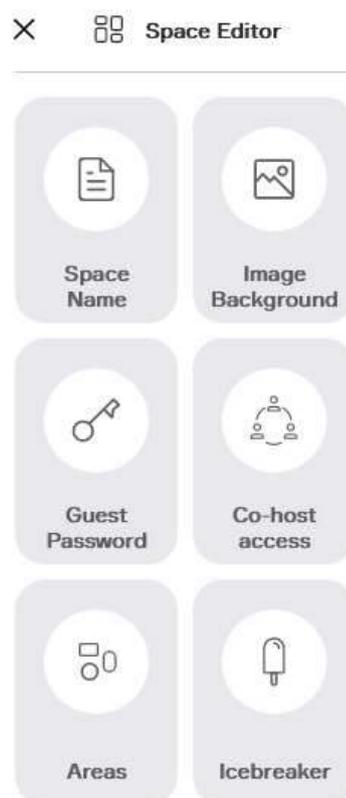


Figure 48: Space Editor in Wonder.me

- **Classroom Activity:** The students are now familiar with the basics of Wonder.me and its great features that allow for working in groups. They know how to enter Wonder.me, but also how to navigate in it now. All that rests is just to use it during classes or even during homework when discussing it or doing it with peers. Now HE teachers can basically conduct their classes with students on Wonder.me or provide them with homework or other assignments, which they can do by communicating in Wonder.me.
- **Collect Data after Tool Implementation**
 - **General Overview:** One possibility of checking how to enhance working in groups and make sure it is more effective, is to ask students how Wonder.me could work for them best. HE teacher can ask them about their preference on doing assignments together in Wonder.me. Thus, the data about the most effective and popular method can be collected and this method could be applied.
 - **Classroom Activity:** After having the students familiarised with Wonder.me and how they can make most of its use with their classmates, students can be asked the 3 following questions:
 - What approach works best for you when using Wonder.me with your classmates? This can be also a new approach.
 - What approach does not work for you at all?
 - What are your tips for your peers, when working in Wonder.me?

The questions can be asked while having a class or through a (online) form.

- **Analyse the Data and Reflect on the Outcome**
 - **General Overview:** After having collected the preferred approaches from your students, check what approach works best for them. Also, check what elements of Wonder.me are not suitable for your students, by having a focus on what approach does not work for them. The tips will also help to identify how to have a fitting approach for your students.
 - **Classroom Activity:** Prepare a (short) methodology for working with Wonder.me with students and implement this within own class. Assess what is going well and what can be improved to enhance your approach even more. Make sure to engage the students as much as possible.
- **Examples of Organisations using Wonder.me**

Here are some examples of companies using Wonder.me and how it has changed their online communication:

Wired likes Wonder.me for all the features it provides other than just video calling.	
The possibility of having the in-between chats and more stimulates to have in-person events for Business Insider.	
TechCrunch likes the way Wonder.me provides a bird's-eye view of a larger space where the interaction can be initiated more spontaneously. Just like in the office or other business venue.	

Table 17: Examples on the Use of Wonder.me Tool

- **Additional Examples on the Use of Wonder.me Tool**

Following are specific resources to understand Wonder.me in more detail e.g., relevant articles.

- Articles:
 - Comparing Wonder.me to two other network tools - [Link](#)
 - A blog with a simple explanation about Wonder.me - [Link](#)
- **Links to General Learning Resources**

Following are general resources to understand Wonder.me in more detail e.g., links to YouTube video clips.

- YouTube Videos:
 - Wonder.me: Looks to have Awesome Potential for Video Chat and Group Collaboration in Schools – [Link](#)
 - Wonder 2.0 Walk-through by our Co-Founder – [Link](#)
 - Wonder.me Tutorial – [Link](#)

3.5.3 Figma

- **Aim**

The aim of Figma tool is to allow everyone having a collaborative design process online, so that teams will not only deliver better products, but they will do it faster. When creating with Figma, there were some great achievements envisioned, which are now made a reality, e.g., more people from more places could have access to powerful tools to design, people from all over the world can work on the same design online, and no struggles with having different versions anymore, which only created confusion. Figma wants to have the future where design is more collaborative, borderless, transparent, open-sourced, and community-driven. Figma's vision is to make design accessible to everyone.



- **Description**

Figma has a specific area for HE teachers and students, which allows to use Figma for free, after having a successful verification process for your education status. As an HE teacher, you can create a virtual classroom space for your students, but also collaborate visually with your colleagues. There is a possibility to create education teams to manage each class, deliver content and facilitate visual activities. With Figma you can make lessons interactive and make sure everyone's input or feedback is truly being recognised.

- **Key Features**

There are specific features for the educators provided by Figma, which allows for an innovative and a more interactive approach online. Figma will enable you as an HE teacher to *organise and deliver course content*. For this, you can use Figma's Education plan to develop teams that will be the central place for all your educational materials, such as lecture notes, activities, syllabus, brainstorm, and student work:

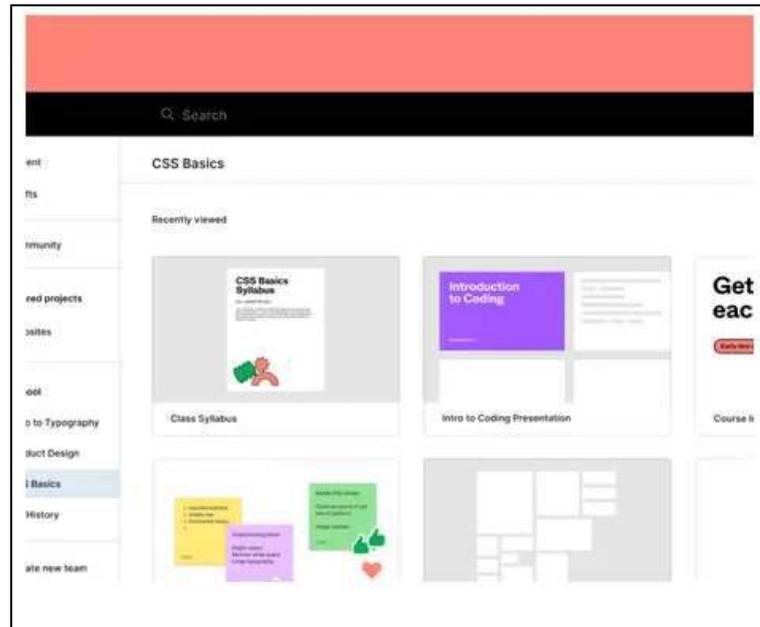


Figure 49: Figma GUI – Search Space

Figma is also a good tool to use to *facilitate engaging group activities*. You can collaborate with your students in the same file, which will enable you as a teacher to teach your students, while making things together in the same online space:

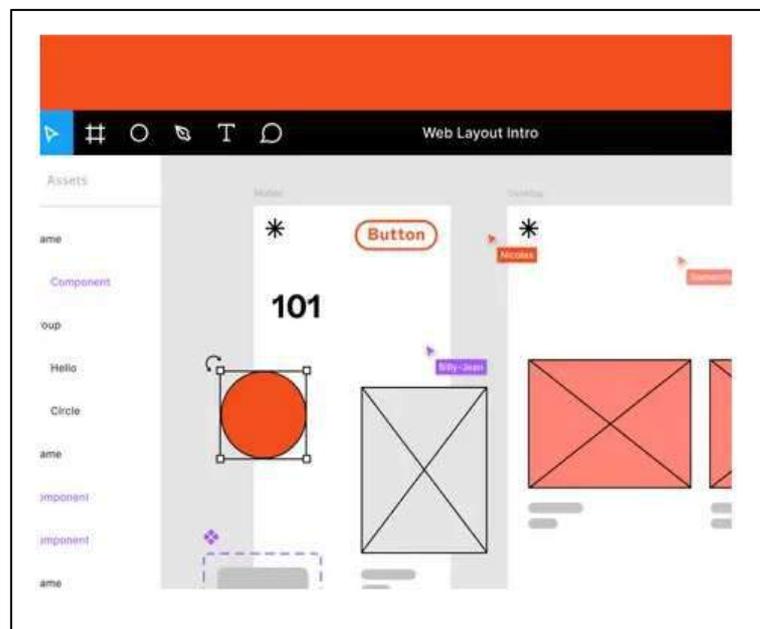


Figure 50: Figma GUI Web Layout Intro

Those regular feedback sessions are so outdated right? There is an interactive and more fun way to provide feedback. With Figma this will be a no-brainer. You can directly give your students feedback on their work by *running interactive critiques and feedback sessions*. There is also a possibility for your students to provide you with a link to their

work, so that you can provide them with feedback, so you can save time downloading (large files):

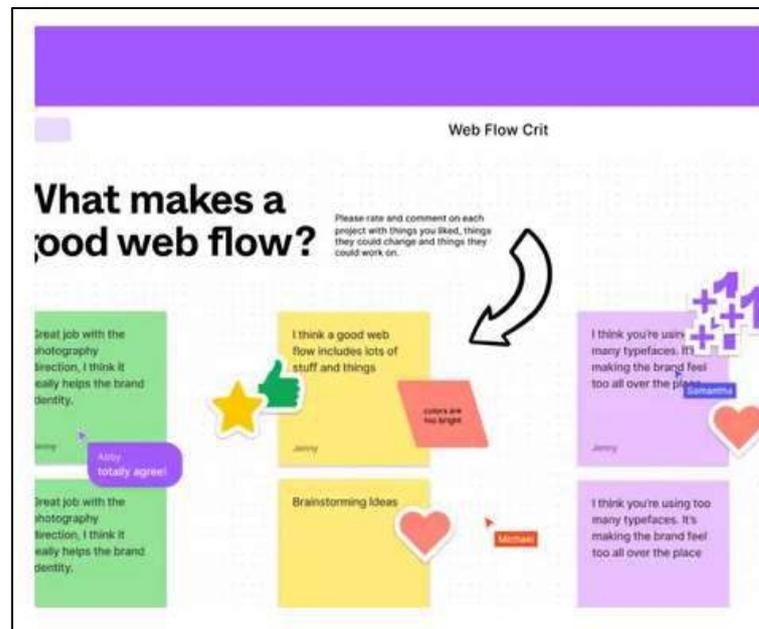


Figure 51: Figma GUI – Web Flow

Another key feature for HE teachers, is that they can create an actual *online community with your students, within own classroom*. For this matter, Figma provides collaborative tools to have your students work and learn along with one another.

- **Benefits**

Figma makes sure that the students enhance their creativity skills, by providing a virtual classroom space, but the students also learn to design and prototype. They will learn through experience with Figma. As an HE teacher with a Figma Education plan you will be able to:



Figure 52: Figma Benefits

- **Implementation**

First, there is no IT provision required, so as a teacher, you can start in Figma right away. What you will need to use the education account for free is to get it verified, which you can do through figma.com/education/apply. After going through the verification process successfully and having an empty template in front of you, there is a possibility to invite the students to be editors (on the right side above). You will get the possibility to insert your students' addresses for that. What you also can do is send your students a link that they can use and that provides them the rights to edit.

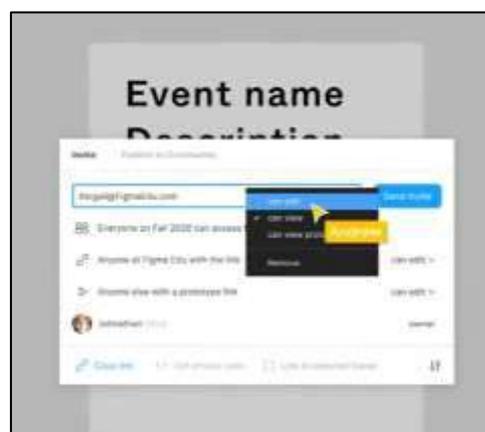


Figure 53: Figma Benefits

After your students are invited and have accessed Figma through your invitations, you can start designing together. During observation mode, you can give lectures to students, without having to share your screen. The students will see what you are doing. After your lesson, your students will be able to break out in groups and create on their own. In order to provide feedback, you can use sticky notes for example or write directly on the canvas, like below:



Figure 54: Figma – Sticky Note

Also, after the students have completed their assignments, you will be able to have an overview of their results and by clicking on the presentation mode, you will be able to see all their works presented, without clicking and scrolling.

Figma can also serve as a central hub for all your classroom assignments:

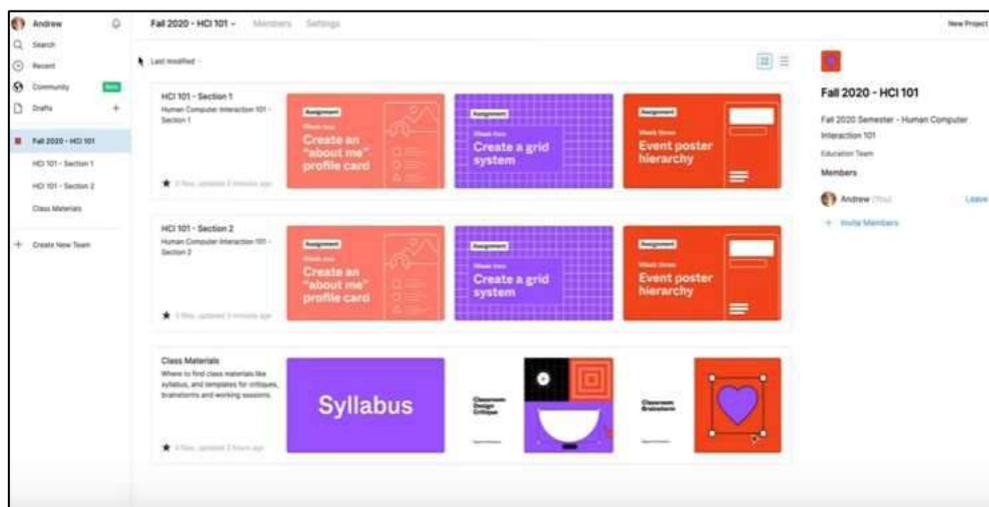


Figure 55: Figma – Central Hub

There, the files are always up to date, without having to email the most recent versions. A very convenient feature is also to create own teams:

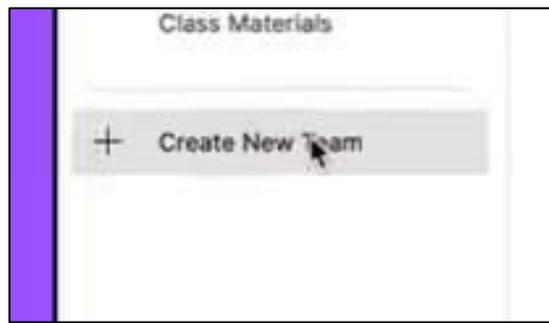


Figure 56: Figma – Create New Team GUI

Teams in Figma have a description field where you can insert all the important information and resources you wish:



Figure 57: Figma – Description Field

To create a new project, you can click on the button New Project, above the team description on the right side. Projects have a description field, just like teams.

- Describe the Purpose/Problem Definition
 - **General Overview:** It can be hard to think of something which enables the students to be creative and for them to learn how to design in a collaborative manner. Most of the tools for the creative purposes, such as designing are developed for individual use. However, for a teacher to provide education in a project (or workshop) context, it is most convenient to have a tool, which enables the students to work together on an assignment. Figma provides this possibility, moreover, the teacher can give classes to students or collect their work for assessment in Figma.
 - **Classroom Activity:** First, a brief presentation for the students (max. 10 minutes). You can show them a [video on how to create a student account](#) for example or show them some important video parts from a [video for the beginning users of Figma](#). For the students to get familiar

with Figma, first individually, but at the same time seeing each other's work, the student trading cards activity will fit the most. What the students must develop is their profile in the social media style where for instance the auto layout is involved. When the students will design in the same Figma space, they will see a bit of each other's style and process, which could be helpful for own designs. When each student has finished the activity, you as a teacher can create a page in the file you are working in, which can serve as a gallery. It can occur that some of your students might already be familiar with Figma, in that case you can challenge them with extra tasks, like adding own questions and an icebreaker that they can share with other students. Thus, this activity enables the students to get to know each other (even better).

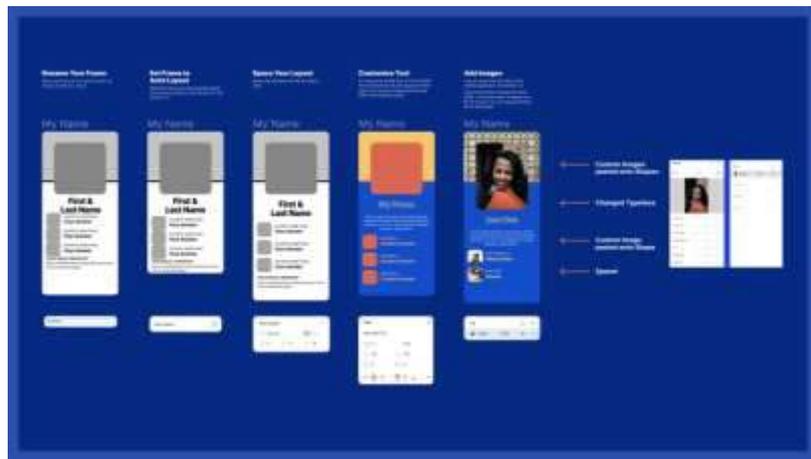


Figure 58: Figma – Activity Space

- Implement the Tool
 - **General Overview:** The students are globally familiar with Figma and are now able to create something there. They have already tried to and have created something in Figma. For you as a teacher, it was also the first step getting to know how educating through Figma can be like. Now, you will get a more in-depth experience with Figma, which will facilitate its use for you and your students, which will show more important features that Figma provides.
 - **Classroom Activity:** To have a better feeling with the actual design process (making shapes for instance), the students can get assigned with a task to make a heart shape with Figma's pen tool, layout grid and properties, after which the heart shape can be customised. Of course, you don't have to use the heart shape, you can also go for any other shape you would like your students to design, and which is probably more relevant for the tech education. After the students are done with this activity, you can again create a "gallery" to see all students' work in a clear overview. If you have already some students already experienced in Figma, you can ask them to make the heart shape pulse with the [Smart Animate](#) feature provided by Figma. They can also make other shapes and style them according to their preferences. This will make the

classroom activity extra challenging for them. It is also possible to assign this as a homework activity if that is of your preference.

- **Collect Data after Tool Implementation:**
 - **General Overview:** Collecting data is in this case something different than probably interpreted at first. The overall aim here is to check what else is possible with Figma, so that the students are aware of it and know that they can explore it further in Figma. When the students will learn everything that Figma provides, they will be able to create much more there than they first would imagine.
 - **Classroom Activity:** Let the students explore Figma freely, without any directions other than to search for all the features that seem interesting for them to use. Thus, they will learn even more about Figma and what it has to offer. You can ask them to discover and provide three to five Figma features of their preference.

- **Analyse the Data and Reflect on the Outcome**
 - **General Overview:** Check with the students what features they have explored in Figma and what they like the most to work on, to gain more skills with this Tool. You can have a rating session and eventually create a top 3 or top 5 of the Figma features, which you could explore with your students deeper. Thus, they will have the most benefit of this tool.
 - **Classroom Activity:** Let your students form groups based on one the Figma's feature's top 3 or top 5 and ask them to prepare a presentation (in Figma) about that feature with some examples. Thus, they will already learn everything about the feature of their preference and will be able to experiment with it already for the examples. By seeing the presentations of other groups, the students will get to learn the use the other Figma's features preferred by the students.

- **Examples of Organisations using Figma Tool**

Here are some examples of familiar companies using Figma and how they it has changed their workflow:

<p>Dropbox moved to a virtual-first working model uses Figma to brainstorm and build remotely.</p>	
<p>By using Figma, Repsol has now a more collaborative and consistent approach to design, but also a measurable one.</p>	 REPSOL
<p>Because of Figma, Kimberly-Clark were able to solve the problems on the fly as a team and have their vision in the same direction.</p>	

<p>GitHub got excited about Figma because it did not require downloading and installing software as part of the workflow to update icons.</p>	
<p>At Zoom, Figma makes the overall process much smoother and richer than when providing verbal feedback for example.</p>	
<p>Deliveroo is very happy about working with Figma, as this results in an idea becoming a product quicker.</p>	
<p>Through Figma's processes, Microsoft designers are able to work allows the designer to work more autonomously, without the engineer being involved. Thus, the engineer can focus on the bigger problems.</p>	
<p>Spotify organises work in Figma to improve collaboration.</p>	

Table 18: Examples on the Use of Figma Tool

- ***Additional Examples on the Use of Figma Tool***

HE teachers appreciate Figma as a tool to use in class. For example, an article from Alicia Quan, a teacher, who emphasises the advantages of Figma in the classroom. Some of the highlights, which will come in handy when using Figma:

- Figma can be used as a platform to see published files, make duplicates to iterate on etc. **It can be compared well with Google Docs for example**, which will make working with Figma easier.
- There is a great possibility that your **ideal online learning environment** can be created in Figma. In Figma, a teacher can customise quite a lot in the open collaborative canvas with students.
- There are **multiple approaches** that Figma provides to make sure classes are interactive, but also serve their goal. You can create interfaces and presentations that are clickable, students are able to make decisions within the collaborative canvas, etc.

Another educator tweets about his experiences with using Figma in classes/for homework:

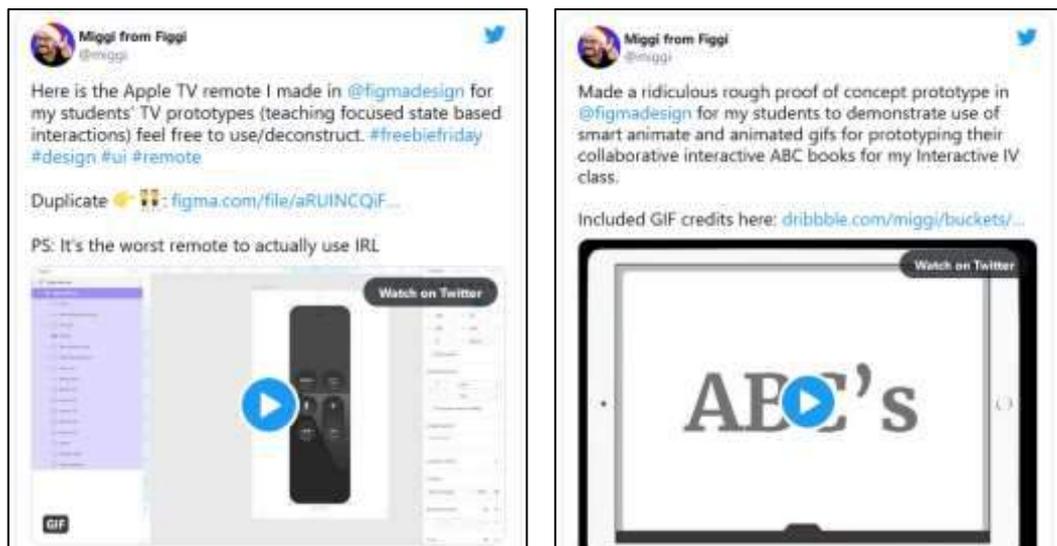


Figure 59: Figma related Tweets

- **Links to Learning Resources**

Following are general resources to understand Figma in more detail e.g., links to YouTube video clips.

- YouTube Videos:
 - Figma Tutorial: Set Your Classroom Up in Figma – [Link](#)
- Other Resources:
 - Figma for Education: Design for Learning Experiences – [Link](#)
 - Figma Examples and Community Files for Education – [Link](#)

4. Acronyms

A	
–	–
B	
BMC	Business Model Canvas
BMN	Business Model Navigator
BEE	Biological and Ecological Engineering
C	
C2C	Consumer To Consumer
D	
DIY	Do It Yourself
E	
EU	European Union
EPA	Environmental Protection Agency
ELCD	European reference Life Cycle Database
F	
–	–
G	
GMO	Genetically Modified Organisms
GBEP	Global Bioenergy Partnership
GUI	Graphical User Interface
H	
HE	Higher Education
HEIs	Higher Education Institutions
I	
IPP	Integrated Product Policy
J	
–	–
K	
–	–
L	
LCA	Life Cycle Assessment
LCACE	Life Cycle Assessment Centre for Excellence
LCA	Life Cycle Analysis
LCC	Life Cycle Costing
LCIA	Life Cycle Impact Assessment
M	
MS	Microsoft Sway
N	
NGO	Non-Government Organisations
O	
–	–
P	
–	–
Q	
–	–
R	
rBGH	Recombinant Bovine Growth Hormone

S	
SEM	Search Engine Marketing
SEO	Search Engine Optimisation
SBS	Sustainability Balanced Scorecard
S-LCA	Social Life Cycle Assessment
SDGs	Sustainable Development Goals
T	
TBL	Triple Bottom Line
U	
USM	User Story Mapping
V	
VP	Value Proposition
VPC	Value Proposition Canvas
VW	Volkswagen
W	
–	–
X	
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Y	
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