

Intellectual Output 5

Best practices for blended training in entrepreneurship in renewable energy

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EntRENEW aims at increasing specific knowledge and knowhow of European students so that they may become effective entrepreneurs and leaders, who are able to address the challenges of Europe's sustainable development and to accompany the transition of the energy sector towards decarbonization —as part of the European Green Deal. EntRENEW's objectives will be accomplished through the creation of a blended-learning course tailored to the needs of target groups operating in the field of entrepreneurship in renewable energy. The project involves six partners, coordinated by the Association Leonard De Vinci (ALDV), and it will be implemented between September 1, 2020 and August 31, 2023.

This publication only reflects the views of the authors, and the Commission cannot be held responsible for any use made of the information contained therein.

More information on the project can be found at <https://www.entrenew.eu/>

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1. Introduction

The course “Entrepreneurships in Renewable Energy” is a new subject within the educational programs of all EntRENEW project partners – Association Leonard de Vinci, Paris; University of Vaasa; Universitat Politècnica de València; Halmstad University; Vrije Universiteit Amsterdam.

Its interdisciplinarity and balanced content for students with different backgrounds - economics, physics, business, chemistry, biology, etc. - have provoked huge interest in following it.

While it has been promoted at different dissemination events and regular classes, the pilot blended course (face-to-face and on-line) was run at Vrije University Amsterdam.

Both the preparation of the course and its testing in a real environment have brought up *interesting insights, outlined herein in these best practices*.

The document is a collection of 5 articles, each focusing on different aspects of the course preparation, its strengths and educational experience.

The articles have already been published on EPAL, the Erasmus+ electronic platform for adult learning and the EntRENEW project website, within the News & Events section.

They have been designed following the Harvard Business Review France style, and the project coordinator has taken steps to translate the articles in French to submit the articles to specialized business media.

The objective is to disseminate the course to a larger public in view of its incorporation into the formal educational programs of the partner institutions and, most importantly, to share the project experience with any organization that is eager to implement it as well.

The document is, therefore, organized as follows:

- 1) Introduction, providing the document’s rationale and organization.
- 2) Article “Entrepreneurship in Renewable Energy, Empowering future leaders”, highlighting the strengths and the innovativeness of the course methodology designed for empowering students to operate in the sector of entrepreneurship in renewable energy.
- 3) Article “Innovation in Renewable Energy - Entrepreneurship Course Content”, reviewing the innovative educational content.
- 4) Article “How do we train the trainers?”, informing about challenges and stimuli in designing train-the-trainers’ contents to boost trainers’ creativity and further adaptation of the content to their specific educational needs.
- 5) Article “The Challenge of Teaching Entrepreneurship Outside the Business Domain”, sharing the experience of the course implementation and success stories of organizing interdisciplinary teams in a single educational course.
- 6) Article “How to make your online training courses more engaging with gamification”, emphasizing the benefits of gamifying the learning content in the perspective of blended

courses to strengthen the team spirit established in interdisciplinary teams and increase students' motivation and commitment.

Since the document is structured around five independent subject topics, the reader may choose to only pick one, or multiple, or all articles of her interest. While we encourage you to take the journey to discover them all, we wish you a pleasant time doing so!



2. Entrepreneurship in Renewable Energy – Empowering future leaders with skills, competencies, and knowledge to develop unique solutions in renewable energy systems

Authors: Shahid Hafeez, Khuram Shahzad and Mona Enell-Nilsson - University of Vaasa

While writing this article in a relatively hot Finnish summer, sitting in a cosy place and air-conditioned by renewable energy sources. Yes, you read it right, with the will and the right attitude, we can achieve a net zero environment. We have a few good examples of energy transition from fossil fuels to renewable energy sources, yet, at a large scale, we depend heavily on fossil fuels to meet our energy needs. However, these best-case scenarios explain that it is possible to accelerate our transition from traditional energy to renewable energy sources.

What could be done to accelerate this transition?

Looking for an answer to this question, we came up with many propositions and diffusion models. Among many promising pathways, one of the most compelling is to raise awareness and knowledge of renewable energy systems to the broader society, particularly students, who are believed to be future entrepreneurs and leaders and hold decision-making positions in the future. EntRENEW (a research project funded by the European Union's Erasmus+ programme) enables students to address the challenges of Europe's future sustainable prosperity and the transition of energy sectors towards decarbonisation (as part of the European Green Deal).

Intending to increase university-level students' competencies, skills, and knowledge on entrepreneurship in renewable energy systems, the project partners of EntRENEW (The Association Leonard De Vinci France, University of Vaasa Finland, Universitat Politècnica de Valencia Spain, Hogskolan i Halmstad Sweden, Europroject Bulgaria and Vrije Universiteit Amsterdam Netherlands) developed a trans-disciplinary HE blended-learning course in Entrepreneurship in Renewable Energy (ERE) at the intersection of entrepreneurship and technology (smart, sustainable and renewable energy applied studies).

What makes the course methodology unique?

The blended learning course aims to build the entrepreneurial capacity of students in renewable energy systems through a unique methodology. We utilized various methodological approaches to train students to begin their entrepreneurial journey in the field of renewable energy systems. The uniqueness of the course lies in two aspects; one combines two disciplines: renewable energy systems and entrepreneurship, making this course attractive to students from different educational backgrounds and disciplines. Besides, course methodology follows a process model that combines different methodical approaches and makes a systematic effort to achieve intended outcomes.

How did we do it?

We followed a process model in identifying and developing course content, activities, and student learning outcomes.

- Need analysis:
 - In order to ensure the relevance, impact and sustainability of the programme, the project incorporates the empirical results of previous literature on interests and resistance towards climate change. While for the course content development, from the beginning, we actively engaged with stakeholders related to the course and professors, students, and industry representatives. Together with several students from partner higher education institutes, we identified students' needs, capacity, and training levels. The project has examined the intrinsic and extrinsic motivations that drive students to join a programme in entrepreneurship in renewable energy, teachers to lead it and institutions to expand its contents. In addition, engaging with several companies, incubators, and consultancies helped us in receiving feedback and recommendations on the practical relevance of the course content. Such an active stakeholder engagement made our methodology unique in delivering theoretical and practical insights to prospective students.
- Pedagogical methodology:
 - The pedagogical methodology uses blended classroom learning, e-learning, and face-to-face collaboration-based activities. This course teaches students to identify gaps in sustainable energy markets and practices, elaborate business ideas and value propositions, mobilize political, societal, and business stakeholders, and practically implement the idea. Thus, the course enables students to acquire knowledge and competencies to develop products/services in renewable energy systems.
- Innovative content:
 - The course content combines four modules on renewable energy systems, entrepreneurial ecosystems, business model innovation and ecosystems in renewable energy, and launching successful start-ups in renewable energy. Modules are designed to give students a holistic view of energy systems, energy transitions, innovations, ecosystem roles, and executing innovative ideas into successful start-ups. Furthermore, course content is designed considering the different educational backgrounds of the students (e.g., business economics and engineering students). Students are encouraged to work in multidisciplinary teams through group work and also work on their individual learning.
- Train the trainers:
 - Since the course has an innovative methodology, the EntRENEW team strives to develop a toolkit to train the professors and mentors who will teach and help students transform their innovative ideas into real-life solutions. The aim is to develop guidelines and a framework that acts as training content to teach the

students in online and in-person classrooms. Such a toolkit will be available to all higher education partners of the project.

- Tailored IT tools:
 - To facilitate blended learning, we introduced an online learning management system (LMS) platform where students can find lectures, study material, and take exams to continue independent learning and expand their knowledge of renewable energies. LMS is an open-source platform where anyone can log in and start learning by registering for the course on the online portal. Besides, we plan to set up a virtual incubation hub to exchange knowledge between actors from academia, business, and NGO representatives from various fields, e.g., renewable energy, environment, engineering, business, and investment. The basic idea behind a virtual incubation hub is to enhance multidisciplinary collaborations to foster support for innovative products and start-ups.
- Piloting activities:
 - The project team carefully designed piloting and assessment activities to validate the course content, methodology, and output of the developed course. Piloting and assessing course content, online platform functioning, and modules relevance to targeted outcomes have been conducted with target groups (students, professors, and mentors). This also led to efficient monitoring and optimization of the course content, tools, and platform learning. In the next phase, we plan to integrate the course into a few master's and bachelor's degree-level curricula so that the maximum number of students can utilize the course content and play their role in developing renewable energy solutions.
- Sustainability, dissemination, and transfer of knowledge
 - The project's sustainability is critical to achieving the study's long-term objectives. We aim to sustain the project with its core objective by creating a virtual hub as the online meeting point for future entrepreneurs (students) and potential mentors from the start-up incubators of partnering universities and renewable energy sector professionals. The virtual incubator directly contributes to the project's sustainability and replication after its lifetime. For the transfer of knowledge, we aim to develop three real-life case studies on entrepreneurship in renewable energy by participating in focus groups and conducting surveys. We have trained several professors in the new course subject and have involved at least ten mentors in the coaching process. We also plan to publish best practices and findings to the academic community through journal research paper publication. We believe and aim to disseminate our findings and content to several students and professors from different universities in France, Spain, Netherlands, Finland, and Sweden and other stakeholders, e.g., Clean Tech, Business Incubators, Clusters, and Business Networks, through five final promotion conferences.

In conclusion, by following the steps mentioned above, we have developed a unique innovative course that equips students with skills, knowledge, and competencies to innovate and create new products and services in the field of entrepreneurship in renewable energy. Independent feedback on the pedagogical methodology and content design, content development and validation of the EntRENEW course provided by external experts constituting the EntRENEW advisory board helped in validating the content and implementation of the course Entrepreneurship in Renewable Energy. We believe the course's long-term outcome contributes to societal and economic values to transit from fossil fuels and renewable energy sources and develop a better future for coming generations by engaging with the future entrepreneurs i.e. students.



3. Innovation in Renewable Energy Entrepreneurship Course Content

Author: Israel Griol Barres - Universitat Politècnica de València

Renewable energy has become an increasingly important topic today, as we strive to reduce our dependence on fossil fuels and move towards more sustainable forms of energy production. As a result, entrepreneurship in the field of renewable energy has become a promising area of interest for many.

To address this growing demand for renewable energy entrepreneurship education, the partner institutions have developed an innovative new course that seeks to provide students with the knowledge and skills they need to succeed in this field.

The contents of this course show a multidisciplinary approach to renewable energy entrepreneurship, drawing on a range of disciplines such as engineering, business, and environmental science. This allows students to gain a comprehensive understanding of the complex issues involved in renewable energy entrepreneurship and develop a broad range of skills.

The course places a strong emphasis on innovation, encouraging students to think creatively and develop innovative solutions to the challenges facing the renewable energy industry. Through a variety of lessons, activities and simulating the creation of a sustainable project, students learn how to identify opportunities for innovation and develop new products and services that meet the needs of the market.

In addition, the contents encourage collaboration between students from different disciplines and backgrounds, fostering a rich and diverse learning environment. This allows students to learn from each other, share ideas, and develop valuable networks that will benefit them in their future careers.

The course content is divided into four different modules that address both the technical vision of sustainable energy and the creation and validation of business models.

The first module is called "Renewable Energy Systems" and contains an introduction to the concept of sustainability and the 2030 agenda of the United Nations for Sustainable Development, an action plan in favor of people and the planet in which the 17 sustainable development goals are included. In this module students will also acquire the knowledge necessary to understand the main innovations in the energy sector and the process of the energy transition to sustainable sources.

The second module is "Entrepreneurial ecosystem" and focuses on the concept of open innovation to foster creativity in the energy sector. In addition, the concept of ecosystem explains the actors involved in the development of companies at local, national and international levels. Finally, the

contents show the life cycle of the startup from the first phases in which the entrepreneur builds a team to turn an idea into reality.

Entrepreneurs will understand the concept of startup, as a temporary organization designed to find a profitable and scalable business model, by creating new products and services under conditions of great uncertainty.

The third module is "Business modeling" and its contents have been designed for students to learn how to turn business ideas into successful business models. Once an entrepreneur has understood the opportunities of the energy sector and the transition to sustainability, it is time to define the key elements of a business model. A business model theoretically describes how a company creates, distributes, and captures value.

The key elements that the student will understand thanks to this module are market segments, value proposition, channels, key resources, key activities, key partners, revenue streams and cost structure. As an innovation, this module also includes a card game for sustainable business modeling.

As eight out of ten startups fail in their first year, the module also contains an explanation of the main barriers for developing business modules.

Business models can be successful even when they do not have a positive climate impact. However, the world requires new sustainable business models. Thanks to this third module, students will also acquire notions of eco-design through life cycle assessment and the measurement of mitigation and capture of carbon emissions.

Startups must define plans to validate the assumptions of their business models. Although failures are almost always inevitable, if they occur quickly and cheaply, startups learn to pivot and will be closer to success.

The third module is completed with tips to interact with investors (one page and the elevator pitch technique) and tools to carry out a marketing strategy.

The fourth module is "Business model innovation and ecosystems in renewable energy". This module is completely practical and based on learning-by-doing. It allows students to apply their learning in a real-world context and develop valuable skills that they can use in their future careers.

In this last module, students will define a business model that responds to the needs of the energy sector. In addition, they will define a validation plan and a roadmap for the implementation of their innovation. Finally, they will measure and improve the climate impact of the business they have defined.

The contents of this course have been designed by top-notch universities in energy innovation and entrepreneurship in collaboration with industry experts and leaders in the renewable energy

sector. This ensures that the course content is up-to-date, relevant, and reflects the current state of the industry.

Through guest lectures and industry partnerships, students have the opportunity to learn from and engage with professionals in the field.

In conclusion, the innovative contents in renewable energy entrepreneurship provides students with a unique and comprehensive learning experience that equips them with the knowledge and skills they need to succeed in this exciting and rapidly growing field.



4. How do we train the trainers?

Authors: Magnus Holmén, Luis Irgang, and Deycy Sanchez, Halmstad University

How to ensure co-pilots in your course: know what to do with minimal fuss

Remember how you struggle with getting others to understand

The situation is not unfamiliar to most teachers. You are to teach in a course where you don't know the aim, content, and pedagogical setup. Of course, the examiner is unwilling or unable to clearly provide instructions. Surely, the examiner could do better? Or you have a course that will reach a broad range of students, with whom you need to interact frequently. To manage the situation, you bring in other teachers and supervisors but unfortunately, they are unable or even unwilling to spend time and effort to properly fulfill their roles. And even if your best efforts ensure you can manage one year, the next year you have a new setup of teachers or trainers, which means you have to repeat the work.

What should a poor teacher do? While the situation rarely is solvable once and for all, the good news is that you can manage the situation by creating a train-the-trainers guide. Such solution comes in different forms, here we show how to do it for blended learning courses, containing a group project where students may have many different backgrounds (engineers, scientists, business, social sciences, etc.) and where familiarity of at least two disciplines, such as business and engineering, are required to successfully finish the course.

In this article, we will explore best practices in training teachers to teach a hybrid course. These practices are described along 5 principles for creating a train-the-trainer module.

Principle #1 Contextualize the course

Lots of mistakes and annoyances can be avoided with simply a short and crisp description of the purpose of the course and how it's organized even if a teacher is only involved in a part of the course. It can be very difficult to understand the red thread in blended learning courses having students with widely varying backgrounds.

If you organize your course in modules or chronologically, you can explicitly show what the different modules are about, and this also shows the shift from e.g. ensuring students familiarize themselves with a topic to actively applying methods and frameworks to a particular problems.

An important lesson is not to overdo the contextualization in terms of time and effort. Keep it simple and just focus on the sensemaking of the course. You may provide the logic in terms of writing but can also make a short recording or video outlining the logic.

Principle #2 Demonstrate the rules of the game

Nowadays formal requirements tend to stress the importance of learning outcomes. Make sure to explicitly show the teachers and explain which of them they are to cover in their supervision or teaching. However, just like any humans, teachers differ and a great answer relative to a learning outcome for one may be a poor reply to another. There are three important aspects here. First, if you are in charge, make sure to show how well different answers respond to the learning outcomes. Second, sometimes your teacher co-pilots do need to make the decision, and not you. Make sure that the division of responsibility is clearly formulated. Third, you may remind people that in rare instances it is your responsibility to overrule an action or decision by a teacher. This is your prerogative and is a part of being professional.

Principle #3 Just in time “offline” assistance

Teachers have been known to procrastinate and do not really prepare in advance, which may force you to spend time helping them just prior to their sessions. Unfortunately, this may be a bad time for you. You can mitigate the issue by providing explicit instructions. These instructions need to be located at a place where the teachers can find them. For example, you can provide short teacher notes in a PowerPoint presentation that outlines the purpose of the slide, additional information and links to other resources. These offline explanations can be extremely helpful as the instructions are there just when the teachers need them.

Principle #4 Clarify examination activities and outputs

While rarely the favorite topic of teachers and students, the examination is in many ways the most important learning event in a course, and often different modules are examined separately. Typical information teachers need to know is the grading system, who grades and who can overrule grading, how much of the final grade each student output contributes to, and what the examination activities are. Additional details such as expected time to completion for the students, and whether it is individual or groups that will do the work should be outlined.

Principle #5 Transparency and time management

Set up all the material available to all teachers. Make sure you clearly have a ‘pointer’ explaining what the material is about, such as modules, learning outcomes, form of teaching (seminar, recording, lecture, projects) and expected student effort in time.

Both the teacher and the student are expected to put in more time and effort in hybrid courses. When educating students in a hybrid course, instructors should receive training on time management skills. They should create a schedule that accounts for the time needed for both in-person and online instruction, as well as grading and giving feedback to students.

Teachers should also give their students advice on how to use their time wisely. Students should be aware of the time commitment for each online activity, as well as the dates and times of scheduled in-person meetings and deadlines. As a result, they will be better able to manage their time and stay on track.

Teaching a hybrid course requires a different set of skills and strategies than teaching a traditional face-to-face or online course. By contextualizing the course, demonstrating the rules of the game, offering just in time “offline” assistance, clarifying examination activities and outputs, and emphasizing the importance of transparency and time management, higher education institutions can ensure that their teachers are equipped with the knowledge and skills to deliver effective and engaging hybrid courses that meet the needs of their students.



5. The Challenge of Teaching Entrepreneurship outside the Business Domain¹

Author: Enno Masurel - Vrije Universiteit Amsterdam

In February – March 2023, the course ‘Entrepreneurship in Renewable Energy’ was taught for the first time, at the Vrije Universiteit Amsterdam (Netherlands). This course was developed within the Erasmus+ project with the same name, initiated and controlled by the European Commission. The participating organizations in this project: Association Leonard De Vinci (France), Vaasan Yliopisto (Finland), Universitat Politecnica de Valencia (Spain), Hogskolan I Halmstad (Sweden), Europroject (Bulgaria) and Vrije Universiteit Amsterdam (Netherlands). Originally it was meant as a pilot course, but the project team decided to skip the adjective ‘pilot’ and to offer the course as a full course.

Anonymous comment by student 1 in the evaluation report:

It's a great course especially for science people like me who want to discover the possibility of becoming an entrepreneur.

The main aim of this course was to make the participating students more entrepreneurial, by teaching them modern theories of entrepreneurship, by familiarizing them with a set of entrepreneurial soft skills and by introducing them to business planning. A good example of modern theories is the effectuation/causation approach. For the soft skills the focus was on generating initial ideas for opportunities and on networking. The introduction to business planning used the Business Model Canvas for Start-ups & Scale-ups, that contains specific building blocks for start-ups and scale-ups. In the latter the students worked in teams of 2 people.

Anonymous comment by student 2 in the evaluation report:

Very interesting course.

14 master’s students enrolled for this course. It was a diverse population, in terms of gender, nationality and educational background. They did the masters Physics and Astronomy, Chemistry, Science, Business and Innovation and Environmental Science, all at Vrije Universiteit Amsterdam.

This article is about the challenge of teaching entrepreneurship to students outside the business domain. The process of teaching entrepreneurship to students outside the business domain (both business administration and business economics) at Vrije Universiteit Amsterdam has been going on for more than 10 years. Long running and successful courses are Entrepreneurship in Physics and Technology, Entrepreneurship in Analytics and AI and Entrepreneurship in Human Movement Sciences. Also teaching entrepreneurship to students in law and students in medicine takes place.

¹ The quotes in Italics come directly from the evaluation report of the course. The general opinion about the course according to the students scored an average of 4.4 on the five-point scale, between positive and very positive.

It is expected that more courses in entrepreneurship outside the business domain will follow soon. These courses are deliberately offered only as electives, so that motivated students are attracted.

Anonymous comment by student 3 in the evaluation report:

This winter I was thinking about quitting my masters, but I'm really glad I didn't do it and followed this course. The only bad thing is that it is over...

It should be noted that there are no specific theories in entrepreneurship for different knowledge domains. This means that only general theories in entrepreneurship can be used and that they should be applied within the other domains. The main approach with the latter is to look for examples of entrepreneurs in other domains and to work with guest lecturers who can say something about entrepreneurship in the other domains.

Anonymous comment by student 4 in the evaluation report:

You learn things that you don't usually learn in university (soft skills)

Based on the extensive experience with teaching entrepreneurship outside the business domain, and actualized by the recent course 'Entrepreneurship in Renewable Energy', the major challenge of this teaching is in familiarizing the students with bookkeeping & accounting and with marketing & sales. In general the students do not have problems coming up with a business idea from their own discipline nor do they have serious problems with the other building blocks of the Business Model Canvas for Start-ups & Scale-ups.

Anonymous comment by student 5 in the evaluation report:

Great, keep going and keep the course, highly recommended.

The students in general have their issues with making a financial overview with the balance sheet, the profit & loss statement, and the cash flow overview, and with the identification of financiers. In general, they understand the concept of the financial overview but they have problems with making estimations, mainly about the cost price and the market size. The approach to solve these issues is twofold. The first one is to work with an Excel sheet containing the balance sheet, the profit & loss statement and the cash flow overview. Note that the capital need is also incorporated here (in the balance sheet). Next the different forms of financing the start-up and scale-up are dealt with, plotted against the life cycle of the small firm.

Anonymous comment by student 6 in the evaluation report:

I saw entrepreneurship as a very intimidating subject, but now I see that it is very achievable.

The students in general also have their issues with marketing & sales. One explanation for this is that the students are quite knowledge driven in the development of their business ideas and not so primarily focused on societal needs. So, they are not really market oriented, at least not initially. Next to that many students have a fear of cold calling, in which potential clients have to be approached out of the blue. And they lack knowledge of the proper steps in the marketing process.

The students therefore are encouraged to do market research at a very early stage. What also works good is to let them think of their launching customer(s).

Anonymous comment by student 7 in the evaluation report:

Because it's fun to combine entrepreneurship and technical knowledge/exact science

One other thing in the lecturing approach is that, after the approval of the business idea, the students make a SWOT analysis of their business idea and their team. This includes the identification of weaknesses within the team, especially those whose knowledge and competences are not sufficient. This identification of the weaknesses is a good basis for looking for a coach or mentor, somebody who is able to compensate for the team's weaknesses. For that purpose, the students are also taught that working with a coach in general leads to superior innovative performance. At the Vrije Universiteit Amsterdam, alumni who run or ran their own businesses are a good pool of coaches.

Anonymous comment by student 8 in the evaluation report:

This course opened my eyes to the possibilities for entrepreneurs at the VU and in Amsterdam in general.

Finally, the students also came up with a number of suggestions, like involvement of more practical case studies and more guidance on how to make a proper market analysis. These requests will be met in the next version of this elective, in the academic year 2023/2024.

6. How to make your online training courses more engaging with gamification: How about adding a little "game" to your online courses?

Authors: Arnaude Lintzer and Irene Beccarini, EMLV Business School, Paris

Gamification, the dynamic engine that has been boosting digital marketing for years, is also making its way into the world of continuing education. But did you know that it could also revolutionize the field of initial training, and more specifically e-learning?

Making online education more attractive: The challenge of engagement

Online education offers unprecedented flexibility and accessibility. Yet it comes with its share of challenges: with isolation, lack of social interaction, absence of immediate feedback from teacher or peers, high levels of self-discipline and motivation, some learners can struggle to stay motivated and manage their time effectively.

Fortunately, gamification is here to meet these challenges. By integrating game elements and creating more interactive and engaging learning experiences, teachers and instructional engineers can reinvent the e-learning experience and improve it for all learners.

Did you say "Gamification"?

This still young term first appeared in the Oxford dictionary in 2011, and refers to: "[...] the incorporation of game-based mechanisms into elements that are not playful in the first place. It's adding play to a non-game context to solve problems or enhance an internet offering." Its aim? Incite action, promote behavioral change, and engage over the long term, all through an adapted design and narrative.

Why gamify?

By taking advantage of the natural appeal of games, gamification, when used properly and adapted to the specificities of the project, makes it easier to achieve objectives.

It has many advantages:

- increased motivation, thanks to points, badges, rewards and ranking systems,
- better retention of information, promotion of collaboration (with team games or group challenges),
- personalized learning (with the ability to progress at your own pace, focusing on areas where you need to improve your knowledge or skills)
- and development of key 21st century skills: critical thinking, problem solving, creativity, digital numeracy and collaboration.

How can gamification be applied to online training?

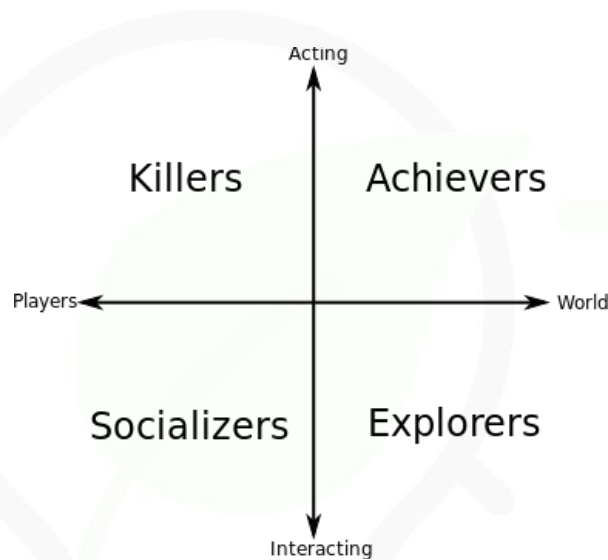
As we've seen, gamification isn't simply a matter of adding fun elements to a course. It requires careful thought and planning. This is where gamification design methodologies come in,

providing a framework for the effective integration of game elements. Several factors need to be taken into account, such as target audience, engagement levers and appropriate game mechanics. Before exploring these methodologies, it's essential to understand Bartle's typology and the levers of engagement in gamification.

Understanding your audience WHY USE IT?

Knowing your audience is crucial to creating relevant and engaging gamified activities. What are your learners looking for? What motivates them? What are their learning preferences? By understanding your audience, you can better understand their expectations and thus create activities that meet their needs and stimulate their engagement.

A valuable tool for answering these questions is Bartle's typology, which categorizes players according to their type. To identify a learner's Bartle type, a specific test* is used. By having an idea of the distribution of gamer types in your class, you can tailor your activities to your audience.



* The "Bartle Test of Gamer Psychology" is a 30-question online questionnaire that enables individuals to determine their gamer type.

<http://matthewbarr.co.uk/bartle/> <https://fidbak.io/test-bartle/>

1. **Socializers:** motivated by interaction with others, they value community and collaboration, and find satisfaction in interacting with other players, whether working together to achieve a common goal or simply chatting.
2. **Explorers:** motivated by curiosity and a desire to discover the world of gaming. They like to explore game systems and mechanics, and find satisfaction in discovering new areas, new secrets or new ways of doing things.
3. **Achievers:** motivated by the achievement of goals and progress, they are satisfied when they reach concrete objectives, whether through rewards, the accomplishment of difficult tasks or the attainment of high levels of competence.
4. **Killers:** motivated by competition and the desire to dominate others, they find satisfaction in direct interaction with other players, often in the form of conflict.

😊 Individuals are generally not strictly one type of gamer. They may exhibit characteristics of several player types, and these preferences may evolve over time. The exact proportions of each player type vary according to the specific population and context. Some research suggests that there are general trends. In a sample of online gamers, Bartle found that Socials were the most common player type (80%), followed by Explorers, then Achievers, and finally Killers (1%). However, these proportions may not be the same in an e-learning context. For example, in an academic environment, we might expect to find a higher proportion of Achievers, who are motivated by goal attainment and mastery.

The 8 Core Drives according to Yu-Kai Chou

Yu-kai Chou, gamification pioneer and author of "Actionable Gamification", is the creator of the Octalysis framework, which includes the following 8 Core Drives**:

1. **Epic Meaning:** Giving meaning to an action, creating the conviction that the player has been chosen to fulfill a mission.
2. **Achievement/Accomplishment:** Validate skills, levels and progress through a system of points, badges or trophies.
3. **Empowerment:** Enhance your skills and creativity.
4. **Possession/Ownership:** Obtain a new status, a new avatar.
5. **Social Influence:** Interacting, wanting to help, learn and work in collaboration or competition with others.
6. **Rarity/Scarcity:** Wait for a reward, seize the opportunity when it presents itself.
7. **Unpredictability:** Wanting to find out what happens next, not knowing what to expect - in short, suspense...
8. **Avoidance/Avoidance:** Fear of losing out, of stopping before reaching your goal.

The use of these engagement levers is essential to engage your users. The match between the levers used in your course and your users' expectations must be fine-tuned to design a tailor-made experience. So, before actually creating gamified activities, you need to identify the most relevant motivational levers and compare them with your learners' expectations. You'll then generate gamification ideas.

**Alexandre Duarte and Sébastien Bru define 9 Core Drives: Social Influence, Competence & Mastery, Meaning, Possession, Rarity & Scarcity, Immersion, Creativity & Autonomy, Curiosity & Randomness, Loss Aversion.

Choosing the right game mechanics and techniques

There are many game mechanics and techniques to use in your gamified activities. Here is a non-exhaustive list:

- Projects, missions and challenges for Epic Sense.
- Points, badges, trophies, rankings, levels, progress bar for Achievement and Creativity.
- Positive feedback and reinforcement, collective or individual encouragement for Empowerment.
- Levels, statuses and avatars for Acquisition.

- Setting milestones, bonus points, time management, sponsorship, random rewards for Rarity.
- Radical learning activities for Unpredictability and Avoidance.
- Creating and belonging to a team or guild, sharing in forums for Social Influence.

Which mechanics/techniques for which profile?

Determining which technique or game mechanic to use depends essentially on your learning objectives and your understanding of your target audience.

Depending on the predominant profile of your learners, you may want to integrate different game mechanics.

If your learners are predominantly 'Social' types, it might make sense to encourage collaboration and social interaction, through online discussions, teamwork and social networking activities.

If you notice a strong presence of 'Accomplishers', consider incorporating progression systems, such as points, badges, levels and rewards. These gamification elements prove highly effective in engaging this type of learner.

For 'Explorers', they might be captivated by gamification elements such as optional learning content, puzzles, or open-ended scenarios as part of an online course.

As for 'Killers', elements of direct competition, such as leaderboards, head-to-head challenges, might be more appealing.

! Note that some game elements, such as leaderboards, badges and trophies, don't always succeed in capturing your learners' interest. Instead of relying on preconceived ideas, focus on investigation and observation to pinpoint their true expectations.

It's up to you!

With your objectives, audience and game mechanics in mind, you can start designing your gamified activities. Once you've designed your activities, test them with a small group of learners to gather feedback. Use this feedback to refine your activities, solve problems, and improve the learning experience. Remember, gamification is a process of iteration and continuous improvement.

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