

ENTREPRENEURSHIP: A SERIOUS GAME



ESG TEACHERS HANDBOOK



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INTRODUCTION

Companies and the whole entrepreneurial sector look for young workers who are able to face with confidence the challenges and opportunities that the business world now presents.

This is the main reason for introducing soft or non-cognitive skills in the curriculum of VET Education if students are to be successful in their future careers.

Hard skills are those required to be able to perform a particular job. These often vary depending on the specific industry and the type of role or position held. Hard skills can usually be developed through studying and training.

In contrast, soft skills are not specific to an industry or job type. As such, they are becoming increasingly valuable to all employers, regardless of the industry they operate in, as it helps them to understand how well the trainee will fit in with their working environment and their ability to perform as one of their employees.

Entrepreneurship is a personal skill and motivation, which enable a person to engage their abilities and efforts in the creation of new products and services. Entrepreneurship has a clear social potential, because it stimulates the entrepreneur to consider the needs and requirements of potential customers, and because running a business requires setting up and managing a team of people as well as creating workplaces.

For these reasons, entrepreneurship is considered as a key factor for contemporary societies and therefore important enough to be an integrated element of every school curriculum, especially in VET schools.

Students at VET schools are assumed to be well prepared technically. However companies demand other requirements from their employees apart from technical capabilities. Similarly, the business world seeks entrepreneurs with wider skills as well as entrepreneurial attributes.

In conclusion, entrepreneurship education has a relevant role and it is a vital need for the current and future generation of young people.

This assumption leads us to search for learning methodologies and tools that sustain entrepreneurship education. Thus, we find serious games as exceptional tools to introduce and develop soft skills in trainees who are about to enter the labour market. Serious games challenge players by testing their capacity to set different alternatives and experience the relevant consequences; serious games provide immediate feedback, which is efficient for procedural learning and assessing; and even more, they lend themselves to be used in collaborative and social settings.



THE PURPOSE OF THE HANDBOOK

This handbook has been produced as one of the products of the ERASMUS+ project *Entrepreneurship: A Serious Game*. The project aim was to identify the key entrepreneurial skills that companies desire and then create a European framework of competences that young trainees and even current employees should have to be an entrepreneur or an enterprising employee.

Based on this European Enterprise Competence Framework, the project developed a second product: a *Serious Game*. By playing the game VET students can achieve and improve these competences by facing work situations, by putting into practice new strategies and by reflecting on each of their actions and decisions.

This handbook is intended for teachers of VET schools, technical colleges and teachers of Secondary schools who want to provide their students with the requirements that the labour market now demands.

Firstly, teachers should study in depth the Enterprise Competence Framework. This describes the six prominent competences that integrate other soft skills (called **skills-oriented competencies**) that students can develop at different levels of acquisition.

The handbook provides suggestions for teachers and trainers to exploit the game, *SimBiz*, as much as possible to meet the game objectives.

THE PURPOSE OF THE SimBiz Game

SimBiz aims to develop the ability and willingness of learners to create value for themselves and others.

This includes:

- Personal development through non-cognitive and metacognitive skills.
- Building an awareness of the importance of entrepreneurship and the role of the entrepreneur in society.
- Building the knowledge and skills to start or take over, run and grow in business.

The core elements in the game are:

- Experiential learning and learning in context.
- The promotion of entrepreneurial competencies.
- The reflection the game provokes in the player, because of the initiatives taken.

SimBiz will help students to identify the range of competences (“soft” or non-cognitive skills) required to run a business. At a higher level, students will be able to recognize some metacognitive skills necessary for some tasks, such as planning work, anticipating changes, and overcoming problems. Metacognition, or higher order thinking skills, implies cognition about cognition, thinking about thinking and knowing about knowing. Metacognition enables us to be successful learners, and has been associated with intelligence (e.g., Borkowski, Carr, & Pressley, 1987; Sternberg, 1984, 1986a, 1986b). Metacognition involves active control over the cognitive processes engaged in learning. Activities such as planning how to approach a given learning task, monitoring comprehension, and evaluating progress toward the completion of a task are metacognitive in nature. This learning strategy is the keystone for students to be successful in any learning activity they take.



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WHAT IS THE TARGET AUDIENCE?

Although *SimBiz* has been created for VET students, this game would be a useful tool in many other environments than the Education sector. Employment services might provide job seekers with this tool. Those companies interested in keeping a high rate of entrepreneurial spirit among their employees could be appropriate targets for this online game. Recent graduate students who reach a high level of technical skills and do not recognize their own cognitive skills as being as important as technical skills would find in *SimBiz* game an essential tool for their entrance into the labour market.

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THE COMPETENCE FRAMEWORK AND *SimBiz*

SimBiz has been created to support the Enterprise Competence Framework developed by experts in five European countries.

Both these tools will enable training and mentoring services for young people and job seekers to promote the value of entrepreneurial competences to EU citizens.

David McClelland was the promoter of the concept of competence. Spencer & Spencer define competence as:

an underlying characteristic in an individual that refers mainly to be effectiveness and/or to a higher performance in a formal labour activity or situation.

Effectiveness in a formal labour activity or situation is what SimBiz presents to its users when in the game they are running a business or are employees in a company.

The six soft-competences developed in the Enterprise Competence Framework using the VQTS model are:

- ***Self-motivated=drive and energy***
- ***Reliability***
- ***Showing commitment***
- ***Flexibility***
- ***Proactive approach***
- ***Receptive to new information***

When the trainees start playing the game, they set up the enterprise, choose the business sector and the skill. Once they have done this, they must define their own competences: they self-evaluate their competences corresponding to the six competences of the framework.

To define their own competences and reflect on how motivated, flexible, reliable, receptive to new information they are, or reflect on their capability to anticipate problems, changes, how to overcome difficulties. The students need to know themselves in relation to these competences. The teachers and trainers should help them to do this before starting to play the game.

Teachers and trainers should also prepare some lessons focused on these competences before using the game. On the following page there is an example of a lesson plan on three of the soft competences



LESSON PLAN EXAMPLES

6.1

FLEXIBILITY

How flexible am I?

AIM: To reflect on my own competences

Methodology:

Inductive reasoning

Problem-solving approach: this methodology allows doing some actuation, promotion and assessment of the cognitive processes when tasks are designed in a creative way.

Seminars and workshops are good examples.

Teaching for understanding: to focus the learning process on the comprehension involves the organisation of images and pictures in different levels to get full comprehension.

Illustrated situations at work and videos can help students to recognise themselves when performing tasks at school and in work placements.

Students learn to understand and are aware of how they do it.

Description:

Students or trainees work in small groups and try to understand what Flexibility is according to the hints, explanations, and examples given by the trainer or teacher and after watching a video that illustrates a situation at work.

Result:

Students are able to define the competence of flexibility as a result of their own reflection.

At this stage, trainees will be able to give a definition of Flexibility such as the following:

It is about adopting a methodical approach to work. It involves planning and organising oneself and others in order to deliver work and prevent future problems. This includes the ability to adapt and change plans as the requirements of the situation change. At higher levels it involves thinking long-term, strategically and creatively.

Criteria for Evaluation Assessment:

Formative methods are beneficial for assessing entrepreneurial learning, rather than summative methods.

The teacher/trainer will have to act as an observer and facilitator rather than as an instructor while monitoring the student's / trainee's comprehension and own reflection about the competence Flexibility. The teacher/trainer's attitude should help the student /trainee to complete their own reflection about their level of competence. This self-reflection is called metacognitive competence - that is the capability individuals have to reflect on their own competences. (See next page on how to practise metacognition)

Materials:

<https://www.youtube.com/watch?v=hPiI44XEKgs>

Source: *you tube Soft-skills-Critical thinking and problem solving*

Trainee's Reflection:

At this stage, the trainee will be able to recognise the level of flexibility he/she has. If the trainee is not very flexible, the teacher or trainer should look to improve this soft skill that entrepreneurs demand.



6.2

RELIABILITY

How reliable (professional) am I?

AIM: To reflect on his/her own competences

Methodology:

Inductive reasoning

Problem-solving approach: this methodology allows doing some actuation, promotion and assessment of the cognitive processes when tasks are designed in a creative way.

Seminars and workshops are good examples.

Teaching for understanding: to focus the learning process on the comprehension involves the organisation of images and pictures in different levels to get full comprehension.

Illustrated situations at work and videos can help students to recognise themselves when performing tasks at school and in the work placements.

Students learn to understand and are aware of how they do it.

Description:

Students or trainees work in small groups and try to understand what Reliability is and what a good professional means according to the hints, explanations, and examples given by the trainer or teacher and after watching the video that illustrates a situation at work.

Students work on their own in different tasks and try to explain the quality of the work done and time employed.

Result:

Students are able to define the competence of reliability as a result of their own reflection.

At this stage, trainees will be able to give a definition of Reliability such as the following:

It is the availability to be involved in tasks and assignments with the commitment to get good results and to give the same outcome every time.

Criteria for Evaluation Assessment:

Formative methods are beneficial for assessing entrepreneurial learning, rather than summative methods.

The teacher/trainer will have to act as an observer and facilitator rather than as an instructor while monitoring the student's / trainee's comprehension and own reflection about the competence Reliability. The teacher/trainer's attitude should help the student / trainee to complete the process of self-reflection concerning the way the trainee organises tasks and how well they are done. This implies not only self-reflection but also self-evaluation on the trainee's part. The trainee is self-monitoring the quality of work he/she's performing, completing it in a timely manner to fulfil the employer's expectations.

Materials:

<https://www.youtube.com/watch?v=7dPWVjQSad4>

Source: *You tube Professionalism*

Trainee's Reflection:

At this stage, the trainee will be able to know the level of reliability he/she has. In case the trainee has not attained a satisfactory reliable or professional standard, the teacher or trainer has to show the way to improve this soft skill that entrepreneurs demand. One way to induce trainees to be reliable employees in the future is to praise their good results and attitudes at work. This implies commitment and more involvement as well as eagerness for learning more and more effectively.



6.3

SELF-MOTIVATED / DRIVE & ENERGY

How self-motivated am I?

AIM: To reflect on his/her own competences

Methodology:

Inductive reasoning

Problem-solving approach: this methodology allows doing some actuation, promotion and assessment of the cognitive processes when tasks are designed in a creative way.

Seminars and workshops are good examples.

Teaching for understanding: to focus the learning process involves the organisation of images and pictures at different levels to get full comprehension.

Illustrated situations at work and videos can help students to recognise themselves when performing tasks at school and in the work placements.

Description:

Students or trainees work in small groups and try to understand what being self-motivated for a company means, according to the hints, explanations, and examples given by the trainer or teacher and after watching the video that illustrates a situation at work.

Result:

Students are able to define the competence of being self-motivated as a result of their own reflection.

At this stage, trainees will be able to give a definition of this competence such as the following:

It is about finding a reason and strength to complete a task, even when it is challenging, without giving up or needing anyone to encourage them.

Criteria for Evaluation Assessment:

Formative methods are beneficial for assessing entrepreneurial learning, rather than summative methods.

The teacher/trainer will have to act as an observer and facilitator rather than as an instructor while monitoring the student's / trainee's comprehension and own reflection about the competence self-motivation. The student should play a leading role in their learning acquisition. This way students' self-motivation will never be extinguished.

Materials:

https://www.youtube.com/watch?v=-vk-99seC_I&list=PLG0im2-n6wDL16gAXtoFpi6yh3mPijeQp
Source: *You tube Soft skills – Enthusiasm and attitude*

Trainee's Reflection:

At this stage, the trainee will be able to know the level of self-motivation he/she has attained. In case the trainee lacks self-motivation, the teacher/trainer must offer the trainee different learning opportunities and promote reflection by asking questions.



SOME IDEAS FOR LESSONS

- Write a business plan for the chosen company in the game
- Assessing the entrepreneurial behaviour of the student not just during the game but also in class (= ECF competencies).
- Let students investigate the game to see what is needed to set up a company in a chosen sector.
- Ask students to make a plan based on specific business targets before starting the game.
- Students can get acquainted with potential placement companies by first getting to know similar companies in the game.
- Challenge the students to design a suitable lesson themselves based on the lesson plan.

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HOW TO INTEGRATE METACOGNITION INTO COURSE ACTIVITIES

Teachers and trainers can follow the following steps to practise learning strategies with students. This should happen before playing the game. Any aspect of the curriculum can be used to put into practice self-reflection about learning. This example refers to the subject of Biology.

- **Pre-assessments** – Encouraging students to examine their current thinking: “What do I already know about this topic that could guide my learning?”

- **The Muddiest Point** – Giving students practice in identifying confusions: “What was most confusing for me about the material explored in class today?”

- **Retrospective Post-assessments** – Pushing students to recognize conceptual change: “Before this course, I thought evolution was... Now I think that evolution is ...” or “How is my thinking changing (or not changing) over time?”

- **Reflective Journals** – Providing a forum in which students monitor their own thinking: “What aspects of my exam preparation worked well that I should remember for the next exam? What did not work so well that I should not do next time or that I should change?”

Next, there are some recommendations for developing a lesson grounded in metacognition:

- Giving students time to identify confusions in the lesson or topic you are dealing with: *ask students what they find confusing, acknowledge the difficulties*

- Integrate reflection into the lesson: *integrate short reflection (oral or written) that ask students what they found challenging or what questions arose during an assignment/exam/project*

Metacognitive modelling by the instructor for students: *model the thinking processes involved*



- *in your field and sought in your course by being explicit about “how you start, how you decide what to do first and then next, how you check your work, how you know when you are done”*

To facilitate these activities, here you are two useful tables:

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TABLES

8.1

TABLE 1

Sample self-questions to promote student metacognition about learning

■ Activity	■ Planning	■ Monitoring	■ Evaluating
Class session	<ul style="list-style-type: none"> • What are the goals of the class session going to be? • What do I already know about this topic? • How could I best prepare for the class session? • Where should I sit and what should I be doing (or not doing) to best support my learning during class? • What questions do I already have about this topic that I want to find out more about? 	<ul style="list-style-type: none"> • What insights am I having as I experience this class session? What confusions? • What questions are arising for me during the class session? Am I writing them down somewhere? • Do I find this interesting? Why or why not? How could I make this material personally relevant? • Can I distinguish important information from details? If not, how will I figure this out? 	<ul style="list-style-type: none"> • What was today’s class session about? • What did I hear today that is in conflict with my prior understanding? • How did the ideas of today’s class session relate to previous class sessions? • What do I need to actively go and do now to get my questions answered and my confusions clarified? • What did I find most interesting about class today?



Active-learning task and/or homework assignment	<ul style="list-style-type: none">• What is the instructor's goal in having me do this task?• What are all the things I need to do to successfully accomplish this task?• What resources do I need to complete the task? How will I make sure I have them?• How much time do I need to complete the task?• If I have done something like this before, how could I do a better job this time?	<ul style="list-style-type: none">• What strategies am I using that are working well or not working well to help me learn?• What other resources could I be using to complete this task? What action should I take to get these?• What is most challenging for me about this task? Most confusing?• What could I do differently mid-assignment to address these challenges and confusions?	<ul style="list-style-type: none">• What strategies am I using that are working well or not working well to help me learn?• What other resources could I be using to complete this task? What action should I take to get these?• What is most challenging for me about this task? Most confusing?• What could I do differently mid-assignment to address these challenges and confusions?
Quiz or exam	<ul style="list-style-type: none">• What strategies will I use to study (e.g., study groups, problem sets, evaluating text figures, challenging myself with practice quizzes, and/or going to office hours and review sessions)?• How much time do I plan on studying? Over what period of time and for how long each time I sit down do I need to study?• Which aspects of the course material should I spend more or less time on, based on my current understanding?	<ul style="list-style-type: none">• To what extent am I being systematic in my studying of all the material for the exam?• To what extent am I taking advantage of all the learning supports available to me?• Am I struggling with my motivation to study? If so, do I remember why I am taking this course?• Which of my confusions have I clarified? How was I able to get them clarified?• Which confusions remain and how am I going to get them clarified?	<ul style="list-style-type: none">• What about my exam preparation worked well that I should remember to do next time?• What did not work so well that I should not do next time or that I should change?• What questions did I not answer correctly? Why? How did my answer compare with the suggested correct answer?• What questions did I not answer correctly? Why? What confusions do I have that I still need to clarify?



Overall course	<ul style="list-style-type: none"> • Why is it important to learn the material in this course? • How does success in this course relate to my career goals? • How am I going to actively monitor my learning in this course? • What do I most want to learn in this course? • What do I want to be able to do by the end of this course? 	<ul style="list-style-type: none"> • In what ways is the teaching in this course supportive of my learning? How could I maximize this? • In what ways is the teaching in this course not supportive of my learning? How could I compensate for or change this? • How interested am I in this course? How confident am I in my learning? What could I do to increase my interest and confidence? 	<ul style="list-style-type: none"> • What will I still remember 5 yr from now that I learned in this course? • What advice would I give a friend about how to learn the most in this course? • If I were to teach this course, how would I change it? • What have I learned about how I learn in this course that I could use in my future biology/science courses? In my career?
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8.1

TABLE 2

Sample prompts for integrating metacognition into course activities

Pair discussion after a clicker question	Active-learning tasks and/or homework assignments (e.g., case studies, concept maps, problem sets)	Preparation for quizzes or exams
Share how you thought about what the question was asking.	Pose three questions that you had about the concepts you explored in your assignment that you still cannot answer.	How do you plan on preparing for the upcoming exam? Why?
Share the process you used to arrive at an answer you wanted to choose.	Describe at least two ideas related to this assignment that you found confusing.	What resources are available to support you? How will you make sure to use these?
What was your main reason for choosing your answer, and what were the main reasons you did not choose each of the other answers?	“I learned a lot in doing this assignment.” To what extent do you agree? disagree?	How does your strategy for exam preparation compare with at least three colleagues in your lab section? (Go ask them!)
How did you compare your ideas with your classmates’ ideas?	How was the way you approached completing this assignment different compared with the last time we had an assignment like this?	What concepts have you found most confusing so far? What concepts have been most clear? Given that, how should you spend your study time in preparing for the exam?
What was most confusing to you about this question?	What advice would you give yourself based on what you know now if you were starting this assignment all over again?	Based on your performance on the first exam, write a letter to yourself with advice about preparing for the next exam.
How confident are you in your answer? Why? What else would you need to know to increase your confidence?		



HOW TO ORGANISE STUDENTS TO PLAY THE GAME

Teachers should organise students before starting playing the game. For the first time it is better for students to play the game in pairs. Every student should play *SimBiz* on their own computer but are encouraged to discuss the decisions they take together. This does not mean they both have to take the same decision and run their business in the same way. However, it is very valuable and rewarding for students if they help each other even though they decide on their own. When, consequently, they get different results, that might help them to share and reflect.

Once they are more experienced with the game, it would be very challenging for them to play in a group of four or six, for example, and enter into competition with each other to see who gets the best results.

Playing the game in pairs or in groups will motivate students to devote some time to play the game in their own time, because it is likely they will not be able to finish the game in one or two lessons. Depending on how much time the business scenario they have chosen takes, part of the time of the game will have to be done at home.

HOW TEACHERS / TRAINERS MONITOR PROGRESS

There are three phases in the acquisition of these soft skills that businesses have identified as essential for enterprising employees.

1. To understand what these skills consist of.
2. To reflect on how much of these skills the student has.
3. To put the skills into practice in a game environment.

In the lesson plan examples above, the two first phases were covered. To monitor progress in the third phase, a methodology that relates directly to digital games can be employed. *This is game-based learning.*

Game-based learning (GBL) is the use of digital games with serious goals (i.e. educational objectives), and used as tools to support learning progress in a significant way. It is also known as educational gaming. Studies in the field of GBL show a clear relation between playing digital games and learning. There are a number of arguments in favour of digital games as learning tools. Players have fun whilst learning. Indeed, in games, the challenge usually increases as long as the game goes on. Therefore, players need to improve their skills and learn new strategies until the game is completed.

Some new learning strategies that *SimBiz* offers to the students/ trainees are:

Taking the best decisions to make a business successful by linking these decisions to the knowledge they acquire about the kind of business they set up, the number of employees, the skills required, the importance or need to invest in brand advertisement etc.



Having a clear goal-orientation. General objectives are essential for the student or trainee to establish, as long as the general objectives are seen as the reference to set up specific objectives. To establish only general objectives might result in some confusion and lack of clear targets.

Considering the experience of failure as a constructive learning experience. This is very important.

Recognition of opportunities.

The teacher / trainer should monitor students /trainees' progress adopting the role of facilitator rather than controller. Supervision of the teacher is highly recommended in order to avoid misconceptions.

When the student/trainee fails and goes bankrupt the teacher should encourage the student to self-reflect on the actions and decisions taken. Analysis of the procedures followed is necessary to be carried out by the student with the help of the teacher. This help might consist of a set of questions to the student in order to identify the error and why it happened. It is very important for the student to expressed orally the process they followed so that they learn from their mistakes & are not discouraged by them.

Evaluation concerning the progress achieved by the student/ trainee will place them in one of the levels of competence within the Framework. Teachers should explain how much progress has been achieved and how far or near they are from the next level, as well as what they need to do to go onto the next one.

CONCLUSION

The *SimBiz* handbook is oriented to the trainee's self-reflection. The self-reflection should lead trainees to understand their own process of learning. This method will provide them with the necessary skills to face difficulties and unforeseen situations successfully in any occupational field.

Using the game as part of any curriculum, teaching professionals can track the progress students are making in developing those personal skills that contribute to their academic level.

We hope teachers, advisors, trainers in different academic and labour sectors find help in the guidelines and examples of this handbook.

As for students and employees, we think *SimBiz* will contribute to the development of their creativity; to their knowledge of how to handle conflicts and problems; how to plan and organise tasks or projects, as well as being engaged in an attractive and challenging game.

For more information regarding the ESG project please see the following websites:

www.enterprisegame.eu

www.simbiz.eu



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