





# A GAMIFICATION-INFUSED TRAINERS'GUIDE FOR DIGITAL

# **EDUCATION**





This work is licensed under a Creative Commons Attribution-NonCommercial 4.0 International License

This license enables reusers to distribute, remix, adapt, and build upon the material in any medium or format for noncommercial purposes only, and only so long as attribution is given to the creator.

## **PARTNERS & Authors**



Nora Kovesd, Myrtill Lenkefi



Ersi Niaoti, Niki Maria Zafeiropoulou



Elina Laouri



Jana Pitrová



Milena Koleva, Dimitar Hristov



Major Ágnes, Nagy Viktória, Margit Weisz

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Education and Culture Executive Agency (EACEA). Neither the European Union nor EACEA can be held responsible for them

## Table of Contents

Intro	duction	1
1	GAMIFICATION	3
1.1	Gamification in education - Why is it a hit method?	4
1.2	Digitalization, the flagbearer of today's educational needs	7
1.3	Learning methods	9
1.	Digital assessment	9
2.	Blended learning	10
3.	Competence-based learning	11
4.	Project Based Learning	11
5.	Gamification	11
6.	Content creation	3
1.4	Improvement of skills, specifically green soft skills via games	5
1.5	Conclusion	7
2	SUPPORTIVE ELEMENTS FOR DIGITAL GAMIFICATION	
	IN EDUCATION	8
2.1	Creative writing	9
1.	What is creative writing?	9
2.	How to write in a creative way: Tips	10
2.2	Storytelling,	12
1.	How to create a narrative	13
2.	How to create a strong narrative	14
2.3	Digital tools and educational games	16
1.	Games and their educational purpose	16
2.	Games both offline and online	17
2.4	Visual communication and game-based learning	18
1.	Example of visual novel online in the form of game	19
2.	DEGREBE: to explore educational content through the different choices	
	of a visual novel.	19
2.5	Conclusion	21
3	MOTIVATION IN THE DIGITAL SPACE/ EDUCATION IN	
	VIRTUAL SPACE	22
3.1	Motivation management, intrinsic and extrinsic motivation	23
3.2	Specific characteristics of gen Z and the Alpha Generational differences	-
	generate how digital methods for education are more effective on Gen Z)	25
3.3	Learning pathways-Down the vellow brick road	27
3.4	Conclusion	28
4	FROM PLANNING TO IMPLEMENTATION	29
4.1	Gamifications 101: From planning to implementation	30
4.2	Collection of good practices and know-how	33
1.	United Airline's lovalty card	34
2.	KFC's "Shrimp Attack"	35
3.	Starbucks' Loyalty Programme	36
4.	T-Mobile	37
5.	Domino's	37
6.	Digital examples	38
7.	VR examples	39
	· · · · · · · · · · · · · · · · · · ·	

8.	Enhancing learning and soft skills	40
9.	Gamification in the Street	42
4.3	GAMIFICATION IN ACTION - LET THE GAMES BEGIN!	45
1.	Psychological needs	45
2.	Tools and strategies of gamification for learning	46
3.	Examples of gamification elements	47
4.4	Conclusion	48
Glossary:		49
Reference		52

## Introduction

In an era where the dynamics of education are constantly evolving, the DEGREBE project presents its second milestone: a groundbreaking Trainers' Guide designed to reshape the landscape of digital education. This guidebook, born from the collaborative efforts of dedicated educators and innovative technologists, serves as a beacon for those who seek to harness the transformative power of gamification in the realm of teaching and learning.

The core objective of this Trainers' Guide is to empower teachers, mentors, and facilitators with the knowledge and tools needed to navigate the intricate world of gamification in a digital context. It bridges the gap between theory and practice, emphasising not only the pedagogical nuances but also the administrative, technical, and organisational dimensions of integrating gamification into education.

One of its distinguishing features is its role in complementing the digital education package (PR1) by offering profound insights into the gamification process. This holistic approach provides a comprehensive view of how gamification can be woven seamlessly into the fabric of modern education. From basic pen-and-paper methods to the most intricate, complex systems for educational games, the guide offers a simple, yet highly effective framework that facilitates the applicability of universal gamification principles.

In a world where storytelling and creative writing have become pivotal in educational methodology, this guide puts an unwavering focus on these elements. It recognizes the profound impact that enriching narratives have on the learning process and aims to empower educators to harness the power of storytelling in their teaching methods.

Crucially, the guide is tailor-made for the visually oriented information consumption habits of today's learners. It recognizes the importance of eye-catching, engaging stories and visual elements in capturing the imagination of students. Therefore, it stands not only as a companion to the educational package but also as a standalone booklet, filled with practical insights and information.

At its heart, the Trainers' Guide is a contemporary solution that revolutionises online teaching practices. It empowers educators to connect the dots between gamification and digital learning, offering a holistic approach that aligns with the overarching goal of the DEGREBE project. It guides teachers and facilitators in leveraging gamification and game-based learning techniques and tools within the digital environment. Moreover, it provides a comprehensive user manual for the digital tool developed as part of the project, creating a symbiotic relationship between PR1 and PR2.

## **1. GAMIFICATION**

The main purpose of this chapter is to provide guidelines for teachers on what and how to apply Gamification in education to better motivate learners. This chapter provides more information and examples of motivation and interaction in classes and training.

#### **AIMS OF CHAPTER:**

This is the first chapter of the Trainer's Guide where it is defining gamification in general. It also elaborates the topics about game-based learning and gamification, project-based learning. Our objective is to provide a concise and practical overview on why and how to make the learning process more engaging and interactive to meet the needs of the new generations Z and Alpha. It provides insights into the digitalisation of the process, learning methods, improvement of skills, specifically green soft skills via games. This chapter offers insights of the gamification process. It also highlights and explains several best practices and tools for achieving the main goals. In this chapter, learners will have the opportunity to learn about the principles and practices of gamification in education, including how it can improve motivation and engagement, the importance of game mechanics, and how to implement gamification in lesson plans. Additionally, the chapter highlights best practices and examples of gamification in the classroom, along with strategies for assessing the effectiveness of gamified learning experiences.

**KEYWORDS:** game-based learning, gamification, project-based learning, educational videos, soft skills, green skills, digital education

#### **LEARNING OBJECTIVES:**

The main learning objectives of this chapter on gamification in practice are to provide educators with a practical understanding of how gamification can be used to improve learning outcomes and engagement in the classroom. Specifically, learners should be able to:

- Better understand the difference between Gamification and Game-based learning.
- Know the different learning methods based on digital technologies and their benefits.
- Understand how to develop games.
- Learn about innovations in education.
- Learn best practices and from existing case studies.

By the end of this chapter, learners should be equipped with the knowledge and skills to create effective gamified learning experiences that improve student engagement and outcomes.

## 1.1 Gamification in education - Why is it a hit method?

The core concept behind game-based learning is teaching through repetition, failure, and the accomplishment of goals. Video games are built on this principle. The main idea is for the player to begin at some level and gain skills and knowledge until they're able to skilfully navigate the most difficult levels. Games that are planned and designed well will offer enough difficulty to keep it challenging while still being easy enough for the player to win.

## Games have been used for centuries:

• Chess for strategic thinking - Chess was used to teach strategic thinking as far back as the Middle Ages.

• The game of Kreigsspiel - The game of Kreigsspiel was invented in 1812 specifically to teach Prussian officers' strategy.

• Learning through play - Beyond military strategy, the genesis of Kindergarten in the mid-1800s was Friedrich Fröbel's ideas of learning through play.

The goal of game design is to produce a game that offers the player the opportunity for meaningful play.

"Meaningful play occurs when the relationships between actions and outcomes in a game are both discernable and integrated into the larger concept of the game." (Salen & Zimmerman, 2003)

"It is a delicate dance between art and science, between instructional design and game design, and between play and guided discovery". (Hirumi, Appelman, Rieber, & Eck, 2010)

"No stone is left unturned in the game development to create something that is rigorous, engaging, and aligned to standards," (Suzi Wilczynski)

When students work on game-based learning, they're probably just thinking that they're having fun with a game, but there's a lot that goes into crafting the game as a learning tool. The games are applied to education as a tool aligned with the curriculum and means of nurturing creativity, motivation, and engagement. As such the creation of the game should start with analysis

and alignment with the standards, rules, curriculum and the specifics of the national Education law and system while keeping the freedom of the content and design. Before the design even starts, a team of education, curriculum, and game experts decides on the exact lesson that will be taught to students.

# GAME-BASED LEARNING: A type of active learning experience within a game framework

The games allow experiential learning for the students and help them better understand the subject matters in real world context. According to Mind Research Institute:

In game-based learning, the game is the learning experience, whereas in gamification, the game components are added to the traditional instruction method.

# GAMIFICATION: The process of adding game elements or mechanics to a learning experience.

Gamification helps modify the teaching process and make it more engaging and interactive by adding the new elements.

Here below you can find some practical examples of gamification in the classroom:

- Forming student teams to work and/or compete to achieve a certain goal.
- Awarding students for their achievements enabling them to earn points and giving rewards.
- Timed flash cards or worksheets.

- Assigning badge or other ways to reward the completion of tasks, activities, and work.
- Listening for certain keywords or situations to complete a bingo-type sheet.
- Using dice to generate random numbers for an activity.

Gamification works well and can be applied as a first step and approach to modernizing the way of teaching. Several studies have shown that offering excessive external rewards for an internally satisfying behaviour can lead to a reduction in intrinsic motivation (Deci et al., 1999). Intrinsic motivation is a type of internal desire that is based on the satisfactions of behaving "for its own sake."

If designed well, game-based learning has the capacity to harness students' intrinsic motivation and love for play and lead them toward complex problem solving.

The goal of game design is to produce a game that offers the player the opportunity for meaningful play.

"Meaningful play occurs when the relationships between actions and outcomes in a game are both discernible and integrated into the larger concept of the game" (Salen & Zimmerman, 2003)

Some key points and factors to be considered before creating a game and applying game-based learning:

• When students work on game-based learning, they might be thinking that they're having fun with a game, and the purposes of the game should be explained in the beginning.

• The games that are applied to the education process in your school and classes as a tool should be aligned with the curriculum and means of nurturing creativity, motivation, and engagement.

• In this respect you start the creation of the game with deliberate analysis and alignment with the standards, rules, curriculum and the requirements of the national education law and system while keeping the freedom of the content and design.

• The members of the team who will work on the game creation is critical. In general, collaboration is one of the key success factors in the process of innovating the education process and system. Members of the team are experts in education, curriculum, and game creation, including IT experts.

• Clear definition and decision on the exact subject and the lesson/s and learning outcomes that will be taught to students by the game.

In conclusion, game-based learning requires very careful preparation, collaboration, goal setting in terms of knowledge, skills, and competence development of students. It also requires review, analysis, consideration and alignment with the standards and rules of the school and the national education system and law. Then the design, structure and overall development are synchronised with those requirements and various techniques, types of games, elements, content can be easily applied.

#### 1.2 Digitalization, the flagbearer of today's educational needs

Digital technologies in education are considered by many to be a controversial process in education. Obviously, not every digital tool is a boon to learning. First, digitalization of education and online distance learning differs. The meaning of digitalization is much broader. It means using different programs, applications, and other digital resources for e-learning remotely and directly at school or university.

For example, one element of digital education is using an essay writing service to aid academic writing. Digitalization concerns not only educational processes but also organizational ones. In addition, electronic diaries, and journals, as well as the ability to write electronic messages to the teacher instead of calling or coming to school in person, are also digitalization.

The digitalization of education has become incredibly prominent since the beginning of the coronavirus pandemic. In the recent years Artificial Intelligence finds its way into the education process, too. For example, applications like OpenAI serve various purposes including giving answers to certain questions, providing essay writing and other exercises.

"Technology can become the 'wings' that will allow the educational world to fly farther and faster than ever before; if we will allow it." (Jenny Arledge)

The digital phase of learning involves various advanced forms like:

- Online courses
- Online exams
- Digital textbooks
- Educational videos
- Animation

The digital phase of learning also involves various advanced techniques like:

• Accumulation Of Students on The Same Platform

- Online Resources: Connecting Students with Their Educators
- Internet: Making Digitization Possible
- Administrative Activities: An Integral Part of The Education Industry

Digital education helps learners build the skills they need to navigate technology and to get the best out of it. Students of digital education can access learning materials and interact and collaborate with their tutors and peers online and can enjoy flexible, engaging, and motivating courses of study.

Some of the advantages of digital education are:

- Personalised learning
- Self-directed learning
- Easier to access.
- Students can learn at their own pace.
- Digital assessment tracks progress.
- Blended learning
- Competence-based learning
- Collaborative learning
- Improves digital literacy.

We all need to be digitally literate in today's technology age. Digital literacy means being able to use technology to find and share information. It's an essential life skill, as well as a prerequisite for many jobs. Even the act of applying for a job is likely to include technology.

The teacher-centred approach vs. the student-centred approach. High-tech vs. low-tech approaches to learning. Flipped classrooms, differentiated instruction, inquiry-based learning, personalized learning and more. Not only are there dozens of teaching methods to explore, it is also important to have a sense for how they often overlap or interrelate.

### **1.3 Learning methods**

#### 1. Digital assessment

As students' progress through their studies, they are likely to be assessed several times. Digital assessment needn't be confined to the marking of written work – it can include live online or pre-recorded presentations. Digital assessment includes timesaving features that make grading and

giving feedback simpler and more effective to free up tutors from repetitive marking. That way, tutors can focus time on addressing learning points instead. Quizzes with correct and incorrect answers can be automatically marked, saving tutors a huge amount of time.

Students benefit from simple access to their grades and feedback over time through the online learning platform. That way, they can clearly see their progress and are able to revisit feedback whenever they need to.



## 2. Blended learning

Figure 1: Blended learning, Source: Own

Blended learning combines some face-to-face tutoring with online learning. It's an approach that can work very successfully because it combines the convenience and flexibility of online, with the personal touch of in-class tuition.

Each institution and educator will have their own approach to blended learning, according to the course type and needs of students. For many, blended learning enables a 'flipped' classroom approach, in which students access content through the learning platform to prepare for in-person lessons. In this way, knowledge acquisition occurs outside the classroom, perhaps from recorded lectures, documents, videos and other resource, and knowledge application occurs in class.

#### 3. Competence-based learning



Figure 2: Competence-based learning, Source: Own

It recognises that, within a specified period of study, learners will progress at different rates. Students will need to spend more time on some topics than others. They might also need to supplement main course material with other information to plug knowledge gaps knowledge. Digital education enables a competence-based approach to learning because it is flexible, with the capability for personalised learning journeys within a framework designed around achieving set outcomes. Built-in logic in the learning platform facilitates learners moving from one topic to the next, only when they have mastered the topic and met pre-defined criteria for progressing to the next stage.

## 4. Project Based Learning

Project Based Learning (PBL) is a teaching method in which students learn by actively engaging in real-world and personally meaningful projects. In Project Based Learning, teachers make learning come alive for students. Students work on a project over an extended period of time – from a week up to a semester – that engages them in solving a real-world problem or answering a complex question. They demonstrate their knowledge and skills by creating a public product or presentation for a real audience. As a result, students develop deep content knowledge as well as critical thinking, collaboration, creativity, and communication skills. Project Based Learning unleashes a contagious, creative energy among students and teachers.

### 5. Gamification

Gamification taps into models familiar to users of technology to deliver enhanced and engaging learning experiences for more successful outcomes. Easy-to-use digital tools, which many students will be familiar with from gaming, can be incorporated into course design to motivate them through rewards and real-time feedback.

Game-based learning platforms are designed to increase learner engagement and productivity by incorporating gaming elements into the training strategy.

Phase 1. Preparation Phase 2. General design

## Phase 3. Implementation

Figure 3: Gamification process, Source: Own

The below activities define the above steps:

## PREPARATION

- Adaptation to the education and curriculum requirements
- Development of the topics and content of the lesson plan/s
- Setting learning and gaming objectives
- Development of a storyline

## **TEAM AND ROLES**

- Forming the team for the game
- Assigning roles in the process

### **DESIGN AND PLAN**

- Definition of type and range of game design
- Graphic design

## DEVELOPMENT OF THE PROTOTYPE FOR TESTING

- Content creation
- Development of the elements

## **TESTING AND VALIDATION**

- Testing with students
- Adaptation

## FINALIZATION AND IMPLEMENTATION

- Final version
- Adjusting the game for future use

One of the critical steps is the alignment of the design and the storyboard. Both should be compelling and interesting enough to motivate and engage students in the process. It is recommended to use a platform which provides the functionalities, guidelines, and main element for the game creation.

Another component of the game development is the assessment methods and tools to be developed.

The main game types could be divided into three main groups:

**Physical Games**: Games that are played in the real world, often involving physical activities or objects.

- Sports: Games with defined rules and physical activities, such as soccer, basketball, and tennis.
- Board Games: Games played on a tabletop, like Chess, Monopoly, and Scrabble.
- Card Games: Games played with a standard deck of cards, like Poker or Bridge.
- Outdoor Games: Physical games played outside, including tag, hide and seek, and frisbee.

Video Games: Electronic games played on computers, consoles, or mobile devices.

- Action/Adventure: Games that focus on exploration, combat, and storytelling, like The Legend of Zelda.
- Role-Playing Games (RPGs): Games where players take on the roles of characters and make decisions that impact the game's story, such as Skyrim or Final Fantasy.
- Simulation: Games that simulate real-world activities, such as The Sims or Flight Simulator.
- Puzzle: Games that challenge players with puzzles, like Tetris or Portal.

**Live-Action Role-Playing (LARP):** Interactive games where participants physically act out their characters' actions in a fictional setting, combining elements of theatre and storytelling.

The following principles of development for video games are suggested below:

- **Interaction** video games require a player to take part to play the game, unlike many learning experiences which allow the learner to take an inactive role.
- **Risk taking** video games provide a low-risk environment in which to try different approaches to problem solving; if one approach does not work the player can simply try another.
- **Agency** players have an ownership in the outcomes and course of the game.
- Well-ordered problems video games present problems in a way such that the difficulty level of what the player must solve starts at an easy level and becomes progressively more challenging.
- **Situated meanings** all knowledge and experience in a video game is connected to the context in which the player finds him or herself.
- **Systems thinking** players of a video game receive information and undergo challenges that are always mindful of the context of the whole game; all the learning is connected to the entirety of the system; there are no parts that exist in isolation.
- **Performance before competence** players of a video game are taught skills that they use at a low level and practice repeatedly until they achieve mastery at these skills.

As mentioned above, there are existing aplications, and we provide a sample list below:

- <u>EdApp</u> is a game-based learning platform that integrates different engagement elements to help you increase course completion rates while ensuring an effective learning experience for your learners.
- <u>Kahoot</u> is a well-known online quiz maker and game-based learning platform, Kahoot! uses visually appealing gamification elements to maximize engagement and ensure higher completion rates among learners.
- <u>Gametize</u> is an enterprise-grade game-based learning platform and LMS solution that enables organizations to enhance their employees' training experiences, whether they are going through onboarding or upskilling programs. With this tool, you can easily design your own gamified content by choosing from a vast library of game templates, which are divided into project categories like employee engagement, learning and development, talent acquisition, and many more.
- <u>Centrical</u> is a powerful gamification training software that allows you to design gamified microlearning content. With its intuitive user interface, you'll be able to create polished game-based learning materials without needing advanced technical design skills. On the platform, you can customize learning challenges, set prize-winning competitions, or design quest-based game narratives to help your employees adopt the right behaviors, practice skills in a risk-free virtual environment, and improve the overall knowledge and skills they need to succeed.
- <u>Archy Learning</u> is an all-in-one gamification training software and eLearning platform that you can use to host global classroom, perfect for those who are training remote teams across the globe. With its intuitive user interface, you can easily copy and paste Youtube links or upload classroom notes, PDFs, and other digital resources that your learners will need to complete their training. You can even design learning paths by incorporating custom course quizzes, mixed media exams, homework, interactive video modules, and personalized games.
- <u>Hoopla</u> is a sales gamification software and engagement solution specifically designed to motivate sales teams to increase performance through contests, leaderboards, and real-time recognition. With this eLearning mobile app, you can identify sales goals and create tournament-style or race-style contests to promote friendly competition between employees and accelerate overall team productivity.
- <u>**Raptivity</u>** is an interactive eLearning solution that you can use to design engaging and visually stimulating online learning materials. The tool features a growing library of pre-made responsive interactions that include parallax displays, panning slides, and 360 interactions. Even with no design expertise, anyone can customize interactive quizzes, games, simulations, flashcards, and brainteasers through the tool's user-friendly interface.</u>
- **<u>ProProfs</u>** is another online on-demand training tool that's packed with features designed to create training courses with ease. It boasts a wide selection of bite-sized courses featuring sought-after skills, such as business writing, data analysis, and web development.
- <u>**GoSkills**</u> is another online on-demand training tool that's packed with features designed to create training courses with ease. Courses on GoSkills are mobile-friendly and cloud-based so they can be taken anywhere. It also features gamification examples like daily streak and time-tracking goals.
- <u>Hurix Digital</u> is an end-to-end digital content solution provider integrating different content creation and delivery platforms. With this tool, you can customize your LMS

according to your organization-specific training workflow. Its game-based learning strategy incorporates puzzles, problem-solving games, strategic games, challenge-based games, and many more.

There are many other options t be used but the overall principles and approaches are similar.

## 6. Content creation

•

Multimodality: blending different formats is the common approach when creating video games. In the list below we provide possible resources and tools:

- Videos:
  - Free Movies
  - Learner.org
  - National Archives
  - Next Vista for Learning
  - The Open Video Project
  - Reel Classics: Classic Movie Video Clip Gallery
- Pictures:
  - 21 Free Stock Photo Sites for your Social Media Images
  - American Memory Project
  - Art Images for College Teaching
  - o <u>BlogPiks</u>
  - o **Deviantart.com**
  - o Every Stock Photo
  - Free Stock Photos
  - o **<u>FreeFoto</u>**
  - FreeImages
  - o **FreePhotoBank**
  - FreeStock
  - Freestocks
  - Free Digital Photos
  - Free for Commercial Use
  - Free Nature Stock
  - o <u>Gratisography</u>
  - High Resolution Textures
  - Icons8 Photos
  - ISO Republic
  - Kaboompics
- Clip Art and Animated images:
  - o <u>Classroom Clip Art</u>
  - OpenClipArt
  - The Teacher Files
- Texts.
- Other tools and sources for content:
  - o <u>PowerPoint</u>
  - <u>YouTube</u>
  - o <u>Doodly</u>

- o <u>Google Slides</u>
- o <u>Canva</u>
- o <u>Ludus</u>
- o <u>Beautiful.ai</u>
- <u>Prezi</u>
- <u>Powtoon</u>Genially

## In conclusion, as presented above:

A possible approach to develop a game and its mechanics and rules can be found in "*Rules of Play: Game Design Fundamentals*" by Katie Salen and Eric Zimmerman. The next step is to consider the pedagogical and curriculum requirements including integration, adaptation, and assessment. Additionally, consider the requirements and resources needed to design, select, and/or obtain the game, and make it successful.

## 1.4 Improvement of skills, specifically green skills via games

## **CASE STUDIES:**

WHO DO IT: Brain Research Laboratory, WHERE DO IT: Universidad Rey Juan Carlos, Madrid, Spain

The proposed Soft Skills Training Program (SSTP) combines multiple serious games to train future employees in four key soft skills that are most demanded by companies:

- intrapersonal
- interpersonal
- personal social responsibility
- organizational sustainability.

These four MacroSoftSkills are subdivided into eight MesoSoft Skills and 21 MicroSoft Skills to establish a complete multilevel structure. The development of soft skills is measured before and after the training using five appraisal questionnaires and tests. The pilot project, aimed at young university and vocational training students, lasted 9 weeks and proved to be effective since the proposed aggregate indicators of soft skills development increased in value, with the results being different across soft skill, gender, and educational centre. The contents and length of some of the training sessions should, however, be adjusted to further develop and improve the program.

# PLAN DO CHECK ACT

## The Sessions of the Program

After the selection of the soft skills, the appraisal tests, and the serious games, all composing the SSTP, the training program on soft skills was designed to be carried out in nine sessions of about 2 h, numbered 0-8, with the first and the last being the appraisal sessions, thus leaving seven sessions for training.



Figure 4: Sessions of the Program, Source: Own

The theoretical background of the different pillars of the proposed program that fosters the training program follow, not forgetting that the aim is that all three vertices of the training program—soft skills, appraisal tests and indicators, and games—are jointly incorporated into SSTP.

#### **1.5 Conclusion**

Making the learning process more engaging and increasing the motivation of learners is becoming more and more challenging with the dynamic changing needs of the new generations, their behaviour, attitudes, and challenges. New teaching methods have been developed in pursuing these challenges: blended learning, competence-based learning, project-based learning, gamification where the last one is quite challenging to be applied especially when it comes to developing games and applying gamified elements in the learning process and materials. Gamification in education means that educators apply game design elements to an educational setting. The goal is usually to make learning more engaging. Breaking the concept of a "game" down into constituent game design elements is tricky, considering how vast the differences are among, say, chess, The Sims, and tag. It is now required by all teachers and trainers in all fields to learn how to apply these innovations as students are better engaged, in less time and more efficient way. This is the first chapter of DEGREBE Trainer's Guide with the main purpose to lay the foundations and introduce the main topics and methods used their role, meaning and influence. The systematic design and implementation of educational games remain an elusive topic. Blended approaches use multiple methods to deliver learning by combining face-to-face interactions with online activities. Online learning offers many benefits for students, including the chance to study flexibly and from a location that suits.

## 2 SUPPORTIVE ELEMENTS FOR DIGITAL GAMIFICATION IN EDUCATION

Games and interactive media have become an integral part of education, especially in recent years. These mediums offer a fun and engaging way for learners to acquire new knowledge and skills while also promoting critical thinking and problem-solving.

However, simply incorporating games and visual novels into the classroom is not enough to ensure their effectiveness. It is important to understand the role of creativity, creative writing and storytelling in educational games and visual novels, and how they can be used to foster deeper learning experiences for students.

This chapter contains an analysis of creativity, creative writing and storytelling that can be used to enhance educational games and visual novels.

There is also an analysis of the benefits and challenges of integrating these elements into the learning process. This chapter contains the benefits of offline and online games and also how DEGREBE enhances the educational process.

#### **AIMS OF CHAPTER:**

1. Developing a strong understanding of the principles of creative writing and storytelling

2. Examining different storytelling techniques, character development, plot structure, and other key elements of writing.

3. Learning how to apply creative writing techniques to the specific context of visual novels

4. Learning how to write compelling dialogue, create memorable characters, and construct engaging narratives that work within the unique constraints of the visual novel format.

5. Practicing and refining writing skills: Through a combination of tips and advises, readers could hone their writing skills and develop a better understanding of their strengths and weaknesses as writers.

6. Analysing the educational purpose of DEGREBE.

**KEYWORDS:** Creativity, Creative writing, Storytelling, Character, Plot, Interesting, Visual novel, Narrative

## **LEARNING OBJECTIVES:**

- Understanding what creativity is and why it is important in education
- Enhancing knowledge on creative writing

• Understanding how to create a narrative to structure of a story

#### 2.1 Creative writing

## 1. What is creative writing?

Creativity is the process of generating new ideas from original thinking. These ideas are the inspiration that, with effort and work can lead to innovation. Creativity is the habit of continually doing **new things** in new ways to make a positive difference in our lives. One of the aspects of creativity is creative writing.

Creative writing is a form of writing that involves **several different genres and styles outside the more formal style of technical writing or academic writing**.

Creative writing focuses on elements such as character development, narrative, and plot, infusing its structure with imagination and story. (8 tips for getting started with creative writing - 2023). Creative writing is the form of writing that uses imagination and thus at its core lies creativity and innovation. Its main purpose is to tell an intriguing and interesting story.

The main tools are robust words to create emotions, wake up the senses and feelings and have an emotional impact to the reader. Creative writing lies at the other spectrum of academic writing, technical writing or news writing and its scope is to nurture creativity and broaden our imagination. It is original and self-expressive.

Creative writing is the form of writing that uses imagination, inspiration, personal expression and thus at its core lies freedom of expression and innovation. Creative writing aims to create and share an intriguing and engaging story.

Types of creative writing include:

- Fiction
- Poetry
- Plays
- Movie and television scripts
- Short stories
- Lyrics
- Memoirs
- Personal essays

Creative writing is simply using your brain to make things up.

As in all art forms, no matter how free the expression is, there are techniques to be followed, at least in the beginning, to have the most effective impact. Same applies to creative writing.

Creative writing techniques include:

- Character development
- Plot development
- Interesting setting
- Underlying theme
- Point of view
- Use of metaphors and similes
- Imaginative language
- Creation of new words in some cases
- Emotional appeal
- Detailed description

Creative writing is a sine qua non element of designing a visual novel or a digital game. You cannot have an impactful game or graphic novel, without its foundation, which is the story. Yes, image is powerful, yes modern technology and design leave us in awe with the perfection of their accomplishments artistically, but the basis of everything is a good story.

## 2. How to write in a creative way: Tips

2. Write all the time. Embrace even random ideas that pop into your head, even if you don't consider them of great artistic value. Even bad or mediocre ideas can inspire good ones, and you can never be sure what will trigger inspiration. Have your computer with you all the time -if you write on your laptop, or if you are more traditional, have your notepad with you wherever you go. Allow inspiration to visit you wherever you are and write down your ideas. You might be at a coffee shop, on the metro or bus and suddenly see something that will strike your interest and, you never know where that will lead you.

- 3. **Don't be afraid of rewriting**. The first draft most probably will not be your best unless you are extremely lucky or maybe exceptionally talented. Creating a story takes a lot of effort, time, thought and going back to your own writing-checking if things work and change, rewrite and edit. Editing is crucial. Most writers are kind of scared to go back and face what they wrote-it makes them feel insecure. But truth is editing with honesty is what will turn your story to a great one, and not just a mediocre self-expression text.
- 4. **Have your own perspective**. A story without a purpose behind it will feel mediocre and not engaging, and your audience will find it hard to grasp the point of your story. Use your own voice and personality to share a story that will make your audience feel interested and moved. We are all different, and we all have different personalities and things that we care about, and touch something deep inside us. This is your basis. You need your own voice, your own beliefs and yearning to talk about significant to your being.
- 5. **Be sure of your audience**. It's not common for a piece of writing to appeal to everyone, so knowing your audience and your target group can help you find the appropriate voice, style, themes, elements, and story that will most probably be effective.
- 6. **Read, nothing else, just keep reading!** Writing needs reading. The more you read and get familiar with great pieces of literature, the more you expand your horizons and understand different styles, different genres, and writing personalities. From Bukowski to Chekov, from Albert Camus to Philip Roth, Virginia Wolf, or Sophocles, just read.
- 7. Stop procrastinating and start your writing journey. Usually, we are intimated and scared in the beginning to start writing, and face bumps on the road, or criticism. Start writing without fear. Procrastination will only make it harder. Easier said than done, of course, as we are all humans, but choose the routine that enables your inspiration. Find out when you work better. Are you more of a morning person? Do you need some tea or coffee, quiet around you and your computer? Or do you feel more inspired in the night hours? Each one, their own. Realise what is helping you to be more effective and creative and stick to it.

8. **Join a writing workshop.** Writing classes and groups will give you the opportunity to meet other fellow writers who can assist in your creative writing journey by offering feedback and constructive criticism and by empowering each other.

## 2.2 Storytelling

Storytelling is intricately connected to creative writing because storytelling is the act of creating and sharing stories, while creative writing is the process of producing literary works that are imaginative and original.

A story is made up of characters, setting, plot, and conflict, and creative writing involves using these elements to craft a narrative that engages and entertains the reader. Both storytelling and creative writing require imagination, creativity, and the ability to communicate ideas effectively through words.

When it comes to creative writing, storytelling is an essential component because a well-told story captures the reader's attention and allows them to connect with the characters and the world that the author has created. Effective storytelling in creative writing also helps to convey the theme or message of the piece, and it can inspire and move the reader in a powerful way.

Storytelling is an integral part of creative writing because it helps to bring the written word to life and engage the reader's imagination.

Storytelling is the interactive art of using words and actions to reveal the elements and images of a story while encouraging the listener's imagination. The art of Storytelling through creative writing is to engage the audience. Great stories start with an intriguing concept and/or a strong character. They grasp the reader's attention and leave memories.

**Storytelling** is a universal and ancient technique. Before writing was invented, people shared stories which were passed down to generations from mouth to mouth. Mythologies, epic poems, and stories existed to inform, to entertain and bond groups of people. In story telling there are specific elements that run through history. There cannot be a successful and impactful story without a strong character, the hero, which is called to go through adventures and struggles to reach in the end their final goal or destination.

The 6 Key Story Elements:

• Character

- Conflict
- Plot
- Setting
- Theme
- Ethical dilemma
- Narrator

Every story has a narrator, who presents the action from a particular, identifiable point of view. The narrator may be a character in the story who speaks in the first person. More often, the narrator views the action from a vantage point outside the story, speaking in the third person.First-person point of view means that one of the characters in the story will narrate–give an account–of the story. The narrator may be the protagonist, the main character. Writing in first-person point of view brings the readers closer to the story.

In sum, the keys for successful storytelling are - conflicts, character, hard choices to be made, climax and katharsis-or not.

In every delightful story, there are elements that make us empathise with the main character.

The character is charming, good, or bad-definitely charming. The character will most probably suffer, fail, then fall in love, be disappointed then excited, exactly like us. Understanding the depth of human nature, is fundamental.

#### 1. How to create a narrative

Narrative is a crucial element of storytelling because it is the structure that gives meaning and coherence to a story. A narrative is a sequence of events or actions that are connected by cause and effect, and it provides a framework for understanding the story's characters, setting, and plot.

A well-constructed narrative in storytelling helps to create tension, suspense, and drama, and it enables the audience to engage emotionally with the story. By organizing the story's events into a narrative, the storyteller can communicate the story's meaning, themes, and messages more effectively.

Narrative also helps to establish a sense of continuity and progression within the story. It allows the storyteller to reveal information gradually, building up to a climax or resolution, which can be a powerful way to engage the audience and keep them invested in the story.

In addition, narrative is essential in storytelling because it provides a sense of order and coherence to the story. Without a narrative structure, a story can feel disjointed and confusing, making it difficult for the audience to follow and connect with the characters and events.

Overall, a narrative is important in storytelling because it gives structure and meaning to a story, engages the audience emotionally, and helps to convey the story's themes and messages effectively.

## 2. How to create a strong narrative

- 1. **Establish Your Purpose.** The very first step is to define what you want to accomplish with your story. What is the message, theme or feeling you want to share? Do you want to create a personal narrative inspired by your personal life and experiences, or a fictional story; Is your story going to be based on historical events or not? Do you want to make your audience laugh or think, or both? These decisions of course are not exclusive, and this is what creates each writer's personal style that distinguishes them from other writers.
- 2. Choose Your Characters. Decide who you want your story to be about. You may want one major character with a cast of supporting characters, or you may choose an ensemble cast who share the limelight. If you're writing a personal narrative, you will be the main character. For fiction, you need to create engaging characters of your own. Whoever you choose to write about, give them personalities that will support your purpose and enough detail to make them come to life for your readers.
- 3. **Craft the Plot.** In narrative writing, conflict always drives the plot. If there are no problems, or struggles whatsoever, there is no story. Decide on a central conflict, then outline the basic elements of your plot -- a beginning that leads your characters into their conflict, a sequence of events that complicates the conflict and builds tension, a turning point that brings your conflict to a climax and a sequence of events that leads to the problem's ultimate resolution. To keep track of your plot, it may be helpful to use a flowchart or write out a quick summary. Ensure that the conflict and its resolution will lead the reader to the message that you've planned to share. A story meant to teach tolerance, for example, may focus on a character's struggle to overcome racial prejudice.
- 4. **Choose your setting.** The setting of a story includes the two vital elements of time and place. Some plots may lend themselves to a certain setting, such as a mountain for a story of stranded skiers. Consider the time, the time of year, the weather, the physical location and how these elements may affect the events in your story and enrich the plot and conflict.

- 5. Find Your Viewpoint. Plan to draft your story either from a first-person point-of-view, narrated by a character and using words like "I" and "we", or a third person point-of-view, where an uninvolved narrator tells someone else's story. For a first-person narrator, decide if you want to have the main character or a peripheral character speaking. Consider how much this narrator will be able to reveal to the audience, as a first-person narrator can share only his own thoughts, feelings, observations, and insights about the story's events. With a third-person narrator, decide if you want your speaker to reveal the thoughts and feelings of all your characters or only those of the main character. This will affect the details that you are able to reveal to your readers.
- 6. Create an Atmosphere. Plan details and images throughout your story that create a mood for your reader, such as fear or sadness. This can be done through carefully placed images like cockroaches and soiled linens in a seedy motel room, or through the details of your characters' actions and mannerisms, such as an eye twitch or fearful glances over the shoulder. Your atmosphere should always support your story's purpose, so if your goal is to make your audience laugh, you will not include details that suggest a feeling of gloom.
- 7. **Fill in the Details.** As you flesh out the details and dialogue that complete story, use your original purpose as a guide. Do not allow yourself to go off track by including too many unnecessary details or rambling descriptions that do not support your theme. Include enough details to set your mood and make your story interesting and characters engaging, but not so many that your readers' attention is pulled from the central conflict and its resolution.

Use storytelling to communicate educational content in a classroom. The interactive nature of storytelling partially accounts for its immediacy and impact. At its best, storytelling can directly and tightly connect the teller and audience.

## 2.3 Digital tools and educational games

Educators, teachers, and educational institutions are becoming increasingly interested in the role of video games to support the learning process. Teachers are using games and video games to increase their students' engagement and enhance the learning outcomes. Video games boost teamwork, critical thinking, and engage students who might face difficulties in school. Where and

when the traditional approaches fail to unlock the students' full potential, video games can have optimum results.

Recent research shows that girls who enjoy playing video games are more likely to enroll in STEM programmes than those who don't. Video games combine creativity, fun, engagement to a technological aspect and (Education (2021)).

## 1. Games and their educational purpose

The concept of a Game has multiple aspects. There are many different purposes of games and their features (especially in the sphere of education) which include:

- Enhancement of empathy
- Deeper understanding of learning subjects
- Social (language, psychological, intercultural) adaptation
- Developing problem-solving skills: Games often require players to solve complex problems, and this can help to develop critical thinking and problem-solving skills.
- Promoting teamwork and collaboration: Many games involve teamwork and collaboration, which can teach players how to work together towards a common goal.
- Improving cognitive skills: Games can improve cognitive skills such as memory, attention, and processing speed, which can be valuable in academic and professional settings.
- Encouraging creativity: Many games require players to be creative and think freely, which can help to foster creativity and innovation.
- Teaching academic subjects: Games can be used to teach academic subjects such as math, science, and history, in a fun and engaging way.
- Improving social skills: Multiplayer games can help to improve social skills such as communication, negotiation, and conflict resolution.
- Promoting cultural awareness: Games can expose players to different cultures and perspectives, which can help to promote cultural awareness and understanding.

Game-based learning is one of the main trends in present educational processes

Games are essential in any educational activity. They can transform the learning process, from a sometimes boring and tedious activity to a more fun but also impactful one. It is very much different to simply memorize and be obliged to learn by heart pieces of knowledge to play a game of memory or implement historic facts into a board game. The combination of entertainment and knowledge makes the learner much more engaged and interested in the process. Games develop language, communicative, cognitive, and creative skills of the students. Games involve diversity in a teaching process and support students' motivation.

#### 2. Games both offline and online

Games have found their place in the educational process. Playing games is not at all a waste time, on the contrary, games enhance the educational process whilst cultivating soft skills, critical thinking, flexibility, and engagement. There is a vast variety of offline games that can be used in various subjects.

From the classical hangman, to charades, to miming and Pictionary, games can be enriched and used for educational purposes. Taboo is a great game to enrich vocabulary and enhance imagination and quick thinking. Board games could be used in language learning, in geography classes, in maths, science and green skills.

Online games, on the other hand, offer different set of benefits. They also can be used for educational purposes; many online games are initially designed with this objective. Games like BrainPOP, Kahoot and Prodigy offer interactive learning experiences and help students to learn the information more effectively (Best Apps for Teachers: Games, Classroom Management, Student Help and More, 2021). Online games also give the opportunity to improve digital and technical skills, such us programming and coding. Minecraft and ROBLOX let users to build their own world, providing them both technical and creative skills. (L. Ascione, 2022) It is very important to mention that online games provide a platform for socialization and connection.

Overall, both online and offline games have their place in education and can provide valuable learning experiences. It is up to educators and individuals to choose the type of game that best suits their needs and objectives while being mindful of the potential risks and benefits.

## 2.4 Visual communication and game-based learning

Visual novels are interactive fiction games in which players creatively control decisions and plot turning points. Endings alter according to the player's choices, providing a motivation to replay the game and opt for alternative decisions each time. Visual novels unfold their stories using text, voice-overs, background music and pictures. In most, players take control of a main character, see the story unfold through that character's first-person perspective and make decisions for them throughout the story. Some occasionally feature fully animated cutscenes. A visual novel is a video game genre that tells an interactive story mainly through text. They usually feature static character models and locations, and while they might have some animated cutscenes, these are typically short.

1. Example of visual novel online in the form of game

Example of Fate/stay night:



Figure 5: Fate/ stay night. Source: https://fantasyandanime.wordpress.com/2014/02/

Fate/stay night is a Japanese visual novel developed by Type-Moon and originally released as a game for adults, for Windows on January 30, 2004. The story revolves around Shirou Emiya, a hardworking and honest teenager who unwillingly enters a to-the-death tournament called the Fifth Holy Grail War, where combatants fight with magic and Heroes from throughout history for a chance to have their wishes granted by the eponymous Holy Grail. (Wikipedia contributors (2023) Fate/stay night.)

## 2. DEGREBE: to explore educational content through the different choices of a visual novel.

Of the example and definitions above, DEGREBE treasures them and builds upon roughly 20 and more years of pop culture and experiments in the educational field to bring something new and innovative to life. It adopts the branching path stories, sharing with some of the examples above (such as Ace Attorney) the common inception of the plot while progressively diverging towards different substories.

DEGREBE is set in a reality quite familiar to that of us players: a world corroded by lax regulations and half-hearted solutions addressing the (inevitable) environmental disasters. New

diseases fester in the filthy and highly urbanized environment of DEGREBE, a city building upon the (pop) ruins of pre-blackout Blade Runners' Los Angeles.

Differently from common visual novels, DEGREBE does not adopt the multi-ending conclusions, as it aspires to make the journey more valuable from an educational point of view than any message that could, at least directly, be sent at the end of the game (a sort of late "moral" reckoning urging the player to reflect upon the choices made along the way). In any case, DEGREBE explores different environments and areas of our globe through six story lines: countryside, riverbeds, mountainous areas and so forth.

This is an important element for the objectives of the visual novel game if we consider the educational objectives and how these spans across environmental as well as transversal competencies. Through the different environments, the players are invited to explore various challenges affecting our climate: circular economy, food consumption and waste, sustainable transport etc. These components emerge from the interactions players will be able to go through thanks to different choices of dialogues and interlocutors. The other educational aspect of DEGREBE is covered by soft skills, or transversal competencies. These are crucial for the professional development of young people, as they become evidently necessary once students go out into the job market (and not only). The way the story of DEGREBE branches out and is structured follows a specific dynamic that will make players more familiar with such skills. An example is the adaptation of Design Thinking theory to the process players are invited to make choices.

Finally, the user's interface – or HUD (heads-up display), in a way. Visual novels are notorious to employ a 2D engine, devoting much of their artistic quality to actual drawings (obviously of Japanese influence) over animations (if anything at all is present). The stories unfold in the form of Japanese cartoons' (or more correctly anime or anime-like) characters sliding one after each other to demonstrate the ability to change expressions and poses. In DEGREBE, the game adopts characters that are meant to accompany the players through their journeys, coming from the kingdoms of animals (Animalia) or plants (Plantae), as well as other non-playable characters (NPCs) with which players will interact. The interaction, as it is standard for visual novel games, will take place through multi-choice dialogue options prompted by the lines assigned and spoken to other characters, be them our companions or NPCs. Players will be able to experience an exclusive companion for each of the six story lines they will explore.

Multiple choices, multiple stories: the value of DEGREBE is indeed multifield. It brings to players and learners' different scenarios all enjoyable online, nurturing familiarity with digital education support as well as growing knowledge about climate challenges and competences to achieve better employability.

## **2.5 Conclusion**

Creativity, creative writing, and storytelling are essential components of educational games and visual novels in education. The general objectives of this chapter were to understand the importance of these components in the context of educational games and visual novels and to explore how they can be used to enhance learning experiences. By incorporating creativity and storytelling into educational games and visual novels, educators can create engaging and immersive learning environments that foster critical thinking, problem-solving skills, and encourage active participation. Therefore, it is crucial for educators to recognize the value of these elements in creating effective educational tools that motivate students and enhance their learning outcomes. Ultimately, with the integration of creativity and storytelling into educational games and visual novels, we can transform the traditional learning experience into a more dynamic and engaging process that cultivates curiosity, creativity, and lifelong learning.

## 3 MOTIVATION IN THE DIGITAL SPACE/ EDUCATION IN VIRTUAL SPACE

The use of technology in education has the potential to transform the learning experience for students, offering them new ways to explore and understand complex concepts, and allowing them to create digital representations of their thoughts. Despite this, there has been limited focus on teaching the basic skills and attitudes that students need to utilize technology when facing real-world challenges effectively and independently with no clear solution (the PISA 2025 Learning in the Digital World).

Digital education, which encompasses Technology Enhanced Learning (TEL) and e-Learning, refers to the creative utilization of digital tools and technologies in education. This approach opens up the possibility for teachers to design engaging and interactive learning experiences, whether through blended or purely online courses and programs.

Moreover, education in the virtual space has revolutionized the way people learn. In this immersive environment, learners can engage with computer-generated worlds, often through technologies like virtual reality (VR) and augmented reality (AR). These virtual spaces enable educators to create interactive and realistic simulations that enhance understanding and retention of complex concepts. Students can explore historical events, conduct scientific experiments, or practice real-world skills within these environments. This approach to education fosters a profound sense of presence, where learners feel fully immersed in the subject matter. It has the potential to make learning more engaging and effective, offering new opportunities for hands-on, experiential learning.

The integration of digital information into educational instruction can generate excitement and interest among students, leading to better academic results. The rapid growth of computer and network technology in the 1990s facilitated a significant advancement in distance learning, allowing students to receive the same educational benefits as they would in a traditional classroom setting from anywhere, they have access to the internet (Harasim, 2000). This has given rise to new pedagogical models and methods. The fusion of technological resources and creative educational strategies has greatly transformed the way teaching and learning occurs.

## AIMS OF CHAPTER:

The aim of this chapter is to understand how motivation is affected and enhanced through digital methods in education.

**KEYWORDS**: Digital education, motivation, learning pathways, generation Alpha, generation Z

## **LEARNING OBJECTIVES:**

The main learning objectives of this chapter is to:

- Understand how digitalizing education motivates students to learn more effectively.
- Understand the new generation and which learning methods are naturally effective to them.
- Understand motivation management and learning pathways.

## 3.1 Motivation management, intrinsic and extrinsic motivation

Intrinsic motivation refers to actions that are inherently enjoyable and fulfilling in and of themselves. This type of motivation is not driven by external rewards or outcomes, and the behavior itself is its own reward.

• Example: A child may enjoy playing outside just for the sheer joy of it, without any expectation of a reward.

Extrinsic motivation on the other hand, is a complex concept that can range from entirely externally driven (such as completing a task to receive a reward) to entirely internally driven (such as engaging in an activity because it aligns with one's personal values and beliefs).

• Example: An employee is working hard to earn a bonus; A student is studying hard to earn a scholarship.

Despite initial objections to these findings, which challenged established theories of behaviour reinforcement, a later meta-analysis confirmed that tangible extrinsic rewards do indeed undermine intrinsic motivation (Deci et al., 1999). This type of motivation is goal-oriented, and the behaviour is performed with the aim of achieving a desired result. For example, a teenager at home may wash dishes to earn an allowance, or a student may study for a test to receive a good grade.


*Figure 6: XYZ. "Extrinsic vs. Intrinsic Motivation: What's the Difference?" Source: <u>https://www.verywellmind.com/differences-between-extrinsic-and-intrinsic-motivation-2795384</u>* 

Extrinsic Motivation and its different forms:

- Intrinsic motivation is driven by activities that are interesting, enjoyable, and offer an optimal challenge.
- Without meeting these criteria, there's little motivation unless there are external pressures or incentives.
- Extrinsic motivation has various forms, some more self-endorsed and aligned with personal values than others.
- Extrinsic motivation encompasses a range of motivations with varying levels of autonomy.
- Personal motivations and goals can regulate activities even if they're not inherently enjoyable.
- External rewards or incentives aren't the sole driving force in these cases.

Type of Extrinsic Motivation	Nature of External Contingency	Underlying Reason for Behavior	Example
		To receive or avoid a	"I avoid making
External Regulation	Consequences,	consequence; to fulfill an	prejudiced comments so
	incentives, compliance	external requirement	that other people will
			think I'm nonprejudiced"
Introjected Regulation	Feelings of internal	Because it "should" be	"I avoid acting in a
	pressure; to avoid guilt	done	prejudice manner
	or to boost the ego		because I would feel bad
			about myself if I didn't"
	Personal valuing of a		
Identified Regulation	behavior, sense of	Because it is important	"I avoid being prejudiced
	importance		because it is an important
			goal"
	Expression of self and		"I avoid being prejudiced
Integrated Regulation	identify; congruence	Because it reflects core	because I see myself as a
	with self and other	values and self/identify	nonprejudiced person"
	values		

Table 1: Types of extrinsic motivation applied to the example of motivation to regulate racial prejudice. Source:Legault et al. 2007.

As per Fig.1, there are four main types of extrinsic motivation:

- 1. **External Regulation.** This type of extrinsic motivation occurs when someone engages in an activity solely to receive a reward or avoid a punishment. For example, a student may study only to earn good grades, or an employee may work overtime only to receive a bonus.
- 2. **Introjection.** This type of extrinsic motivation involves doing an activity to avoid guilt or anxiety. For example, a person might exercise not because they enjoy it, but because they feel guilty about not exercising.

- 3. **Identification.** This type of extrinsic motivation occurs when someone values an activity and chooses to engage in it because they believe it will help them achieve a personal goal or because they identify with the activity's values. For example, someone may choose to volunteer at a local food bank because they value helping others and believe it will make a positive impact on their community.
- 4. **Integration.** This type of extrinsic motivation occurs when an individual engages in an activity because they value the activity itself and see it as part of their identity. For example, someone who enjoys playing soccer may join a local team because they enjoy the activity and see themselves as a soccer player.

# **3.2** Specific characteristics of gen Z and the Alpha Generational differences generation (and how digital methods for education are more effective on Gen Z)

Generations are categorized as specific groups that have common:

- Birth years (or else, time periods)
- Cultural Experiences (common cultural, historical, and societal experiences, including significant events, technological advancements, and social movements that shaped their worldview)
- Values and Attitudes (Generations often develop distinct values, beliefs, and attitudes influenced by their formative years and the prevailing cultural norms of their time, Kupperschmidt, 2000, p. 66).
- Technology Use (Technological advancements play a significant role in shaping each generation's relationship with communication, information, and entertainment)
- Social and Economic Trends (Generations may exhibit common trends in areas such as education, career choices, and economic circumstances)
- Interactions and Communication Styles (How generations communicate and interact with each other and the world can be influenced by their unique experiences and the technology available during their formative years)

In the modern world, at least five distinct generations can be identified:

- Traditionalists (Silent Generation or Greatest Generation), born between 1928 and 1944, who value authority and a top-down management approach.
- Workaholic Baby Boomers, born between 1945 and 1965.

- Generation X, (born between 1965-1979), a generation that is at ease with authority and values the rule of law, work-life balance is crucial.
- Generation Y, (those born between 1980 and 1995) who grew up in affluence and are technologically savvy.
- Generation Z (those born after 1995) (Cilliers, 2017, pp. 189–190)
- Generation Alpha (those born between 2010-2025)

To understand Generation Z and their relationship with technology:

- Born in the 1990s and raised in the 2000s.
- Witnessed significant technological advancements: internet, smartphones, laptops, digital media.
- Predicted to experience economic and social revitalization.
- Skilled in navigating both physical and virtual worlds.
- View physical and virtual worlds as complementary (Singh, Dangmei, 2016, p. 2)

Gen Alpha:

- Gen Alpha is the newest generation, born between 2010 and 2025 to millennial parents.
- They are growing up in a time of rapidly advancing technology available globally 24/7.
- Technology plays a central role in their lives, from entertainment and gaming to socializing and education.
- By age two, Gen Alpha members are skilled in using touchscreens and navigating various apps on smartphones.

• They are known as the "generation glass," "screenagers," "digital natives," "connected," or "wired" generation (Product et al., 2014; Williams, 2015).

Generation Z and Alpha are receiving increased attention due to their upbringing in the digital age and the impact of technology on their lives. As Fadlurrohim et al. (2020) note, the rapid advancements in technology have a significant impact on various aspects of society, including social interactions. This has resulted in a generation that is more modern or contemporary than prior generations. The well-known millennial generation has now been replaced by Generation Z and Alpha, both of which are considered technologically literate.

These generations are familiar with a wide range of instant tools such as email, SMS, social media platforms like Facebook, Line, Path, Instagram, WhatsApp, and Twitter, and are comfortable with technology. Their preferences are more personalized due to their exposure to technology and gadgets. When it comes to education, educators face the challenge of engaging these students as their attention span is short. Purnomo et al. (2016), point out that this generation is different from previous ones, and the education system must adapt to accommodate their unique needs and design learning strategies based on their profile, to bridge any gaps. With this being said, both Generation Z and Generation Alpha are so new that extensive studies are ongoing to better understand their unique characteristics, behaviours, and trends. As digital natives and early adopters of technology, they are reshaping the social, educational, and technological landscapes. Researchers are actively exploring their preferences, values, and how they interact with the world, making it an exciting time for generational analysis with new insights continuously emerging.

#### 3.3 Learning pathways-Down the yellow brick road

Learning pathways or learning journeys, also known as "down the yellow brick road" in reference to the Wizard of Oz, refer to the process of acquiring knowledge or skills through a series of steps or stages. These stages can be sequential or non-linear and are designed to guide learners from their current level of knowledge or skill to a desired endpoint.

Learning pathways can take many forms, including formal education programs, professional development plans, self-directed learning initiatives, and more. They are typically characterized by a series of learning objectives, assessments, and feedback mechanisms, which help learners track their progress and identify areas for improvement.

In the context of education, learning pathways may involve a sequence of courses or modules, each building upon the knowledge and skills acquired in the previous ones. In the workplace, learning pathways may involve a combination of on-the-job training, mentorship, and professional development programs aimed at building specific competencies.

One important aspect of learning pathways is that they should be tailored to the needs and preferences of individual learners, considering their prior knowledge, learning style, and goals. This personalized approach can help learners stay engaged and motivated throughout the learning process and can ultimately lead to better outcomes.

Overall, learning pathways are a valuable tool for anyone seeking to acquire new knowledge or skills, and can help individuals and organizations achieve their learning and development goals (Scager et al, 2016).

# **3.4 Conclusion**

To sum up:

- Learning pathways refer to the process of acquiring knowledge or skills through steps or stages.
- Stages can be sequential or non-linear, guiding learners to a desired endpoint.
- Forms of learning pathways: formal education programs, professional development plans, self-directed learning initiatives, etc.
- Learning pathways include objectives, assessments, and feedback mechanisms.
- Education context: sequential courses/modules building upon prior knowledge.
- Workplace context: on-the-job training, mentorship, professional development programs.
- Personalized approach based on individual needs, prior knowledge, learning style, and goals.
- Personalization enhances engagement, motivation, and outcomes.
- Learning pathways benefit individuals and organizations in achieving learning and development goals

# **4 FROM PLANNING TO IMPLEMENTATION**

In this chapter, learners will have the opportunity to learn about the principles and practices of gamification in education, including how it can improve motivation and engagement, the importance of game mechanics, and how to implement gamification in lesson plans. Additionally, the chapter highlights best practices and examples of gamification in the classroom, along with strategies for assessing the effectiveness of gamified learning experiences. By the end of this chapter, learners should be equipped with the knowledge and skills to create effective gamified learning experiences that improve student engagement and outcomes.

#### AIMS OF CHAPTER/ABSTRACT:

After defining gamification in the first chapter, this section provides additional information on its implementation in practice. Our objective is to offer a concise and practical overview of how education can become more enjoyable and effective by employing gamification tools. By incorporating game elements, typically rewards, gamification in education can enhance motivation and engagement, leading to improved learning, focus, and comprehension by modifying the reward and pleasure center of the brain. However, to achieve this level of gamified learning enjoyment, various methods must be integrated into the educational process. This chapter highlights and explains several best practices and tools for achieving this goal.

**KEYWORDS:** Engagement, Motivation, Rewards, Feedback, Competition, Progression, Gamified learning, Game mechanics, User experience, Player behaviour

#### **LEARNING OBJECTIVES:**

The main learning objectives of this chapter on gamification in practice are to provide educators with a practical understanding of how gamification can be used to improve learning outcomes and engagement in the classroom.

Specifically, mentors should be able to:

- Understand the fundamental concepts and principles of gamification and how they relate to education.
- Identify the potential benefits and limitations of gamification in education.

- Recognize the different game mechanics and elements that can be used to gamify learning experiences.
- Develop strategies for integrating gamification into existing lesson plans and curricula.
- Explore best practices and case studies for implementing gamification in the classroom.
- Evaluate the effectiveness of gamified learning experiences and make adjustments based on feedback.

#### 4.1 Gamifications 101: From planning to implementation

Gamification is the use of game design elements in non-game contexts to enhance user engagement and motivate behaviour change. The process of gamifying an experience or product can be split into several steps, from planning to implementation. The goal of gamification is to increase user motivation and engagement by tapping into their intrinsic desire to play, compete, and achieve.

Gamification has been used in a variety of contexts, including marketing, education, health and wellness, and workplace productivity. For example, gamification has been used to encourage customer loyalty in marketing, to improve learning outcomes in education, to encourage healthy habits in health and wellness, and to increase productivity in the workplace.

The key to successful gamification is to design game elements that align with user motivations and to integrate them into the overall user experience in a seamless and natural way. Gamification can be a powerful tool for driving user engagement and behaviour change, but it's important to approach it with a clear understanding of the goals and target audience, and to design and implement the game elements in a way that is both effective and enjoyable.

**Planning:** The first step in gamifying an experience or product is to determine the goals and objectives. What behaviour do you want to encourage or discourage? What outcomes do you hope to achieve? This will inform the design of the game elements and the overall gamification strategy.

Besides, it's important to understand your **target audience**. Who will be playing the game? What are their motivations, needs, and preferences? This information will help you tailor the game design to the audience and ensure that the gamification experience is engaging and enjoyable.

**Implementation:** Once the planning phase is complete, it's time to start implementing the gamification elements. This may involve adding badges, points, leaderboards, or other game

mechanics to the experience or product. It's also important to consider how the game elements will be integrated into the overall user experience and how they will be communicated to the user.

One of the key aspects of a successful gamification is to make sure that the game mechanics are aligned with the user's motivations and goals. For example, if the goal is to encourage exercise, the game mechanics should be designed to reward physical activity.

**To track and measure** the effectiveness of the gamification, it is important to establish metrics and data collection methods. This can help you evaluate the success of the gamification and make improvements where necessary.

The process of planning gamification typically involves the following steps:

- 1. **Define the goals**. The first step in planning gamification is to clearly define the goals and objectives of the gamification effort. This may involve understanding the target audience and the behaviours you are trying to change, as well as the metrics that will be used to measure success.
- Identify the game elements. Once the goals have been defined, the next step is to identify the game elements that will be used to motivate and engage the target audience. This may involve selecting elements such as points, rewards, leaderboards, and challenges that are aligned with the goals and user motivations.
- 3. **Conduct user research.** It's important to understand the target audience and their motivations to design a gamification experience that will be both effective and enjoyable. User research can involve conducting surveys, focus groups, or usability tests to better understand user needs and preferences.
- 4. **Design the game mechanics.** Based on the insights gathered from user research, the next step is to design the game mechanics that will drive engagement and behavior change. This may involve selecting the appropriate game elements, defining rules and mechanics, and determining how points and rewards will be awarded.
- 5. **Test and refine.** Before launching the gamification effort, it's important to test and refine the game mechanics to ensure that they are effective and enjoyable. This may

involve conducting pilot tests with a small group of users and making iterative improvements based on feedback.

6. Launch and monitor. Once the gamification effort has been planned and tested, it can be launched and monitored for effectiveness. Regular monitoring and analysis of the data can help to identify areas for improvement and ensure that the gamification experience remains engaging and effective over time.

The process of implementing gamification typically involves the following steps:

- 1. **Integrate game elements.** The first step in implementing gamification is to integrate the game elements into the existing product or experience. This may involve adding points, rewards, leaderboards, and challenges to the user interface, and integrating them into the overall user experience in a seamless and natural way.
- 2. **Implement the game mechanics.** The next step is to implement the game mechanics, such as the rules and mechanics for awarding points and rewards. This may involve setting up automated systems for tracking progress and awarding rewards and integrating the game mechanics into the existing user experience.
- 3. Launch and promote. Once the game elements and mechanics have been integrated and implemented, the gamification effort can be launched and promoted to the target audience. This may involve marketing and communications efforts to raise awareness of the gamification effort and engage users.
- 4. **Monitor and refine.** Regular monitoring and analysis of the data generated by the gamification effort is important to ensure its effectiveness and identify areas for improvement. This may involve tracking engagement and behaviour change metrics and using this information to make iterative improvements to the game elements and mechanics.
- 5. **Continuously evaluate and improve.** Finally, it's important to continuously evaluate and improve the gamification effort over time to ensure that it remains effective and

enjoyable for users. This may involve making changes to the game elements and mechanics based on feedback from users and incorporating new technologies and innovations as they become available.

Overall, gamification is a powerful tool for engaging users and motivating behaviour change. When planning and implementing a gamification strategy, it's important to have clear goals, understand the target audience, and design game mechanics that are aligned with user motivations. With careful planning and execution, gamification can be a highly effective means of driving user engagement and achieving desired outcomes.

#### 4.2 Collection of good practices and know-how

The aim of gamification is to engage people in many filed of the life. The point is to inspire users to engage with the content. Gamification is a good tool to overcome on non-enjoyable, boring, or long-lasting tasks, such as in-depth safety training programme or compliance training or just attracting students' attention in the classroom.

Gamification offer motivation to learn new skills, play games or sports, or help someone cross the road because it gives you pleasure or a sense of purpose.

Where is gamification used for?

Gamification started as a marketing tool, but widespread to several different areas where peoples' involvement is a key issue.

#### 1. United Airline's loyalty card

The loyalty card was the invention of the United Airline in 1980 by launching its Advantage program inspired from video games, in particular earning points.



Figure 7: United Airline loyalty card. Source: <u>https://romanjnx.medium.com/the-first-gamification-the-case-of-</u> <u>united-airlines-f7e3dab5a81c</u>

The United Airlines card therefore allowed to accumulate points as a traveller. On each flight with the airline, and depending on the distance travelled, customers earned a certain number of points. Each point was tallied and kept on a map. The goal of this gamification is quite simple: encourage customers to travel with the same company all the time, to unlock benefits over time.

The success was it, that in a few years all the airlines copied this system, as well in the United States as in the rest of the world!

The goal of marketing is to encourage the relationship between brands and users. Typical gamification tools in marketing are websites, apps, loyalty programmes, (virtual) badges.

Website games, mobile apps can be simple, "spin the wheel" modules that pop up when customers click through to products or when they arrive on your site, or they might be virtual scratch cards that let buyers earn a discount on their favourite products. No matter the type, the key to website games working is keeping them simple and relatively unobtrusive. Make it easy for users to play, always let them win something, and let them quickly close out games if they're not interested.

#### 2. KFC's "Shrimp Attack"

This mobile game was developed for introducing a new KFC menu, the Shrimp, in Japan to incentivise customers to try the new product.



Figure 8: KFC Shrimp Attach display. Source: <u>https://creativepool.com/magazine/inspiration/what-is-gamification-in-marketing-and-why-you-should-be-using-it.23959</u>

This is a very basic online game with the backstory: you had to protect KFC's chicken kingdom's castle from shrimps by slashing at them when they popped up from the bottom of the screen. The more shrimps were slashed, the more points were granted, the more discount vouchers were rewarded with. KFC simply sent the link out via social media, from there the players and social shares took care of themselves.

Though Shrimp Attack is a basic game, this game brought in over 800,000 players and 600 hours of playtime. Resulting in KFC having to stop the game mid-campaign as they actually ran out of the product.

#### 3. Starbucks' Loyalty Programme

Starbucks' loyalty program is designed in such a way that customers keep patronizing, because they can save some money and earn rewards as well. Customers only need to register for the rewards program either by visiting starbucks.com/rewards or downloading the Starbucks Rewards app on their smartphones.



Figure 9: Starbucks' Loyalty Programme. Source: https://www.starbucks.co.uk/rewards

The rewards program offers a variety of benefits and features, including:

- Earning free add-ons, drinks, or food items
- Free refills on brewed coffee and tea
- Bonus rewards
- Free birthday treats each year

Starbucks started the program in 2008, which had been regarded by some as one of the most rewarding, gained members steadily during its first two decades, but exploded in growth during the pandemic. At the end of 2022, about 29 million people were enrolled, up from a little over 16 million in early 2019.

There are several challenges in developing the working conditions and consequently the effective operation in a business environment. Businesses often apply gamification to employee training, recruitment, to motivate their employees, increase productivity, or train their teams.

In the life of a corporation, there is a lot of new information, procedures, which have to be acquired and mastered constantly. Gamification may offer improving training results with more fun for the employee and more likely they remember.

#### 4. T-Mobile

As T-Mobile products and services grew more complex, managing customers became more challenging. To solve this problem, they created T-Community in 2011. This was a social business platform that aimed to help customer care representatives to learn and collaborate with each other.

Gamified elements were added to the platform to increase participation. As such, members earned points and badges for certain activities. These included reviewing training materials, answering questions or liking content. A leaderboard allowed them to compare their performance and rankings with other colleagues.

Within a span of six weeks, T-Mobile awarded 187,000 achievement badges within the platform. They also saw a staggering 1,000% increase in learner participation. In fact, more than 15,000 frontline employees completed missions in the first two weeks.

This increased engagement from participants also reflected in their customer satisfaction scores. On top of that, resolution rates improved month-on-month since gamification was introduced.

#### 5. Domino's

Domino's, the American pizza chain, needed to get their new employees up to speed on their menu. AllenComm created a gamified mini course to help new employees quickly and accurately learn how to top all the delicious pizzas that they get at Domino's. AllenComm is a company that produces training and educational materials. The Domino's pizza chain, for example, commissioned them to create a gamified mini-course for their new employees to quickly and accurately learn how to make Domino's pizzas.

By turning the pizza-making process into a web-based course with many gaming elements (points, achievements, levels), they made the learning process fun and long-lasting. They also created printable on-the-job resources to reinforce the web-based training to make sure employees would have all the information they need to be confident and do a great job.

These were examples in corporate education, but gamification is already in the kindergarten and classrooms as well. Gamification is becoming increasingly used in education. Either in formal or non-formal education learners learn best when they are also having fun. Gamification in education refers to using game-based components, such as point scoring, peer competition, teamwork, and score tables, to increase student engagement, aid in the assimilation of new knowledge, and assess their level of understanding. Programming cultivates a systematic and original approach to problem-solving. Gamification helps students to think, go beyond what they know, establish relationships, and find alternative ways to achieve results.

#### 6. Digital examples

- 1. **Socrative** is a free, online, therefore real-time, Web platform for teachers to put questions to students through an app on their smartphone or tablet device. Educators can initiate formative assessments through quizzes, quick question polls, exit tickets and space races all with their Socrative Windows app. Socrative will instantly grade, aggregate and provide graphs of results to help you identify opportunities for further instruction.
- 2. Genially is worthy of its name a brilliant online application. We can create spectacular presentations, interactive quizzes, and escape rooms with its help. With a free account, one can create an unlimited number of tasks. There are a lot of templates at our disposal, which we can fill with personalised content, but we can also create a genius one from a blank page, which we can completely adapt to our needs. We can embed tasks created on other platforms (e.g. LearningApps, Wordwall). By using the scripts of a French (S'cape) and a Spanish (Sandbox) team, we can further expand the scope of Genially's usage possibilities. It can be recommended for use from kindergarten to higher education.
- 3. **Duolingo** realised that learning a whole new language can be a challenging task, so they associated language classes with game-like tasks to help users truly retain information. Gamifying the entire learning experience with points, badges, learning streaks, social functions, rewards and more, helps build momentum and motivation for users in their studies. One of its strengths is that the home page of Duolingo expertly focuses you on the progress of the student by indicating the progress and strength of each skill and showing the full tree of skills in your language course. Duolingo has grown into the largest language learning platform and one of most downloaded

education apps worldwide since its launch in 2011. The app teaches 42 languages to over 500 million users. The app is free and is also available in a desktop format.



Figure 10: Duolingo. Source: <u>https://www.teachthought.com/technology/duolingo-innovative-educational-app-learning-languages/</u>

## 7. VR examples

Virtual reality can be brought in to replace training scenarios where it is too expensive, dangerous, time-consuming, or unrealistic to do in real life. For pilots, firefighters, rescuers, military and law enforcement, virtual reality can help them learn how to respond in high-intensity scenarios that would otherwise not be available for them to safely engage with.

Virtual reality can even improve communication, trust, and empathy within the workplace. This can be particularly helpful with geographically separated teams, as creating a VR meeting place can encourage cohesion. Implementing training with VR can help turn abstract ideas into concrete, understandable personal experience.

- **1. Police using virtual reality for training.** The police use VR, among other things, to prevent ethnic profiling and interview techniques, the so-called soft skills. The so-called hard skills, such as shooting and the use of a taser are also popular in this type of program.
- 2. Volkswagen | Assembly VR-Training. Staff at Volkswagen often have to travel long distances for training, which slows down the learning process. Therefore, the organisation uses virtual reality to train employees anywhere, anytime. In virtual reality simulations, employees perform tasks such as assembling a door or a brake. In addition to assembly training, simulations have also been developed for customer service and orientation of new employees.

- **3.** Bank of America | Bank staff VR-Training. Bank of America employs more than 50 thousand employees, many of whom need to learn new skills quickly. Virtual reality is being used by the company to train staff on how to open accounts, as well as more difficult tasks such as conducting a service call. Artificial intelligence (AI) is used in conversations with customers to simulate responses based on the answer given. Employees learn this way to perform professionally in situations where emotion is an important factor, such as applying for a loan.
- **4. Google Expedition Virtual trips.** Most teachers can't take their students to Base Camp at Mount Everest or take them to visit the Louvre, but they can do both of these things with a series of highly immersive school trips with Google Expeditions.
- 5. Microsoft HoloLens has developed a way for medical students and clinicians to learn about the human body using mixed reality. Students can flow through the bloodstream, isolate, enlarge, and even walk inside the components of the human body to not only understand anatomy but learn how to treat different medical conditions.
- 6. Virtual Speech is being used by universities around the world to improve communication skills essential for employment after graduation. These skills require realistic practice, which is impossible to achieve on a consistent basis with traditional online learning methods.
- 7. VR experiences are also helping the large percentage of people with speech anxiety to build their confidence practicing in VR provides a safe environment that allows them to desensitize from a real-life audience.

#### 8. Enhancing learning and soft skills

As years are passing the form of gamification tools are widely spreading in the digital environment but **non-digital games**, also known as analogue games, are any type of game that is not played on a digital device (computer, game console, phone, or tablet). Board games, card games, and sports games are examples of non-digital games.

**LEGO Serious Play** is an innovative, experimental, facilitation method, during which the participants must solve a predetermined task or situation with the help of LEGO pieces, which strengthens innovation and business performance.



Figure 11: LEGO® SERIOUS PLAY® Starter Kit 2000414. Source: www.lego.com

It's essence: a group-directed communication and problem-solving procedure, a game that moves the hands and the mind, in which the participants have to answer countless questions, delving deeper and deeper into the given topic. Each participant builds their own 3D LEGO model in response to the facilitator's questions. This 3D model then serves as a basis for group discussion, knowledge sharing, problem solving and decision making. LEGO building elements and figures serve to visualize the problem. The procedure is to learn to listen to the other and allows everyone to share their opinion with the other, regardless of the participants' native language, cultural background, or position. The result is gaining trust and achieving common goals, because the relationship systems can be explored during the game, you can observe your relationship systems between people and with the world, the internal and sending dynamics, you can examine different hypothetical scenarios and get to know the different possibilities.

The use of LEGO Serious Play promotes communication within the team, facilitates strategic decision-making, develops collaboration skills and competencies - as a result, participants can make creative proposals to solve a given problem and communicate their ideas more easily.

Lego Serious Play was used in the H2020 BOND project in the Hungarian Regional Policy Roundtable on 4 February 2020 in Budapest where participants discussed, explored, built and told the challenges of sustainable public catering and procurement, the challenges of the legislation and the related opportunities of the outbreak. We all know the importance of reading and storytelling with babies and children as it promotes brain development and imagination, develops language and emotions, and strengthens relationships. Storytelling is a way of learning which we should not abandon after childhood. Storytelling may enhance learners' motivation, autonomy, and engagement and to improve oral and speaking skills in native or foreign language learning. Storytelling may also be such an activity which engages learners in creative and abstract thinking.

'What Is Your Story?' a playful card-based activity which supports this latter, encourages learners to use their visual literacy and oral communication skills to explore a topic in a fun, challenging, social activity. It develops creative thinking, improves complex reasoning and understanding of a given topic, improves ability to communicate complex and abstract ideas, playful participatory and social learning, and social icebreaker between peers.



Figure 12: What is Your Story card game also available online. Source: https://wiys.gchangers.org/

'What Is Your Story?' can be used with a range of audiences, across levels and disciplines, and can be made topic specific either by structuring workshop delivery around given topics, but even card may be tailor made with new images to a given classroom topic. 'What Is Your Story?' has three card elements: People, Context and Activity. The aim of the game is for players to create a narrative around a given topic using the People, Context and Activity cards, and to share their story with other players. The activity encourages learners to employ a complex combination of skills to link disconnected images to a theme, to create an abstract concept. 'What Is Your Story?' encourages learners to share their ideas and develop confidence in doing so and requires peer review of ideas shared.

'What Is Your Story?' is available under the Creative Commons licence CC BY-NC 4.0. Originally it is a card game but may be used online here: <u>https://wiys.gchangers.org/</u>.

#### 9. Gamification in the Street

There are many rules, bans or expectations in our daily life. All of us must comply. Gamification may provide a solution to make people do things, even gladly, if they do it while having fun. This is the Fun Theory whose fundamental principle is that in a simple way you can change and improve the behaviour of people by making fun of those necessary actions that we should do every day.

People do not like the speed limit or tend to forget. Police install radars and penalise those who overtook speed limit.

**The City of Stockholm** introduced the radar gun lottery in 2010 based on the invention of the American Kevin Richardson. The goal of the speed camera lottery is to incentivize the drivers to respect the speed limits rewarding their behaviour.

The licence plates of the most virtuous drivers are automatically registered by the speed camera and inserted in a lottery. These drivers have periodically the chance to win a money prize pay with the fines of those who exceed the speed limits. The results are undeniable. Thanks to this system the medium speed of cars has decreased from 32 km/h to 25.



Figure 13: It can well seen that no one uses escalator. Source: <u>https://adage.com/creativity/work/fun-theory-</u> piano-staircase/17522

Do you like climbing stairs? Well doctors always emphasise the importance of daily physical activity. But do you use the stairs when you can use the escalator? Certainly not. But in Sweden normal staircases turned at a subway station into a "piano staircase," where stepping on a stair produced a sound. Commuters were significantly more likely to choose the stairs over the escalator when the staircase was a piano than when it was a regular staircase.

One overnight, Volkswagen Sweden and advertising agency DDB Stockholm transformed the stairs at the Odenplan subway station in Stockholm, into giant, working piano keys. Their aim was to stimulate physical activity and encourage passengers to take the stairs rather than the escalators. Each step is associated with a note and as you climb them you can compose pleasant melodies. In this case again the fun theory works, in fact 66% of users preferred to take the stairs.



*Figure 14: Staircase converted into a piano in Stockholm metro station. Source:* <u>https://www.classicfm.com/discover-music/instruments/piano/musical-staircase-experiment/</u>

You can see in this video how people had fun using the Piano Stairs: <u>https://www.thefuntheory.com/piano-staircase/</u>.

There is a constant struggle of all cities against littering. It is a great question how to influence people to use waste bins.



Figure 15: Fun game rubbish bins in Luzern. Source: <u>https://www.luzernerzeitung.ch/nachrichten/zentralschweiz/lu/Abfall-Luzern-will-den-Spieltrieb-</u> <u>weckenart92,94072</u>.

The city of Lucerne was making a new attempt in the fight against carelessly thrown away rubbish, therefore 16 rubbish bins were converted into fun games with decals of games like mazes and hopscotch boxes were pasted around the bins, encouraging both children and adults alike to use the bins and make a conscious effort to bin their wastes.

# 4.3 GAMIFICATION IN ACTION - LET THE GAMES BEGIN!

Now we know quite a lot about gamification, we saw good examples thus it is time to see some walk-throughs about how to use gamification in practice. Gamification can improve both the teaching and learning experience and supports the students in engagement. Let us see how and under what conditions gamification is likely to be effective.

The key elements of gamification in practice are the following:

- agree on behaviour expectations: reward the group when expectations are fulfilled.
- set the achievements levels and reward the "student" with something.
- create sets of activities at different levels: the players/students must pass the levels.
- give them award after each level and certificate after passing all levels.
- gamification does not have to be linked to technology, the game can be outdoor/indoor activities with movements, physical games like lego, etc.

#### 1. Psychological needs

Gamification has close effect on psychological needs, which should be addressed when planning the gamification of the learning process. The gamification practice has to match psychological needs, but it differs based on the specific needs. We have to find those game design elements, which clearly match the psychological needs. Let us see the three main psychological needs that should be taken into consideration (Sailer et al. 2017):

- 1. **Competence.** How to address the need for competence? It can be addressed by points, performance graphs, badges or leaderboards which are important because the player has to receive feedback which is directly connected to the actions taken by them.
- 2. Autonomy. The need for autonomy plays a key role in the successful gamification process. It includes two aspects: decision freedom which means that the player can decide what to do or not to do and task meaningfulness which depends on the story, because the players have to feel the meaning of their own actions, otherwise they are

not able to engage with the game. Playing with avatars can strengthen the decision freedom.

**3. Relatedness.** In these terms relatedness is social. The player should be engaged in the game with the feeling that they play in a group, in a team and their actions affect the team's performance or future. The teammates can be real co-players or nonplayer characters also.

## 2. Tools and strategies of gamification for learning

As it was previously mentioned the aim of gamification is to make learning more effective, satisfying by using game elements. It can increase learner motivation levels, improve knowledge retention and reach better learner engagement through social mechanisms. Let's see those elements which can be used in gamifying any learning practices.

- **Points:** giving points for completing different tasks can encourage the players to work hard as it gives feedback for their efforts.
- **Badges:** badges can be used to acknowledge and reward people for their efforts. For example a badge can be given for supporting their teammates 3 times in a row when completing a task, but other types of badges could be used and developed by the trainer or teacher. The most important thing is that it has to be linked to the game and has to be meaningful.
- Levels: levels are often defined by missions or storylines or collected points. Reaching different levels can motivate the player/student to work harder. The levels has to be clearly defined and interpreted to the player because they have to see the concrete goal they can reach with taking the effort to work harder.
- Missions/Challenges: mission or challenges can be tasks for individuals to complete, but if they fail it does not have any negative impact. It is useful if the challenges incorporate learning strategies for example as problem-solving which requires out-ofthe-box thinking.
- Leaderboards: for the competing needs leaderboards should be used. It can motivate the players as they would like to see their name on the leaderboard which encourages them to work harder. The leaderboards can be created for different teams and individuals also.

• Notification: notification is more important in digital gamification tools, as in the game prepared for developing green skills. The notifications also have to be engaging because otherwise the player would just skip those without paying attention to them. Notifications must be able to call for actions, not only responses for the actions. just to show an example: in a war game a notification can, be: You are under attack! - this notification calls the player to act and defend himself or fight back. If the notifications are not relevant, then they are useless.

#### 3. Examples of gamification elements

- Giving points for meeting academic objectives. Giving points for meeting objectives can be an excellent way to motivate students. It can also help track progress and increase engagement. Giving points for accomplishing non-academic objectives. Teachers can also reward non-academic objectives, like tidying up the classroom, with points. This helps motivate learners to meet both academic and non-academic goals, which encourages their overall success.
- 2. Reflect on personalized performance. Reflecting on personalized performance helps students identify and track their progress. It is a good way for learners to self-assess what they learned, predict the outcomes of future behaviour, and see how far they need to go to succeed.
- **3.** Using different methods of "progression". Opting to use levels and checkpoints can help learners feel like they are progressing through the game. This makes them want to find out what happens next, which keeps their attention focused on learning.
- 4. **Provide the option to give badges rather than points.** Badges also work well when it comes to motivating and encouraging students. An effective alternative to points, badges are a great way to implement an element of competition into the classroom. They can also help create a sense of community and increase engagement in the classroom, which is fantastic for learning success.
- 5. Use different platforms or applications. Using different platforms or applications is a great way to keep students engaged. Teachers can achieve student engagement through

tablets, smartphones, and more to allow learners to access their learning resources anytime and anywhere.

The listed and showcased psychological needs must be addressed in order to be successful with the gamification method and reach a better impact of teaching and learning. The tools can be easily adapted to the knowledge material, and the needs of the group or class, but not all of those has to be used at the same time, it really differs on the given situation, so use it as a source of tools.

#### **4.4 Conclusion**

Gamification has become a widely used tool in education to increase student engagement and motivation. However, to achieve these goals, it is essential to follow practical actions and recommendations. From planning to implementation and good practices, the process of gamification can be better understood and utilized. By applying these practical tips, educators can create more effective gamified learning experiences for their students, leading to improved learning outcomes and engagement. Overall, the successful implementation of gamification in education requires a thorough understanding of its principles, strategies, and best practices, which can be achieved through careful planning and execution.

# **5** User Manual to the Digital Educational Package of Project Degrebe

This chapter aims at explaining the use of the digital educational package of Project Degrebe to both young agricultural professionals and Gen Z students, and educators. The educational package has three components: the Knowledge Base, the Quizzes, the Avocado Boy game based on a visual novel. The User Manual shows how to reach them and what to do with them.

#### **KEYWORDS**: *educational package, Knowledge Base, quizzes, visual novel*

**LEARNING OBJECTIVES**: Having read this chapter, the user will be able to reach the online educational package, to use its components one by one or in a complex way, acquire background knowledge of green skills in agricultural enterprise, use it in a game, and test it by quizzes.

#### **5.1 Introduction**

Project Degrebe developed a digital educational package to make it easier for users to acquire background knowledge of the necessary soft (transversal) skills in dealing with environmental problems in sustainable agricultural enterprise. This educational package consists of a Knowledge Base in 5 chapters, providing theoretical explanations, a quiz connected to each chapter, and the Avocado Boy game based on a visual novel. While playing the game, users can practice their knowledge of sustainable agriculture and the necessary soft (transversal) skills of agricultural workers in an entertaining gamified way. This chapter explains how to reach the digital educational package, and how to use it.

The target group of this package is young agricultural students and workers (aged 16-22). Their educators might also find it useful in teaching and monitoring their students. The package can be used both individually or in the classroom.

The Knowledge Base provides the necessary knowledge, the quizzes help the users assess the progress in learning, the gamified visual novel offers an entertaining practice. The quizzes and the game might be repeated several times. The game is interlinked with the Knowledge Base and the quizzes so the user might stop playing and consult the theoretical learning material.

The digital educational package is available at the Project website (https://degrebe-project.eu/) and directly at https://degrebee.trebag.hu in 5 languages: Bulgarian, Czech, English, Greek, Hungarian – these are the languages of the project partners. The use of the material is free. The visual novel game can be played online.

#### 5.2 The Knowledge Base

It is a theoretical learning material in 5 chapters, dealing with 5 specific environmental problems, and 5 soft skills a successful agricultural worker / entrepreneur must have. The choice of the topics is based on preliminary research done by the project partners among members of the target group in the respective countries of the partners. The table below shows the connection of problems and skills, and the chapter structure of the Knowledge Base.

Soft skills	Specific environmental problems	
adaptability	emission of greenhouse gases	
creativity	circular economy	
resilience	water pollution	
empathy	sustainable food management	
design thinking	mobility choices	

(Table 2: Table of the chapter structure of the Knowledge Base)

The material contains explanations, illustrations/graphs if needed, resource material fur further studies. The PDF files can be read online or downloaded. There is a quiz connected to each chapter so that the users can assess their study progress on their own. The acquired knowledge can be put to practice also by playing the visual novel game online, in which the necessary decisions must be taken based on the know-how of sustainable green agricultural enterprise. The Knowledge Base is available in Bulgarian, Czech, English, Greek, Hungarian languages.

In the game, the Knowledge Base can be opened by clicking on the book icon:



(Figure 16: Icon of the five chapters of the Knowledge base in the game)

If you click on the Knowledge Base icon, the five Knowledge base chapters can be opened directly:



(Figure 17: The five Knowledge base chapters in the game)

## 5.3 The quizzes

The quizzes are created with the aim of providing an assessment tool for the users of the digital educational package. There is a quiz connected to each chapter of the Knowledge Base, with questions about both the soft skill and the specific environmental problem dealt with in the given chapter. There are 10 multiple choice questions in each quiz. The quizzes can be repeated. There is instant feedback at the end of the quizzes on how many correct answers have been given. The quizzes are available in Bulgarian, Czech, English, Greek, Hungarian languages.



In the game, the Quizzes can be opened by clicking on the Test icon with bullet points:

(Figure 18: The icon of the Quizzes in the game: "test")

If you click on the test icon, you arrive at the five different tests/quizzes:



(Figure 19: Quizzes in the game)

The opened quiz looks like this, if you click on the chosen answer, the next question comes up automatically.

		the Eng	66 57
DA	What is the n	nain limit of the linear economic model?	NOG
K	Economic growth	Social growth	
A	Environmental destruction	Internationalization of business pro	ncesses
K	AP Por	A Carlond	

(Figure 20: Quiz questions)



(Figure 21: Feedback on the quizzes in the game)

# 5.4 The 'Avocado Boy' game

The title of the game is based on a visual novel Avocado Boy. It tells the adventures of Daniel, a gamer boy, who must unexpectedly face the problem of avocado planting. The visual novel episodes are based on the material of the Knowledge Base (5 skills + 5 environmental problems) represented by 5 pathways.

While the player is following Daniel's adventures along these 5 pathways, every now and then they must take decisions in problem situations, and so take part in Daniel's future success personally. The pathways start from the same life situation, but they might end in various different ways depending on the decisions taken by the player.

## 5.5 How to play the game

The game is accessible from two links:

- from the project website (<u>https://degrebe-project.eu/</u>)
- from a direct link (<u>http://degrebee.trebag.hu/</u>).



(Figure 22: Title page of the game)

Registration and log-in are not needed. The game is free.

# **5.6 Languages**

The game is available in Bulgarian, Czech, English, Greek, Hungarian languages. You can choose the language by clicking on the respective flag icon in the top right corner of the webpage.



(Figure 23: Language selection)

## 5.7 Optimization

The game is optimized for desktop computer screens. The optimal screen setting is 1920X1080. If you find the pictures too big, go to the browser settings (top right corner, 3 dots below one another), and choose "Zoom". Here you can set the appropriate size.



(Figure 24: How to optimize the screen size, if needed at all)

The game comes with music. If you do not need it, mute or turn off your audio device.

# 5.8 Gameplay

Once logged in and inside, the first picture tells the players about the possibilities. They can follow the storyline, refer to the Knowledge Base, or take the test, by clicking on the appropriate icon.



(Figure 25: Game options and icons)



(Figure 26: Choosing a pathway in the game)

In the next pictures of the visual novel the player arrives at the beginning of the story, gets acquainted with Daniel, the hero, and the basic problem that leads him to the wish to plant avocado.

There are several side characters, among them a mentor figure, who sometimes gives advice or explains the situation. The game resembles comics with the important difference that sometimes the hero must take decisions and it is the player who choses for the hero, from a given set of options. Whenever there is a decision situation, the picture is divided into segments. The player should click on the segment of the chosen option, and from that time on Daniel's adventures proceed based on the player's decision.

The first decision situation defines what soft skill and environmental problem will be in the focus of the game, and who will be the mentor of the hero. These are the options:

Soft skill	Environmental problem	Mentor
adaptability	emission of greenhouse gases	Wormie
creativity	circular economy	Flowie
resilience	water pollution	Turtle
empathy	sustainable food management	Beebee
design thinking	mobility choices	Tara

(Table 2: Pathways, knowledge, mentors)

The player will follow the story of the chosen pathway and take decisions on Daniel's side, further modifying the outcome of the story with each decision. Meanwhile the mentor gives advice or information. There are no good and bad decisions, but if the decision leads to the failure of planting avocado, the game ends. The pathways can be played in an optional order.

# How to take decisions

As the story proceeds, Daniel must face decisions. Whenever he must take an option, the player will see a divided picture like this. If you move the cursor above that side of the picture which you want to choose, and click on the text with the hand, you have made your choice.



(Figure 12: Taking decisions in the game)
## **Glossary:**

**Analogue games:** Analog games, also referred to as non-digital games, are any type of game that is not played on a digital device, such as a computer, game console, phone, or tablet. Examples of non-digital games include board games, card games, and sports games.

**Blended learning:** a style of education in which students learn via electronic and online media as well as traditional face-to-face teaching.

**Competence-based learning:** systems of instruction, assessment, grading, and academic reporting that are based on students demonstrating that they have learned the knowledge and skills they are expected to learn as they progress through their education. In public schools, competency-based systems use state learning standards to determine academic expectations and define "competency" or "proficiency" in each course, subject area, or grade level (although other sets of standards may also be used, including standards developed by districts and schools or by subject-area organizations).

**Creative writing:** A form of writing where creativity is at the forefront of its purpose through using imagination, creativity, and innovation in order to tell a story through strong written visuals with an emotional impact.

**Digital education:** the innovative use of digital tools and technologies during teaching and learning and is often referred to as Technology Enhanced Learning (TEL) or e-Learning. Exploring the use of digital technologies gives educators the opportunity to design engaging learning opportunities in the courses they teach, and these can take the form of blended or fully online courses and programmes.

**Educational videos:** a virtual medium that helps the individuals or students in understanding the concepts better with GD and with the help videos.

**Engagement:** Engagement refers to the level of involvement, interest, and attention that learners bring to a learning activity. In gamification, the goal is to increase engagement by creating an immersive and interactive learning experience that motivates learners to actively participate in the learning process. Gamification strategies such as badges, leaderboards, and progress bars can help increase engagement and maintain learners' interest over time.

**Feedback:** Feedback refers to information provided to learners about their performance on a task or activity. In gamification, feedback is used to help learners understand how they are progressing and to motivate them to continue engaging in the learning activity. Effective feedback is timely, relevant, and personalized to the learner's needs.

**Game-based learning:** game characteristics and principles are embedded within learning activities. It is a type of active learning experience within a game framework.

**Gamification:** Gamification is the use of game elements and design techniques in non-game contexts, such as education, to increase engagement and motivation. It involves incorporating game mechanics, like rewards and competition, into learning activities to enhance the overall learning experience.

**Game mechanics:** Game mechanics refer to the rules and systems that govern how games are played. In gamification, these mechanics are applied to non-game contexts to make them more engaging and interactive. Common game mechanics used in gamification include points, levels, badges, and leaderboards.

**Green skills:** the knowledge, abilities, values and attitudes needed to live in, develop and support a sustainable and resource-efficient society.

**Motivation:** Motivation refers to the reason why individuals engage in a particular behavior or activity. In gamification, the aim is to increase motivation by providing rewards, feedback, and other incentives that encourage learners to continue with the learning activity. Motivation is an essential component of gamification, as it is crucial for maintaining learner engagement and interest.

**Project-based learning:** project-based learning (PBL) is a teaching method in which students learn by actively engaging in real-world and personally meaningful projects. It is called also project-based instruction, and it is an instructional approach designed to give students the opportunity to develop knowledge and skills through engaging projects set around challenges and problems they may face in the real world.

**Plot:** Plot is the series of events that take place in a story. It's the action of the story that drives the narrative forward.

**Soft skills:** a personal attribute that supports situational awareness and enhances an individual's ability to get a job done. The term soft skills is often used as a synonym for people skills or emotional intelligence. Unlike hard skills, which describe a person's technical ability to perform a specifically defined task, soft skills are broadly applicable across job titles and industries. It's often said that while hard skills might get someone an interview, soft skills will help that person get and keep the job.

**Storytelling:** The social and cultural activity of sharing stories, sometimes with improvisation, theatrics, or embellishment.

**Visual novel:** A form of digital interactive fiction. It combines a textual narrative with static or animated illustrations and a varying degree of interactivity.

## Reference

- Abfall: Luzern will den Spieltrieb wecken. Available at: https://www.luzernerzeitung.ch/nachrichten/zentralschweiz/lu/Abfall-Luzern-will-den-Spieltrieb-weckenart92,94072 (accessed: February 1, 2023)
- BOND Regional Policy Roundtable. Available at: https://www.bondproject.eu/project-activities/regional-policy-roundtables/ and https://kisleptek.hu/en/news/lego\_en/ (accessed: February 3, 2023)
- Domino's [Top 10 Examples in Gamification]. Available at: https://www.linkedin.com/pulse/top-10-examples-gamification-learn-organizations-havedubey (accessed: February 3, 2023)
- Gamification. Available at: https://www.valamis.com/hub/gamification (accessed February 3, 2023)
- Gamification in Education: What is it & How Can You Use It? Available at: https://www.trueeducationpartnerships.com/schools/gamification-in-education/ (accessed: February 3, 2023)
- Genially. Available at: https://genial.ly (accessed: February 24, 2023)
- KFC Shrimp Attack [Gamify's Top 9 Best Advergames | Gamification Marketing 2021 (video)]. Available at: https://www.gamify.com/gamification-blog/top-9-bestadvergames-gamify-2021#:~:text=KFC%27s%20%22Shrimp%20Attack%22 (accessed: January 18, 2023)
- Lego Serious Play Wikipedia. Available at: https://en.wikipedia.org/wiki/Lego\_Serious\_Play (accessed January 28, 2023)
- Michael Sailer, Jan Ulrich Hense, Sarah Katharina Mayr, Heinz Mandl (2017): How gamification motivates: An experimental study of the effects of specific game design elements on psychological need satisfaction, Computers in Human Behavior, Volume 69, 2017, Pages 371-380, ISSN 0747-5632 https://doi.org/10.1016/j.chb.2016.12.033.
- Non-digital games. Available at: https://mlpp.pressbooks.pub/gamebasedlearning/chapter/non-digital-games/ (accessed: February 3, 2023)
- Socrative. Available at: https://www.socrative.com/ (accessed: February 24, 2023)

- Starbucks Loyalty Program Case Study. Available at: https://www.trybeans.com/blog/starbucks-loyalty-program-analysis (accessed January 20, 2023)
- T-Mobile [TOP 12 POWERFUL EXAMPLES OF GAMIFICATION IN THE BUSINESS WORLD].d Available at: https://www.growthengineering.co.uk/top-12examples-of-gamification-in-business/ (accessed: February 3, 2023)
- The first gamification: the case of United Airlines. Available at: https://romanjnx.medium.com/the-first-gamification-the-case-of-united-airlinesf7e3dab5a81c (accessed: January 22, 2023)
- The fun theory: repaying instead of punishing. The Swedish model to stoke the civic engagement. Available at: https://www.reshumana.com/regions/europe/the-fun-theory-repaying-instead-of-punishing-the-swedish-model-to-stoke-the-civic-engagement/ (accessed February 1, 2023)
- The Fun Theory, Volkswagen's piano staircase experiment proves the power of fun. Available at: https://shsnorsenews.org/1647/columns/the-fun-theory/ (accessed: February 1, 2023)
- Virtual reality accessed: February 17, 2023. . Available at:
- <u>https://www.vrowl.io/how-police-use-virtual-reality-for-traing-and-education/</u>
- <u>https://www.vrowl.io/the-22-best-examples-of-how-companies-use-virtual-reality-for-</u> <u>training/</u>
- https://www.microsoft.com/en-us/hololens/industry-healthcare
- <u>https://artsandculture.google.com/project/expeditions</u>
- https://virtualspeech.com/blog/vr-education-example-use-cases
- What is Your Story? A Card Game for Narrative Development. Available at: https://flipped.coventry.ac.uk/tool/what-is-your-story-a-card-game-for-narrativedevelopment/#1476457066400-09eabfce-7228 (accessed: February 4, 2023)
- Other online resources
- https://www.allencomm.com/blog/2018/03/best-onboarding-ingredients-numbers/
- https://www.sciencedirect.com/science/article/abs/pii/S0360131513000031
- https://www.sciencedirect.com/science/article/abs/pii/S1071581914001256
- https://www.sciencedirect.com/science/article/abs/pii/S1071581914001256
- https://www.linkedin.com/pulse/planning-gamification-leo-abdala
- https://dergipark.org.tr/en/pub/cet/issue/46996/590005

- https://assets.cambridgeenglish.org/webinars/the-value-of-gamification-for-language-learning.pdf
- https://www.trueeducationpartnerships.com/schools/gamification-in-education/
- https://tka.hu/nemzetkozi/6575/jatekositas
- http://tanarblog.hu/attachments/3010\_7\_gamification.pdf
- http://www.oktatas-informatika.hu/2013/03/rab-arpad-a-gamifikacio-lehetosegei-a-nemuzleti-celu-felhasznalasok-teruleten-kulonos-tekintettel-a-kozep-es-felsooktatasra/
- https://elearningindustry.com/gamification-for-learning-strategies-and-examples
- https://elearningindustry.com/gamification-for-learning-strategies-and-examples
- https://timesofindia.indiatimes.com/readersblog/herbinger/gamification-physical-digitaland-phygital-and-its-importance-in-education-for-equitable-and-life-long-learning-43542/
- https://www.pickcel.com/blog/gamification-in-education-complete-guide/
- Deci, E. L. (1971). Effects of externally mediated rewards on intrinsic motivation. Journal of Personality and Social Psychology, 18, 105–115.
- Deci, E. L., Koestner, R., & Ryan, R. M. (1999). A meta-analytic review of experiments examining the effects of extrinsic rewards on intrinsic motivation.
- Fadlurrohim, Ishak, Asmar Husein, Liya Yulia, Hery Wibowo Santoso Tri Raharjo, 2020, "Learning Media and Technology: Generation Z and Alpha".
- Guglielmino, Lucia M., Guglielmino and Paul J, 2016, "Learning Pathways in Higher Education: Design Principles for Effective Curriculum Planning and Instruction"
- Dolot, Anna. (2018). The characteristics of Generation Z. e-mentor. 44-50. 10.15219/em74.1351.
- Aldhafeeri, Fayiz & Alotaibi, Asmaa. (2022). Effectiveness of digital education shifting model on high school students' engagement. Education and Information Technologies. 27. 1-23. 10.1007/s10639-021-10879-4.
- Kupperschmidt, B.R. (2000). Multigeneration Employees: Strategies for Effective Management. Health Care Manager, 19(1), 65–76. DOI: 10.1097/00126450200019010-00011
- Legault, L., Green-Demers, I., Grant, P., & Chung, J. (2007). On the self-regulation of implicit and explicit prejudice: A self-determination theory perspective.
- Lepper, M. R., Greene, D., & Nisbett, R. E. (1973). Undermining children's intrinsic interest with extrinsic reward: A test of the "overjustification" hypothesis. Journal of Personality and Social Psychology, 28(1), 129–137
- M. Scager, M. J. Boon, A. M. de Jong, & J. J. M., 2016, "Creating Personalized Learning Pathways in Higher Education"
- Mannheim, K. (1952). The Problem of Generations. P. Kecskemeti (Ed.). Essays on the Sociology of Knowledge. New York: Collected Works, Routledge.
- Purnomo, Agus, Nurul Ratnawati, Nevy Farista Aristin. 2016. "Development of Blended Learning in Generation Z". Journal of IPS Learning Theory and Praxis
- Singh, A.P., Dangmei, J. (2016). Understanding the generation Z: the future workf