GATE:VET CURRICULUM

"How to instruct teachers to use game elements and game mechanics in VET teaching"

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The curriculum is an intellectual output of the GATE:VET Erasmus+ project, which will be implemented between September 2019 and August 2021. A consortium of six partners with expertise in vocational education and Game-based Learning is developing the project:

- **AFBB** - Consortium leader (GER, training provider specialised in vocational training)
- **VUC Storstrøm** (DK, Adult Education Centre)
- **National College Nicu Gane** (RO, General Secondary School)
- **Manzavision** (FR, technology company)
- **University of Coventry** (UK, university and specialist in various game-based learning projects)
- **FHD** (GER, University of Applied Sciences)

CONTENTS

1. Introduction & Project Description

Effective teaching and learning practices are usually the result of didactic expertise in designing learning situations. This is primarily a matter of planning, designing and refining the conditions of learning. The use of games and playful elements in teaching can have an equally positive effect on these conditions. Game-based learning (GBL) can create new learning experiences and at the same time provide support for learning processes in order to open up new ways and forms of acquiring skills and abilities (Gidion et al., 2003). GBL means the targeted use of playful and gameful approaches to teaching and the use of games or game elements in the learning context.

The use of games or the gamification in teaching subject-content but also in helping learners to understand learning processes contributes to improving engagement and motivation and thus helping learners to enhance their learning experience. The purpose of enhancing the learning experience is also to encourage positive emotions among learners. Learning should be fun by conveying the materials in an interesting, dynamic way. Furthermore, GBL can support, among other things, consolidating knowledge, gaining a deeper understanding of a topic, developing creativity and a sense of constructive competition (Knapp, 2012). In teaching content should contribute to improving the motivation and thus learning success for the students.

Some teachers are sceptical about the concept and its benefit to the teaching and learning process. The assumption is that this is due in part, to the fact that some teachers are overwhelmed by the multitude of games, playful elements and GBL tools that can be used. There seems to be a work overload effect that may prevent teachers to design and enact GBL activities and at the same time, teachers may not have the skills and competencies that will enable them to employ GBL in online, blended or face-to-face modes of teaching. To counter this, raising awareness, training and offering support to teachers is crucial. Teachers must be equipped with design recommendations and become familiar with the practices and processes for the use of game elements in the classroom. Building on the initial training, teachers need to have access GBL-related content and resources that they can reuse and share.

This need is attempted to be addressed in the GATE:VET project, which primarily aims at expanding the methodological repertoire of teachers at VET schools by giving them the opportunity to enrich their lessons with game elements.

Further aims of the project include:

- Raising teaching staff's awareness for GBL and Gamification.
- Helping teachers to develop GBL skills and competencies.
- Improving and amplifying the practice of teaching by employing GBL.
- Create a community of teachers and practitioners for creating, sharing, reusing and assessing inclusive, social and emotional GBL in different teaching contexts.

2. Training-of-Trainers Curriculum

2.1. How to use this training-of-trainers curriculum

The curriculum is a very specific and guiding example of how (VET) teachers can be trained in the use of GBL and gamified activities. As part of that, it will also provide an overview of gamification in education - but that should not be the first sentence. Basics, concepts, practical examples and procedures of gamification are presented. The participating teachers are introduced to the tools developed in the project – the wiki and the app – in order to familiarise them with the platforms and the use of game-based teaching elements. By working with concrete examples and topics, playful teaching methods are tested followed by group reflection, after which the participants develop their own game ideas.

Overall aim

The **overall aim** of the training module described here is to guide teachers in using game elements and mechanics to their full advantage inside and outside the classroom, i.e. to create game-like learning environments themselves and at the same time to work successfully with the platform. It is important to build up and further develop the skills of vocational education teachers so they are able to implement training programmes independently.

Learning objectives

Learning objectives of the workshop include those participants are able to:

- describe the basics of gamification.
- summarise and classify relevant terms and concepts (game-based learning, serious games, gamification).
- list fields of application of game formats, strategies and elements in educational contexts and derive options for action for their own teaching practice.
- confidently operate the Wiki & App platforms.
- create their own content in the wiki.
- apply basic procedures of gamification (design processes) to a self-selected educational context and design an independent game scenario.
- act as multipliers for apprenticeship in their own vocational school or region.

Target group

The training module is primarily aimed at teachers in vocational schools, but in principle, the workshop is also suitable for teachers of the secondary and tertiary level. This ToT curriculum was designed for a total of nine participants. However, the number of participants may vary from training to training. However, the number of participants should not exceed 15; otherwise, some exercises and games may take too much time and demotivate the students.

Learning Outcome

The Learning Outcome of this training is to provide a qualification for teachers so that they are able to act as multipliers in teaching at vocational schools and to design their own training programmes for the gamification of teaching content. Teachers will then be able to implement similar training modules at their respective schools. This can take place not only within the region, but also nationwide.

Timing

The **expected time** needed to present the units of the curriculum may vary from training to training. This depends on which of the contents described in the curriculum are implemented in one's own workshop. The topics and exercises presented here are designed for a three-day online workshop. Table 1 provides a brief overview of the three-day workshop programme. The duration of the sessions is 5-6 teaching units. A suggested – rather than fixed – schedule is presented for each day (Table 1), as different amounts of time can be allocated to each session or topic. Trainers should review the material and schedule time to meet the needs of the particular training group.

T-o-T CURRICULUM OVERVIEW

WORKSHOP AGENDA		
DAY 1	**DAY 2**	**DAY 3**
Opening workshop, Introduction Warm-up Theme memory Thematic introduction Break Introduction Wiki Introduction App Interactive exercise Reflection Work order	Introduction Workshop Day 2 Warm-up Creation of a wiki entry Break Presentation GaWo Practical example Work order Reflection	Introduction Workshop Day 3 Presentation of own game scenarios Break Energizer Conclusion Workshop
QUICK LINKS - DAY BY DAY AGENDA		
DAY 1	**DAY 2**	**DAY 3**

Information

The ToT curriculum is divided into individual units that can be configured flexibly by the multipliers, to allow the concept to be adapted to fit the local requirements of the partner institutions. The multipliers can independently choose which learning outcomes and topics they want to focus on; thus, enabling them to respond to different learners' prerequisites in terms of prior knowledge and skills. In addition to the resources provided in each training unit, trainers can use other tools. A brief description of the content of each training unit is presented in the following chapters.

2.2. T-o-T Workshop Day 1

In the run-up	Registration Wiki and App

DAY 1				
Time (min)	**Phases**	**Contents**	**Method**	**Media/ Material/ Tools**
15 min	Opening workshop, introduction	▪ Why are we here today... ▪ Agenda ▪ Project presentation	Lecture	PPP
45 min	Warm-up	▪ Playful introduction ▪ Icebreaker activity ▪ Get to know ▪ Awarding points to whoever guesses the wrong fact first ▪ Mapping the points in a leaderboard	Whole group work, e.g. truths and lies	Leaderboard Paper and pen Badge
5 min/ permanent	Theme memory	▪ Presentation theme memory ▪ Collecting interesting topics, ideas and comments from the participants	Lecture	PPP Whiteboard
45 min	Thematic introduction	▪ Different concepts ▪ What is GBL; Gamification; Serious Games; Playful Learning ▪ Why are the use of playful concepts	Lecture + discussion	PPP Videos

		useful? (scientifically sound) ▪ Practical examples		
20 min	Break			
20 min	Introduction Wiki	▪ Introducing the GATE:VET wiki ▪ Explanation of structure and mode of operation	Lecture, walk through	Wiki
15 min	Introduction App	▪ Demonstration of the app ▪ Explanation of structure and mode of operation	Lecture, walk through	App, Smartphone
15 min	Interactive exercise	▪ 3 stations ▪ Search for individual letters that make up a solution word (PONG) ▪ Winner who finds the solution word first	Scavenger hunt	App + Wiki Leaderboard Badge
15 min	Reflection	▪ Clarifying unanswered questions ▪ Topic memory ▪ Feedback on first Day	Discussion Securing results	Whiteboard
10 min	Work order	▪ Participants receive a work assignment for the second day		Wiki

In the run-up	
Title: Registration Wiki and App	**Duration:** 10 - 30 minutes
Target:	Participants (TN) register in the GATE:VET Wiki and the Teemew App
Content:	Before the workshop begins, the participants must register in the wiki and the app of the GATE:VET project. This is a prerequisite for participating and carrying out individual exercises during the workshop and saves time.
Method:	The registration takes place in individual work of each participant.
Tip:	By registering early, participants have the opportunity to preview the two platforms and have a basic introduction to the topic of the workshop.

Workshop Day 1	
Topic: Opening workshop, Introduction	**Duration:** 15 minutes
Target:	Participants get to know the course leader Participants know the planned sequence of the workshop session Participants are familiar with the GATE:VET project, its aims and contents.
Content:	▪ Welcome and introduction of the course leaders ▪ Present the content and procedure of the workshop ▪ Presentation GATE:VET Project **Welcome and introduction of the trainers:** Trainers welcome the participants and give a short self-introduction. Trainers then explain the purpose of the workshop as well informing them about the contents and processes involved. **Content and procedure of the workshop**: In the introductory phase of the workshop, the individual agenda items of the session are presented, which serve to orientate the content. **Presentation of the GATE:VET project:** Short presentation of the goals, partners, contents of the GATE:VET project and the reason for the

	training.
Method:	Trainer presentation in plenary
Tip:	▪ Clarify at the beginning of the workshop how to address the participants (formal or informal). ▪ For example, the agenda should be presented on a presentation slide, whiteboard or metaplan board for visual support. ▪ Make sure that the agenda of the workshop is visible to the participants throughout the session so that they can follow the process at any time. ▪ For more information on GATE:VET, please visit the project website: https://www.gate-vet.eu/

Workshop Day 1	
Topic: Warm-up	**Duration:** 45 minutes (varies depending on the method)
Target:	Participants get to know each other Participants gather play experiences Participants try out a method for gamifying rounds of introductions
Content:	Warm-up methods and small games to liven up and increase the productivity of the workshop.
Method:	Ice-breaker activity as whole group work
Example:	**Title:** Two truths and a lie **Duration:** Varies according to the number of facts and participants (for 12 participants with 4 facts each, approx. 45 minutes). **Material:** Paper, Pen **Process:** Each participant writes 3-5 facts about themselves on a piece of paper, one of which is not true. The other participants then have to guess which of the facts the lie is. This is done in turns until each participant has presented

		their facts.
	Recommendation:	To increase the playful aspect, individual game elements can be incorporated. These include awarding points to the participant who guesses the wrong fact first. These points can be recorded on a leaderboard, so it is possible to see who has scored the most points and ultimately won this game. In addition, a badge can be awarded here, e.g. for the "best lie detector".

Workshop Day 1	
Topic: Theme memory	**Duration:** 5 minutes, course-related
Target:	Participants get actively involved in the content and/or methodological process by collecting topics, ideas or examples.
Content:	The topic repository is created in advance by the trainers (e.g. as a forum or whiteboard or digital pinboard or during the face-to-face event as a flipchart). During the workshop, all topics, ideas, comments and examples of the participants that may arise during the workshop are what comprise this repository. These contributions are discussed together at the end of the session.
Method:	1. Introduction of the topic memory: presentation by trainers (Face-to-face learning) 2. During the workshop: collection of topics in individual work 3. End of the session: Plenary discussion on the collected topics etc.

Workshop Day 1	
Topic: Thematic introduction	**Duration:** 30-60 minutes

Target:	Participants understand the basics of gamification Participants are able to distinguish between the concepts of game-based learning, serious games and gamification. Participants know the elements of learning games Participants know the learning effects of games
Content:	▪ Thematic introduction of the workshop ▪ Basic knowledge on the subject of play ▪ Presentation of the concepts of game-based learning, serious games and gamification ▪ Introduction to the basics of playing ▪ Studies and findings on the effects of play in learning situations
Method:	Face-to-face learning through the presentation of the trainers
Tip:	▪ Take the participants' prior knowledge into account when deciding on the length of the theoretical part. ▪ Illustrate the content with practical examples, such as the presentation of game sequences from different contexts or videos. ▪ By using aids, you can diversify your presentation and thus activate the attention of your participants.
Literature:	▪ Jan L. Plass, Bruce D. Homer & Charles K. Kinzer (2015) Foundations of Game-Based Learning, Educational Psychologist, 50:4, 258-283, DOI: 10.1080/00461520.2015.1122533 ▪ Karl M. Kapp, Lucus Blair, Rich Mesch (2014). The Gamification of Learning and Instruction Fieldbook: Ideas into Practice (Englisch) Taschenbuch – 3. Januar 2014 ▪ Zamzami Zainuddina, Samuel Kai Wah Chua, Muhammad Shujahata, Corinne Jacqueline Perera (2020). The impact of gamification on learning and instruction: A systematic review of empirical evidence. Educational Research Review. ▪ Kevin Werbach, Dan Hunter (2012). For the Win: How Game Thinking Can Revolutionize Your Business, Wharton School Press.

Workshop Day 1	
Topic: Introduction Wiki	**Duration:** 20 minutes
Target:	Participants learn about the structure and functions of the wiki Participants can use the wiki independently
Content:	This step introduces the wiki. First, the general structure of the wiki is presented. Then, the two main categories of the wiki - Glossary and Educational Sheets - and their subcategories are explained. To illustrate this, an example from the wiki is presented for each main category so that the participants have a better insight into the final result. The search and comment functions are also explained.
Method:	Presentation by trainers
Tip:	- Register in advance - As a trainer, first get an overview of the structure and functionality of the wiki (https://wiki.gate-vet.eu/tiki-index.php). - Introduce the wiki to the participants via walk-through by presenting the two main categories - Glossary and Educational Sheets - and their subcategories. - Also mention the search and comment function - Point out how important it is to fill the wiki with content especially with further examples for lesson design - Allow enough time for learners to explore the wiki independently

Example:

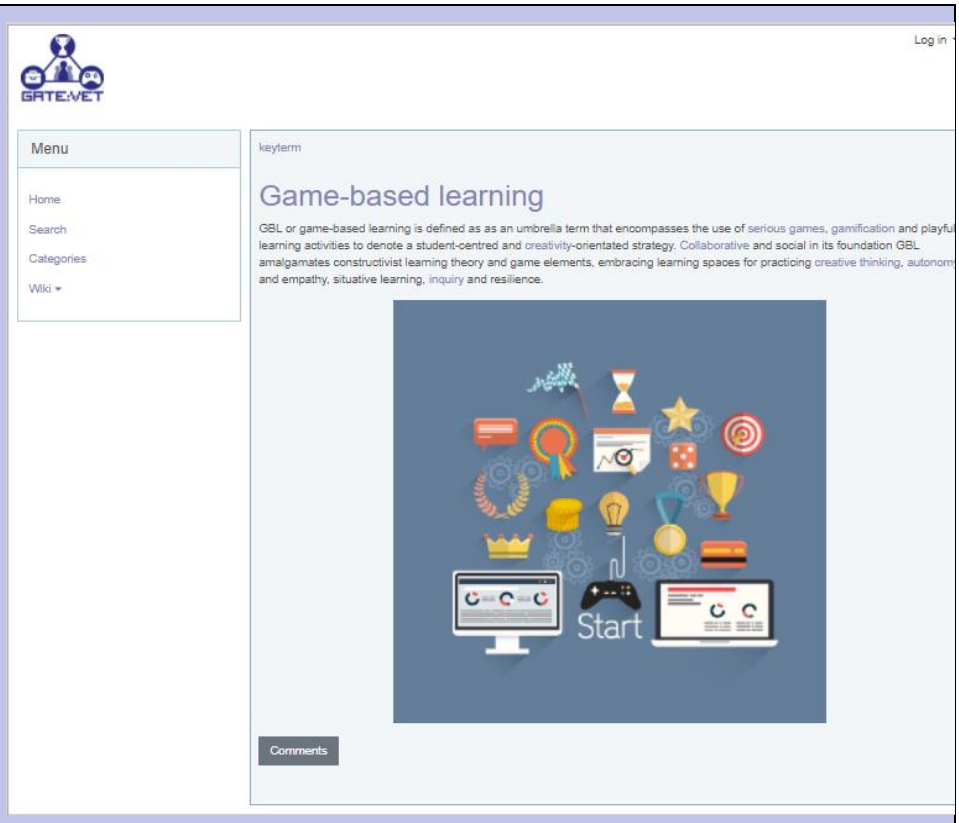


Figure 1: Wiki, example of a glossary term, including links to other content in the wiki

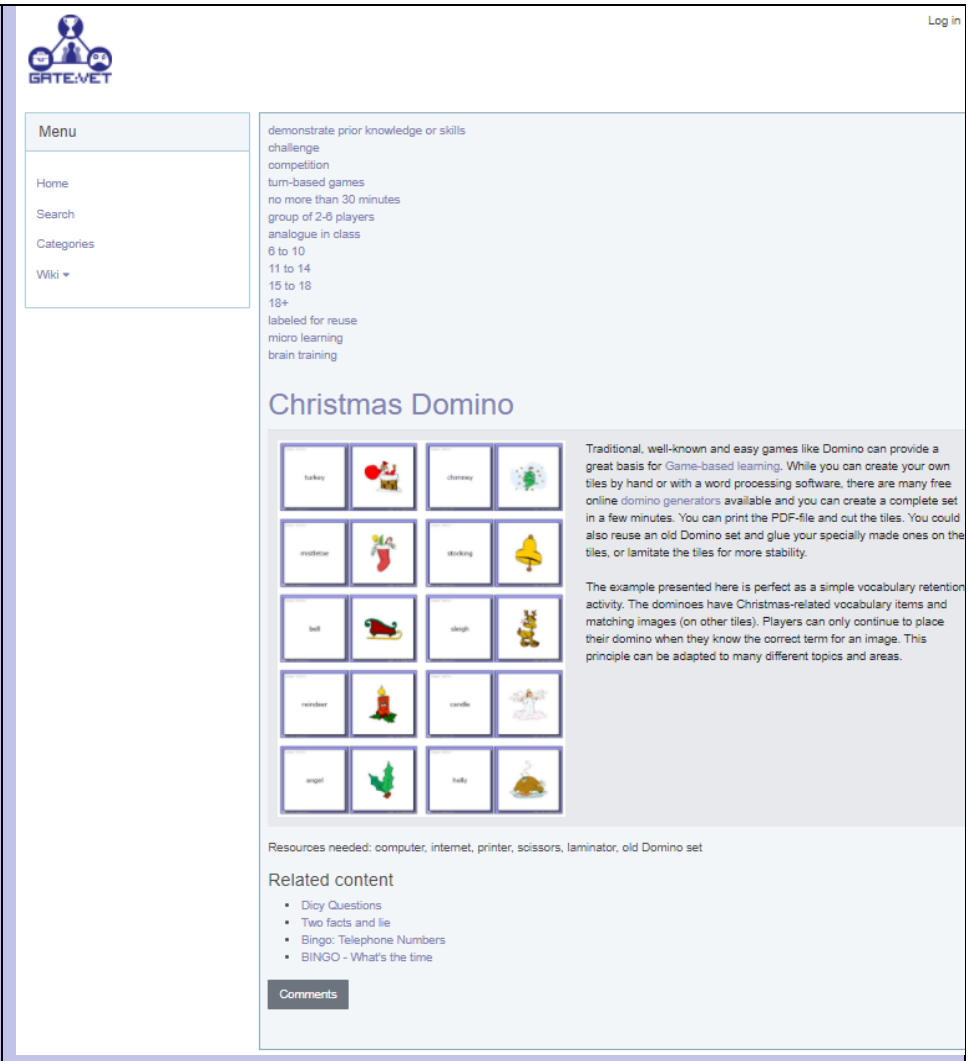
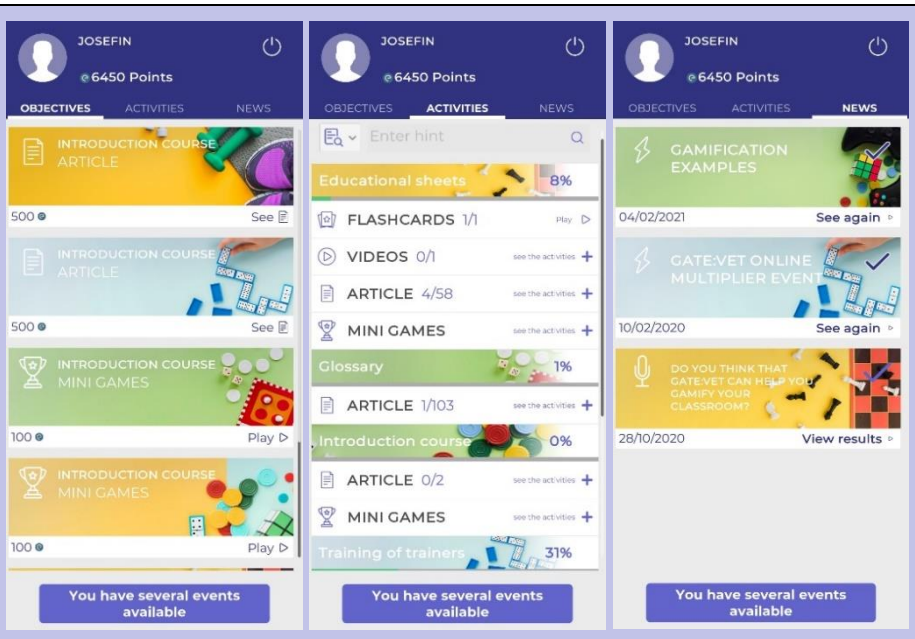


Figure 2: Wiki, example of an educational sheet with categories, internal and external links, and related content

Workshop Day 1	
Topic: Introduction Application (App)	**Duration:** 15 minutes
Target:	Participants learn about the structure and functions of the app, Participants can use the APP independently
Content:	This step is the introduction to the app. The structure of the app (three tabs/pages: daily goals, activities, news), the respective activities and mini-games as well as the various functions (search, bookmark and rating function) are presented and explained in individual steps so that the participants learn how to use the app. Besides the games, the app offers

	other game elements (points, leaderboard, badges, awards and progress bar) which are also presented and explained.
Method:	Face-to-face learning through the presentation of the trainers
Tip:	- Download the app to your smartphone in advance or register in the web version of the app (https://mobile.teemew.com/smart130/webgl/index.html). - As a trainer, first get an overview of the structure and functionality of the app and test individual activities yourself. - Introduce the app to the participants via walk-through by presenting the individual pages, categories, activities and functions. - Allow enough time for participants to explore and 'play' the app themselves.
Example:	 *Figure 3: Mobile app screens showing: the daily objectives assigned to the user; the list of activities available and news.*

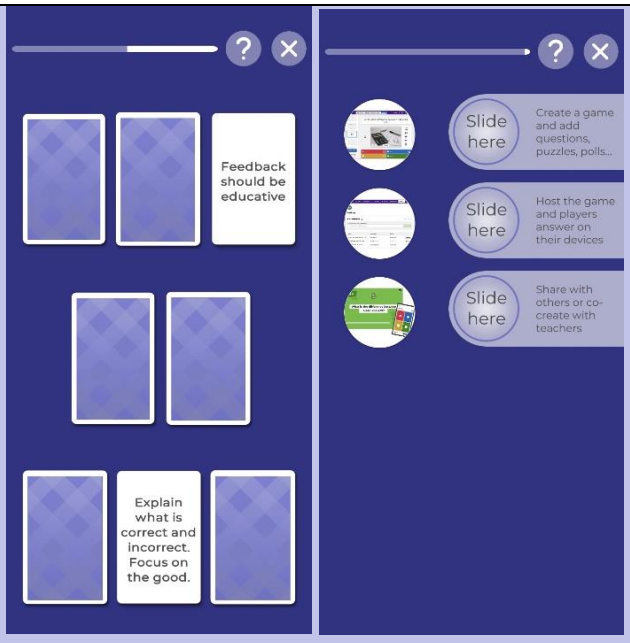


Figure 4: Mobile app screens showing: the mini-games

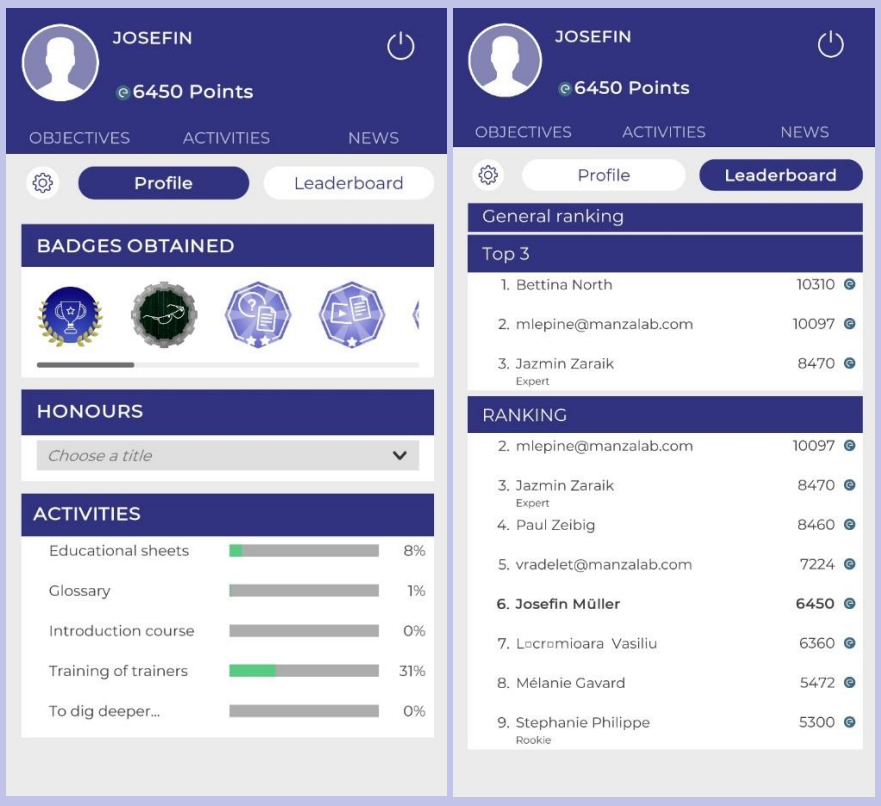


Figure 5: Mobile app screens showing: the user's collected badges, honours, progress bar and leaderboard

<table>
<tr><th colspan="3">Workshop Day 1</th></tr>
<tr><td colspan="2">Topic: Interactive exercise</td><td>Duration: 15 minutes</td></tr>
<tr><td>Target:</td><td colspan="2">Participants discover the functions and user guidance of the wiki and the app in a playful way.</td></tr>
<tr><td>Content:</td><td colspan="2">In an interactive exercise, the wiki and app are discovered in a playful way. Through the interactive exercise, the use of the platforms is to be practised in order to guarantee the participants a safe handling. Furthermore, the aim is to activate the participants and to promote the fun of playing.</td></tr>
<tr><td>Method:</td><td colspan="2">Interactive exercise in whole group work</td></tr>
<tr><td>Example:</td><td colspan="2">
<u>Title:</u> Scavenger hunt

<u>Material:</u> Smartphone, PC

<u>Process:</u> The participants complete a total of 3 stations and search for individual letters in the wiki and the app to finally guess the solution word.

<table>
<tr><th>Part 1:</th><th>Part 2:</th><th>Part 3:</th></tr>
<tr><td>1. Open the app
2. Click on Activities
3. Search for/scroll to the article "Icebreaker" in the Glossary
4. Open this article and memorise the first letter in the fourth word of the first sentence.</td><td>1. Stay in the app under Activities
2. Go to the Introduction course and click on Mini Games
3. Choose the game "Mix and Match"
4. Now play this game
5. When you have successfully completed the game, a sentence appears under the big star
6. Memorise the second and third letters of the second word.</td><td>1. Open the Wiki
2. Click on the green picture that says "Learn about Game-Based Learning by checking out practical examples".
3. Now click on the "here" in the sentence: Click here to browse our collection of educational sheets
4. Open the Educational Sheet "Escape Room".
5. Memorise the first letter in the second word of the first sentence.</td></tr>
<tr><td colspan="3">→Put all the letters together. What is the solution word? 62</td></tr>
</table>

The solution word is: PONG

Through the experience-oriented character, the competition and the excitement, participants are activated and a fun, lively atmosphere is created.

<u>Recommen-dation:</u> To increase the playful character, individual game elements can be incorporated. These include awarding points to the participant who guesses the solution word first. In addition, a badge can be
</td></tr>
</table>

	awarded, e.g. for the "best scavenger hunter".

Workshop Day 1	
Topic: Reflection	**Duration:** 15 minutes
Target:	Internalisation of the contents of the workshop session Uncovering gaps in knowledge Contextualisation of knowledge
Content:	In the reflection, the goals and contents of the day are briefly summarised and discussed together. Furthermore, the collected topics, ideas and comments from the topic memory are discussed.
Method:	Plenary discussion
Tip:	▪ Give the participants an additional opportunity to raise questions, problems or uncertainties

Workshop Day 1	
Subject: Work order	**Duration:** 10 minutes
Target:	Participants can distinguish and evaluate GBL scenarios Participants are prepared for workshop day 2
Content:	The participants receive a work assignment for the second workshop session. This serves as preparation for the agenda item "Content creation" for the second day. The participants should look at educational sheets in the wiki and then search the internet for further GBL examples (analogue or digital games) and save them.
Tip:	▪ If the participants already use their own games in their lessons, these can act as examples

2.3. T-O-T WORKSHOP DAY 2

DAY 2				
Time (min)	**Phases**	**Contents**	**Method**	**Media/ Material/ Tools**
5 min	Introduction Day 2	▪ Presentation of the agenda ▪ Questions about Day 1	Lecture	PPP
10 min	Warm-up	▪ Content quiz (theoretical introduction + project) based on the previous day	Kahoot Quiz	Smartphone/ PPP
60 min	Creation of a wiki entry	▪ Instructions for creating Educational Sheets and Glossary terms in the Wiki ▪ Participants create a wiki entry from their collected example	Lecture, individual work	Wiki
15 min	Break			
60 min	GaWo	▪ Presentation GaWo ▪ Explanation of the planning steps for the use of gamification in teaching (concerns, learning objectives, player types, storytelling, tools, reward, game mechanics, etc.).	Lecture	PPP
30 min	Practical example	▪ Working on a fictitious example from practice ▪ How can this be gamified? ▪ Collect ideas	Lecture / Discussion	PPP
10 min	Work order	▪ Participants collect topics/ ideas from their own teaching that they would like to gamify.	Collection of topics/problems Individually or as	Sheets, Checklist

		▪ Participants conceptually create their own scenario	group work	
15 min	Reflection	▪ Theme memory ▪ Claryfying unresolved questions ▪ Feedback Day 2	Lecture	PPP

Workshop Day 2	
Topic: Introduction Day 2	**Duration:** 15 minutes
Target:	The participants know the planned procedure of the workshop session The participants have understood the contents of the first day and can reproduce them.
Content:	The session starts with a short welcome and the presentation of the day's agenda. Afterwards, participants are given the opportunity to ask questions about the first day of the workshop. This allows the participants to also reflect on the previous sessions and assess whether they have internalised what they have learned up to this point.
Method:	Presentation in plenary
Tip:	▪ For example, the agenda should be presented on a presentation slide, whiteboard or metaplan board for visual support. ▪ Make sure that the agenda of the workshop is visible to the participants throughout the session so that they can follow the process at any time.

Workshop Day 2	
Topic: Warm-up: Quiz	**Duration:** 10 minutes (varies depending on the method)
Target:	Awaken the participants' willingness to learn Participants enter the learning scenario in a playful way Cohesion in the group is strengthened

	Content quiz of what was learned the day before
Content:	The second day will start with a short quiz. The quiz serves the dual purpose of establishing a fun, creative atmosphere, as well as reviewing what was taught on the previous day.
Method:	Quiz in whole group work
Example:	**Title:** Kahoot Quiz **Material:** Smartphone, laptop/PC, (beamer) **Description:** Kahoot is a game-based learning platform that offers an easy way to conduct quizzes. There is a choice of question types. **Process:** The trainer/teacher first needs to create an account at https://kahoot.com/. The teacher can then create his/her own quiz. They can also choose different question types, such as multiple choice, true or false or puzzle. The question types can also vary. The questions are then given via wall projector or, in the case of a video conference, by screen sharing. The participants log in beforehand via https://kahoot.it/ with a game PIN. They then answer the questions via smartphone. Each player receives points for answering the questions correctly. Extra points are awarded for speed. The players are ranked after each round until the player with the most points win. **Recommen-dation:** In addition to the playful elements already used, a badge, e.g. "best Quiz Master", can again be awarded. In class to: increase student motivation by offering a competitive element, to determine individual and collective comprehension, to test or secure knowledge and to activate prior knowledge In addition to Kahoot, there are other tools that

		can be used, such as Quizlet, LearningApps, H5P, Quizizz, Mentimeter, Learning Snacks, etc. A large number of tools can also be found in the Wiki under the category "tools".
Workshop Day 2		
Topic: Content creation wiki		**Duration:** 60 minutes
Target:	The participants can independently create an entry in the wiki.	
Content:	The trainers show the participants step by step how to create an entry in the wiki. The following steps are necessary: 1. Logging into the wiki (only then can a wiki entry be created) 2. Add a description of the game, project, tool, glossary term you want to create. 3. Add the individual categories that apply to the Glossary Term or Educational Sheet. 4. Add a picture that matches your contribution. Also take into account the image rights. Afterwards, the participants create their own wiki entry. The template is the example from the work assignment.	
Method:	Presentation in plenary and exercise in individual work	
Tip:	- Written instructions can be found in the wiki at: https://wiki.gate-vet.eu/tiki-index.php?page=GATE:VET-Guidelines - Act as a coach for the participants when they create their own wiki entry. - The creation of the wiki entries by the participants can be done simultaneously with the trainer's content creation presentation.	

Workshop Day 2		
Topic: Gamification Workflow (GaWO)		**Duration:** 45-60 minutes
Target:	Participants can follow the development process of gamification. Participants can distinguish relevant developmental phases from one	

	another. TN know the references and interactions between the individual phases.
Content:	In this part of the workshop, the individual development phases of gamification are presented (Gamification Workflow, GaWo). First, all phases will be roughly classified in a uniform process that is oriented towards design thinking. In the further course, individual phases and their design concepts will be presented in more detail. Examples of this are: ▪ Player types ▪ Learning types ▪ Rewards systems ▪ Learning Objective Taxonomies ▪ Tools for implementation
Method:	Lecture with subsequent discussion
Tip:	▪ Use a unified model to visualise the gamification process ▪ Illustrate the individual development phases with practical examples

Workshop Day 2	
Topic: Practical example	**Duration:** 30 minutes
Target:	The participants understand how they can implement the steps of GaWo in a real learning environment.
Content:	In a concrete example, the steps of GaWo are explained in specific terms so that the participants understand how this can be implemented in practice. The participants should also contribute their own ideas.
Method:	Presentation and discussion in plenary
Tip:	▪ The choice of elements used (profiles) is left to each trainer to decide. ▪ The participants' ideas should be recorded in writing, for example on moderation cards, whiteboards, notes, etc., in order to secure the results.

Workshop Day 2	
Subject: Work order	**Duration:** 10 minutes
Target:	Preparation for Workshop Day 3
Content:	The participants receive an assignment for the third workshop session. Here, the participants are to create their own gamified scenario for their lessons. This task can be done individually or in groups. As additional support, the participants will be provided with the GaWo fact sheets and a checklist (see appendix).
Method:	Presentation by course instructor in plenary
Tip:	- The participants can choose and think up their own topics and problems. - Participants are free to choose their own presentation format. A short PowerPoint presentation with a maximum duration of 5 to 10 minutes is recommended. - Offer a consultation appointment so participants can contact you if they have questions or problems

Workshop Day 2	
Topic: Reflection	**Duration:** 15 minutes
Target:	Internalisation of the contents of the workshop session Participants identify gaps in their knowledge Participants show main points of interest for the 3rd day of the workshop
Content:	In the reflection, the goals and contents of the day are briefly summarised and discussed together. Furthermore, the collected topics, ideas and comments from the topic memory are discussed.
Method:	Plenary discussion
Tip:	▪ Give the participants the opportunity to raise questions, problems or uncertainties once again.

2.4. T-O-T WORKSHOP DAY 3

DAY 3				
Time (min)	**Phases**	**Contents**	**Method**	**Media/ Material/ Tools**
10 min	Introduction Day 3	▪ Presentation Agenda ▪ Questions about the 2nd day	Lecture	PPP
100 min	Presentation of an own scenario	▪ Presentation of individual examples by the participants ▪ Number depending on number of groups ▪ Peer review: other participants evaluate and give feedback ▪ Feedback by trainer	Lecture Discussion	PPP Notes, whiteboard
15 min	Break			
15 min	Energizer	▪ Quiz to bring up the energy levels ▪ Participants work on the quiz in the app	Individual work	App
30 min	Closing	▪ Final discussion on the workshop ▪ Evaluation of the workshop ▪ Topic memory	Discussion	PPP

Workshop Day 3	
Topic: Introduction Day 3	**Duration:** 15 minutes
Target:	The participants know the planned procedure of the workshop session The participants are familiar with the content of the previous days
Content:	The session starts with a short welcome and the presentation of the day's agenda. Afterwards, participants are given the opportunity to ask questions about the first day of the workshop. This gives participants the opportunity to reflect on the previous session and to check whether they have internalised what they have learned.
Method:	Presentation in plenary
Tip:	▪ For example, the agenda should be shown on a presentation slide, whiteboard or metaplan board for visual support. ▪ Make sure that the agenda workshop is visible to the participants throughout the session so that they can follow the process at any time.

Workshop Day 3	
Topic: Presentation of the scenarios	**Duration:** 100 minutes (varies depending on the number of presentations)
Target:	The participants can create gamified teaching scenarios. Participants can explain their example Participants evaluate each other and further develop individual scenarios as a group
Content:	Each teacher has 5-10 minutes to present their own scenario. After each presentation, the other participants have time to ask questions. Afterwards, the participants as well as the trainers can give their feedback on the scenarios. A three-stage division is suitable here: 1) What I particularly liked

	2) What I liked less 3) Proposed changes
Method:	Presentation participants in plenary
Tip:	▪ Should the processing of the scenario be done as group work, the time can be kept or extended? ▪ The results of the feedback should also be recorded in writing, for example by moderation cards and flipchart or online using a whiteboard, so that the feedback can also be handed over to the teacher after the discussions. ▪ After the individual scenarios have been revised, the examples should be added to the wiki after the workshop.

Workshop Day 3		
Topic: Energizer GATE:VET Quiz		**Duration:** 15 minutes
Target:	Participants deal with topics of the workshop Participants learn about possible uses of quizzes Participants are introduced to a tool for using quizzes.	
Content:	As a fun activity, all participants take the quiz in the GATE:VET app. The purpose is for the participants to test and internalise the knowledge they have learned on day 1 (thematic introduction) and day 2 (GaWo). Therefore, they have to answer questions about GBL and gamification as well as about the individual contents (see sheets) of the GaWo.	
Method:	Quiz via MobileApp	
Example:	**Title:**	GATE:VET App Quiz
	Material:	Smartphone, App
	Description:	On the third day of the workshop, the playful aspect are still important. In this quiz, what was learned on day 1 and day 2 can be consolidated once again.
	Process:	Participants have to open the app and press the button "You have several events available" at the

		bottom of the screen. Two quizzes will then open, the second of which is on GBL. Then click on the start button and the game can begin.
	Recommen-dation:	Other games can be used at this point, but it is worth using the existing material.

Workshop Day 3	
Topic: Closing of the workshop	**Duration:** 15 minutes
Target:	Clarification of open questions Reflection on topics dealt with
Content:	At the end of the workshop, the collected contents of the topic memory are discussed. Furthermore, the participants evaluate the workshop after which, the trainers thank the participants and wish them success with their new qualifications.
Method:	Presentation and discussion in plenary
Tip:	▪ Possible questions for the evaluation: o What did you particularly like? o What did you like less? o Do you have any suggestions for change, if so, what are they? o Were your expectations met? o Can you use what you have learned in your own teaching, if not, why? o Etc. ▪ You can decide which method you want to use for feedback. This can be verbal feedback, for example through a discussion, or anonymous feedback through a questionnaire or the 5-finger method.

3. RECOMMENDATIONS

Recommendations provide information to help trainers understand how certain techniques will contribute to the goals of trainer education.

1. Teachers and trainers need to be sensitive to the needs and level of knowledge of the participants and make adjustments to the workshop content as necessary.
2. The training should be adapted to the requirements and circumstances of the school and the staff.
3. The daily feedback is a useful tool to monitor and evaluate the training progress. Participants are asked to reflect on the day's activities and discuss some of the key issues.
4. The didactic methods used go beyond the typical frontal teaching modality and focus on interaction, cooperative learning, brainstorming and problem-based learning.
5. Please note that participants need a computer workstation or their own laptop/PC as well as an internet connection to be able to complete individual modules.

4. IMPLEMENTATION OF THE CURRICULUM

The Training of Trainer curriculum aims to qualify teachers in your institution to use game elements in their lessons. For the effective and long-term implementation of the curriculum, it should be integrated into the structures and processes of your institution. Are there already qualification measures for teachers? Then the curriculum could become a part of it.

In the following, general aspects are addressed that should be taken into account when implementing the curriculum in VET schools (in Germany, Denmark and Romania).

4.1. IMPLEMENTATION STRATEGY GERMANY

1) Premises

Regardless of whether you offer the curriculum in traditional face-to-face workshops or virtual events, the location plays an essential role for its success.

You should consider the following aspects:

a) Presence: Room with appropriate equipment (projector, screen, interactive board, flipcharts, internet connection, etc.) and room size for interaction possibilities.
b) Virtual: Select a suitable video conferencing tool for which licences may already exist at the school, which is appropriate for the number of participants and includes various functions (e.g. breakout rooms, whiteboard, etc.).

2) **Timing**

Since interaction is an integral part of the curriculum, you should ensure that a wide participation of teachers will be achieved. 10-15 participants are ideal. In order to recruit enough teachers, timing is crucial. Use non-teaching times, ideally in the preparation period for the new school year. In this way, teachers can participate and immediately apply the contents of the workshop in the lesson planning.

3) **Participant recruitment**

a) Start recruiting participants at an early stage.
b) Writing to teachers via internal channels or notices in the staff room.
c) Provide participants with information in advance (objectives, content, duration, materials/tools needed, access to wiki and app, etc.)

4) **Certification**

Certificates verify skills gained and the content of courses learned. Therefore, certificates are often requested by participants to prove their continuing education activities. You should therefore issue a certificate to the participating teachers after successfully completing the training. This may also provide an additional incentive for participation.

4.2. Implementation Strategy Denmark

At VUC, following implementation strategies for the curriculum would be feasible:

- In connection with the competency development of our 140 teachers it will be a possibility to work with game-based learning and the curriculum at the courses.
- Our beacons will be the first to work with game-based learning and the curriculum for the purpose of introducing it to the teachers.

Suggestions on how the curriculum can be implemented in schools:

- At VUC, we could present the project and the curriculum to our partner schools at e.g., conferences describing the pedagogical and didactic requirements and e.g., the technical equipment needed to succeed the implementation.

4.3. Implementation Strategy Romania

Locally:

- Promotion within the methodical committees in the school
- Organizing workshops for teachers who want to use GBL in the class
- Support for teachers provided by colleagues trained in the project.

Regionally:

- Popularization at the meetings at the beginning of the school year
- Popularization in the written press and in the online environment
- Proposal for collaboration with CCD * in order to organize a course at regional level

* *resource centers aimed at training and professional and personal development of the employees of the pre-university education system in Romania*

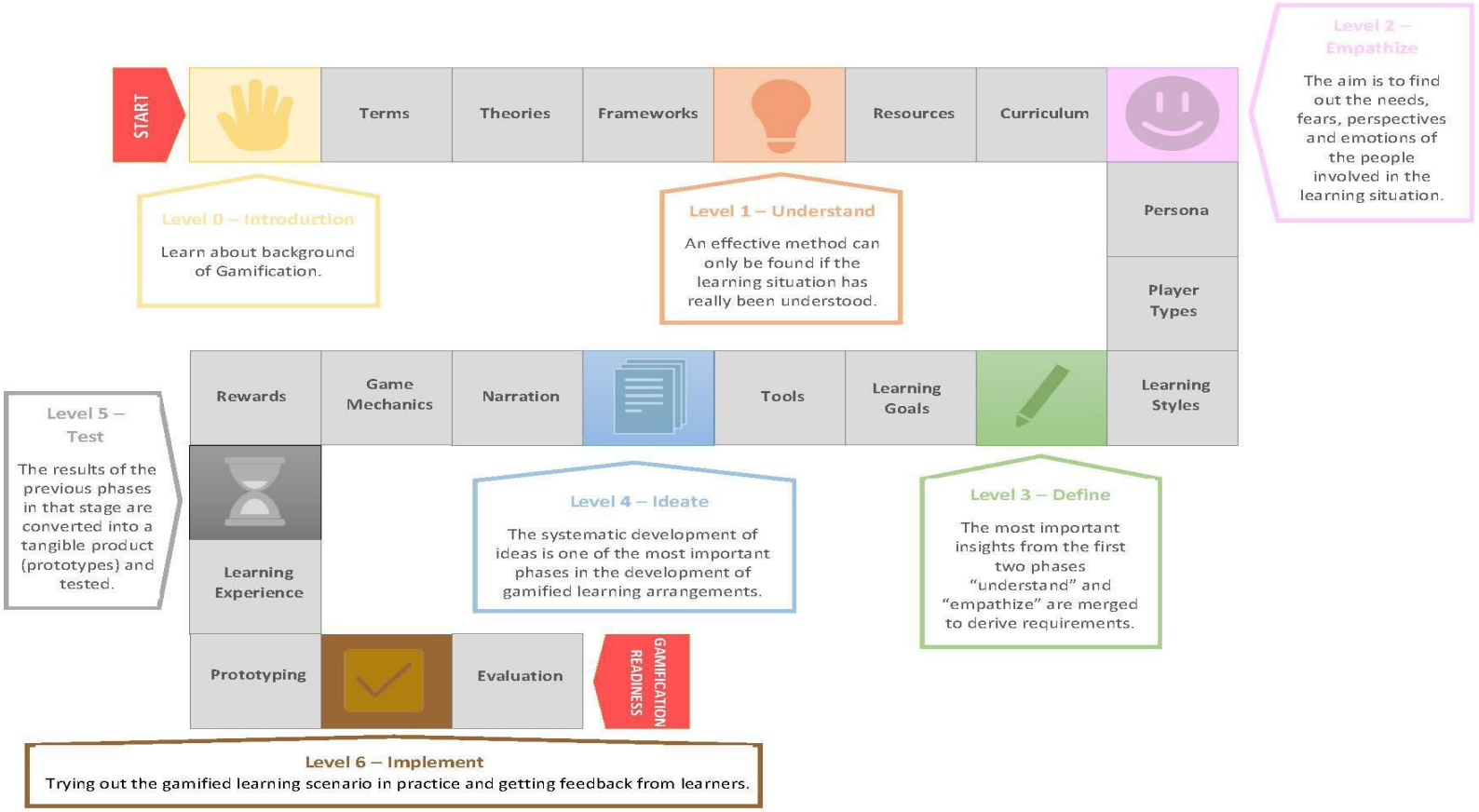
5. REFERENCES

Gidion, G., Martinez, S. & Soultanian, R. (2003). *Alltägliche Lernprozesse mit neuen Technologien als Artefakte*. In D. Brandt, *Kompetenzentwicklung 2003. Technik - Gesundheit - Ökonomie* (S. 113-160). Münster/New York/München u.a.: Waxmann Verlag GmbH.

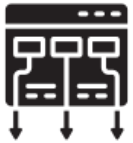
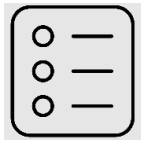
Knapp, Karl M., (2012). The Gamification of Learning and Instruction: Game-based Methods and Strategies for Training and Education, San Francisco: John Wiley & Sons.

6. APPENDIX

6.1.1. GAME PLAN GAMIFICATION WORKFLOW



6.1.2. Overview Sheets – Quick Links

 Terms	 Frameworks	 Theories	 Resources
 Curriculum	 Persona	 Player Types	 Learning Styles
 Learning Goals	 Tools	 Narration	 Game Mechanics
 Rewards	 LXD	 Prototyping	 Evaluation

Start or Level 0 – Introduction
Explanation: Learn about the background of Gamification.
Topics: • Terms • Theories • Concepts/Frameworks

6.1.3. SHEETS TERMS

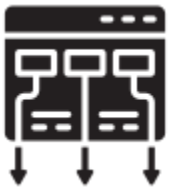
	**Terms**
Description	Game-based learning is a generic term for the use of games and game-like solutions in non-game contexts. This includes the following different formats: ***Serious Games*** ▪ Entire games used in a learning context. ▪ e.g. Microsoft Flight Simulator ***Gamification*** ▪ Use of game elements in non-game contexts. ▪ e.g. Duolingo ***Playful Design*** ▪ Only uses ideas and design from games, e.g. user interfaces that are reminiscent of a game. ▪ e.g. LinkedIn ***Simulation Games*** ▪ Realistic virtual environments and virtual mapping of processes in which behaviour can be tested/practiced. Direct game elements are not always integrated, but game mechanics are used to pursue a learning goal.

	▪ e.g. SPUN ***Games*** ▪ Games to have fun without an intended learning purpose. In contrast to play, games follow defined rules and tasks/goals that are set in advance for the different roles. ▪ e.g. Tetris
Examples	Microsoft Fight Simulator https://www.youtube.com/channel/UCqONzeACDBaF6FfKjh7ndAQ Duolingo https://www.youtube.com/watch?v=3_FJCaS-hro
Sources	Gamelearn. Eight examples that explain all you need to know about serious games and game-based learning. https://www.game-learn.com/all-you-need-to-know-serious-games-game-based-learning-examples/ Marczewski, A. (2017). The Game Thinking Spectrum. https://www.gamified.uk/2017/07/31/game-thinking-spectrum

	(Digital) Game-based Learning/ (D)GBL
Description	Game-based learning describes the use of playful elements up to digital games in the educational context for imparting and acquiring knowledge through active, self-directed, constructive and situated learning within the framework of digital teaching/learning processes. The "D" for "digital" is added to indicate that the focus is on computer and video games as digital games.
Importance	The integration of GBL in teaching and learning scenarios aims at improving the participants' motivation to learn and enhances the learning process.
Use	Game-based learning is characterised by the following features:

	▪ different game mechanisms are combined with each other ▪ the application of the game is digital or analogue ▪ the learning process feels like playing ▪ learning becomes a positive experience
Sources	Video: https://www.youtube.com/watch?v=zPFJQgsATOk [12.12.2020].

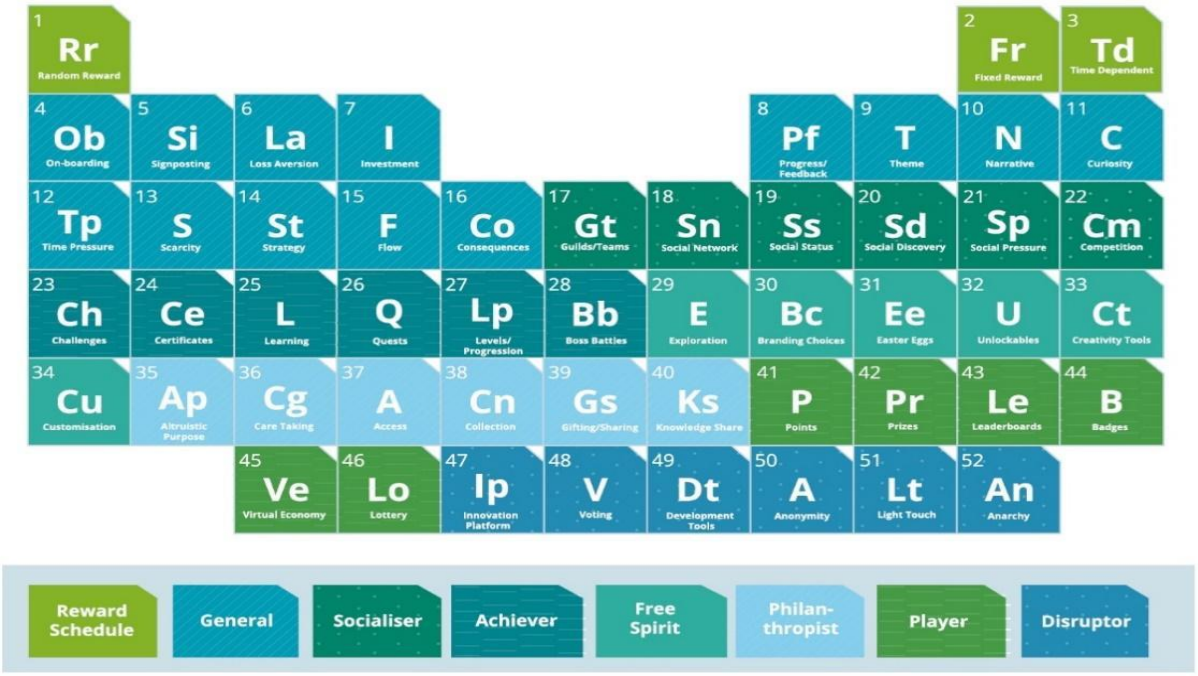
6.1.4. SHEETS FRAMEWORKS

	Learning attributes to game mechanics
Description	Classification of learning attributes with game mechanics as means to scaffold teachers' understandings of how to perpetuate in learning in games.
Importance	The classification may help teachers to design learning elements and make decisions on how they may visually be represented in GBL instances. Most essentially it amalgamates fun with learning, feedback and assessment
Use	

Learning Attribute	Game Attribute	Outcomes	Feedback/ Assessment	Teacher Roles
Information transmission	task description; multiple choices to select, content description, challenge repetition, scoring	Remembering	Progress; affect Summative	Designer/ evaluator
Individual	Game journal, missions, objective cards, storytelling, dialogues, puzzles, branch tasks, research points, study requirements, game levels	Understanding, applying, analysis	Motivational; Progress, affect Formative and/or summative	Player, Facilitator, Designer, motivator, evaluator
Collaborative	Role-playing, community collaboration, epic meaning, bonuses, contest, scoring, timers, coins, inventories, leader boards, communal discovery; game levels	Applying, analysis, evaluating, creating	Motivational, social Formative and/or summative	Player, facilitator, motivator
Discussion and argumentation	Nested dialogues, NPC interaction, in-game chats; game levels, research track, maps; progress tress	Evaluating, understanding, analysis	Motivational, affect, social Formative	Motivator, evaluator, facilitator

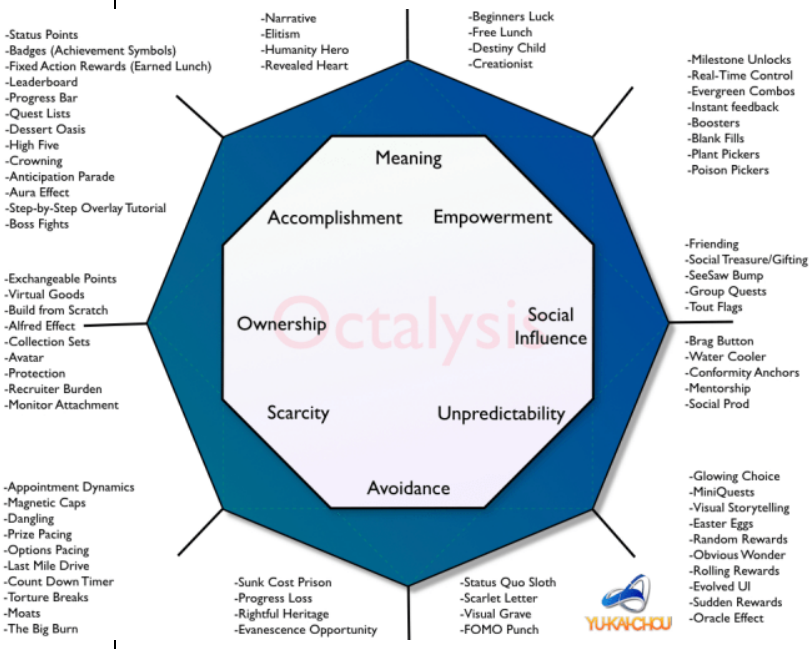
Examples	▪ Deciding the type of learning activities designed in games ▪ Understanding types of teacher roles in facilitating learning in games ▪ Balancing rules, goals and choices, tasks and challenges, collaboration, assessment and feedback
Sources	Lameras, P., Arnab, S., Dunwell, I., Stewart, C., Clarke, S., & Petridis, P. (2017). Essential features of serious games design in higher education: Linking learning attributes to game mechanics. British Journal of Educational Technology, 48(4), 972-994. https://doi.org/10.1111/bjet.12467

	Periodic Table of Gamification Elements
Description	There are a variety of game elements that can be used in different contexts. Marczewski's periodic table gives a comprehensive overview of these elements.
Importance	Different game elements motivate and address individuals differently. The selection of game elements thus supports the target group-oriented design of gamified applications.
Use	The periodic table of gamification elements (Marczewski 2017) includes 51 game elements. These are assigned to the following categories:



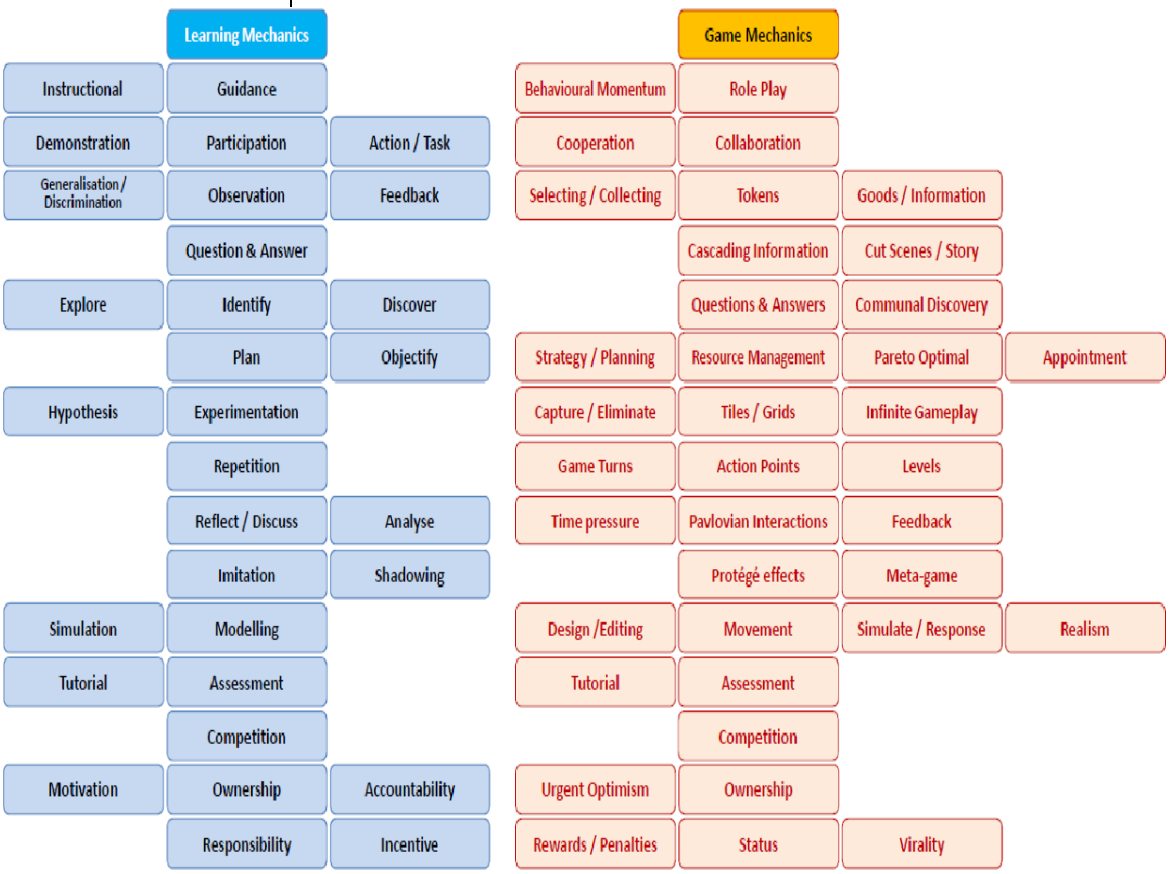
Examples	▪ Narration, embedding something in a story ▪ Time pressure, giving a task a countdown ▪ Rewards, badges, prizes ▪ Competition ▪ Exploration, discovering an environment and details ▪ Challenges, missions, quizzes ▪ Collect points, view leaderboards ▪ Advance to new levels
Sources	Gamification tools, game-play, game mechanics & game elements https://aestranger.com/products/gble/toolkit/ Marczewski, A. (2017). The Periodic Table of Gamification Elements. https://www.gamified.uk/2017/04/03/periodic-table-gamification-elements/

	Octalysis Framework
Description	Octalysis, is a human behaviour-focused gamification framework based on eight core drivers of human motivation: 1) Epic Meaning & Calling 2) Development & Accomplishment 3) Empowerment of Creativity & Feedback 4) Ownership & Possession 5) Social Influence & Relatedness 6) Scarcity & Impatience 7) Unpredictability & Curiosity **8)** Loss & Avoidance
Importance	Games are fun because they appeal to certain core drives in humans that motivate us to engage in certain activities and

	increase engagement. Here, different types of game techniques can drive the user differently: some in an inspirational way, others in a manipulative and compulsive way. Everything that humans do is based on one or more of the 8 core drives.
Use	 *The Octalysis framework consists of 3 stages:* The first stage is primarily concerned with the use and development of the 8 motivators. This knowledge from Stage 1 can then be applied to Stage 2, where the aim is to optimise the experience in all four stages of a game's journey: 1. Discovery (why would people want to embark on the journey in the first place). 2. Onboarding (how to teach users the rules and tools to play the game) 3. Scaffolding (the regular path of repeated actions towards a goal) 4. Endgame (how do you keep your veterans). This is specifically about getting a sense of what the players feel during the journey.

	Once level 2 has been mastered, the next step is to consider the different types of players to see how different types of people are motivated at different stages of the experience.
Sources	Chou, Yu-kai https://yukaichou.com/gamification-examples/octalysis-complete-gamification-framework/

	Learning Mechanics-Game Mechanics
Description	The "Learning Mechanics - Game Mechanics" model is used to analyse serious games in terms of their game elements and learning mechanics. The developed illustration of the LM-GM can represent the interaction of both, so that conclusions can be drawn about the effectiveness of the game from the point of view of game designers and also educators, as well as about the teaching-learning setting in which it is to be integrated.
Importance	The example of serious games shows that games can create a connection between learning and entertainment and thus enable ~~an~~ intrinsically motivated generation of knowledge. For teachers, the LM-GM framework therefore serves primarily as a support to evaluate the effectiveness of a serious game and to translate pedagogical elements into game mechanics.
Use	Educators can use the model to draw a "LM-GM map" (illustration, graphic representation) for a game. This illustrates the most important pedagogical elements of their teaching-learning arrangement and the opposing game mechanics (motivational, entertaining factors) as well as their interaction. A user of the model can thus see which LM and GM are used in each game situation, how they relate to each other and how they can be implemented.



Source	Arnab, S., Lim, T., Carvalho, M.B., Bellotti, F., de Freitas, S., Louchart, S., Suttie, N., Berta, R. & De Gloria, A. (2015), "Mapping learning and game mechanics for serious games analysis", British Journal of Educational Technology, vol. 46, no. 2, pp. 391-411, https://doi.org/10.1111/bjet.12113.

6.1.5. SHEET THEORIES

	**Cognitive Load Theory (CLT)**
Description	Cognitive Load Theory is an instructional design theory based on the assumption that information must be processed in working memory to reach long-term memory, but that working memory can only process a certain amount of information and cognitive load.
Importance	Knowledge of the "cognitive architecture" of working memory and the different types of load can be used to design teaching-learning situations in such a way that the highest possible capacities of working memory are available for processing the learning material, so that an effective transfer of the relevant information into long-term memory can take place.
Use	In order to make use of the findings of CLT, the three types of stress on working memory must be known: 1. Intrinsic Cognitive Load As the learning material becomes more demanding and the level of interest decreases, the intrinsic load on the working memory increases. 2. Extraneous Cognitive Load The better these external conditions are, the less cognitive energy has to be expended on processing them. 3. Germane Cognitive Load The cognitive load arises from the actual processing of the learning material.
Example	Playful learning is often used in mathematics lessons. Here it is important to find a balance of the different cognitive loads on the working memory: For less demanding learning content, e.g. addition and subtraction, game variations with several rules and complex goals can be chosen. In the case of demanding learning content - such as written division - on the other hand, it is advisable to keep the external stresses as low as possible - for

	example, by understanding and applying complicated game rules - so that sufficient working memory capacity remains to process the information that is demanding in terms of content.
Source	Sweller, J., van Merriënboer, J. J. G. & Paas, F. G. W. C. (1998). Cognitive architecture and instructional design. *Educational Psychology Review*, *10*, 251-296. CLT briefly explained: https://www.youtube.com/watch?v=UpA6RdE0aYo

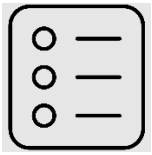
Level 1 – Understand
Explanation: An effective method can only be found if the learning situation has really been understood.
Topics: ▪ Resources ▪ Curricula

6.1.6. SHEET RESOURCES

	**Resources/ general conditions**
Description	Game elements can be integrated into almost any teaching-learning setting. However, certain resources and framework conditions must be met.
Importance	Gamification does not automatically lead to success. Several steps need to be taken into account when implementing gamification. This means that before the development of gamification can

	begin, the general conditions and resources must first be determined and fulfilled so that the desired goal can also be achieved.
Use	At the beginning, the general conditions and resources must be clarified. These include: 1) Determine the general conditions ▪ Identify the problem ▪ Define goals and expectations ▪ Determine main topic ▪ Time resources (time to prepare teaching materials, duration of implementation, etc.) ▪ Existing skills of the teacher for creation ▪ Number of "players ▪ Analysis of the target group (link to personas, player types) ▪ Curricular embedding/preferences (link to Curriculum) 2) Develop concept ▪ Define game idea (theme, story, ...) ▪ Online, presence or mobile? ▪ Synchronous or asynchronous ▪ Define central game elements ▪ How do teaching and game fit together? ▪ What technology (tools, media) should be used? ▪ Technical resources (internet access, beamer, PC, smartphone etc.) ▪ Define required material
Source	Epic Gamification Hangout with Prof. Kevin Werbach - "Gamification: A New Adventure" https://www.epicwinblog.net/2013/05/epic-gamification-hangout-with-prof.html

6.1.7. SHEET CURRICULUM

	**Curriculum**
Description	Game elements can be integrated into the curriculum in various ways or can themselves serve as the didactic framework of a curriculum. The starting point for planning game sequences is therefore the analysis of the existing curriculum, e.g. on the basis of the questions: ▪ Which pedagogical needs are being pursued? ▪ What learning goals are to be achieved? ▪ How is the teaching-learning scenario to be gamified embedded in the curriculum? ▪ What are the needs of the target group?
Importance	The game elements and mechanics used have a direct influence on the competences to be taught or learned (Yunyongying, 2014). If the decision is made to gamify sections of the curriculum (seminars, lectures, only parts of a course), the "big picture" must always be kept in mind. Only in this way can conflicts with other curriculum elements be settled and a connection established within all course components, otherwise this could lead to a negative learning experience.
Use	Teachers have acquired a knowledge of the basic concepts related to gamification. Furthermore, the composition of the target group is known and the curriculum element to be gamified is precisely defined.
Example	Planning gamified learning units, how can teachers proceed: https://www.edutopia.org/blog/project-based-learning-gamification-go-great-together-heather-wolpert-gawron
Source	Yunyongying P. (2014). Gamification: Implications for Curricular Design. *Journal of graduate medical education*, *6*(3), 410–412. https://doi.org/10.4300/JGME-D-13-00406.1

Level 2 – Empathize
Explanation: The aim is to find out the needs, fears, perspectives and emotions involved in the learning situation
Topics: ▪ Persona ▪ Player Types ▪ Learning styles

6.1.8. SHEET PERSONA

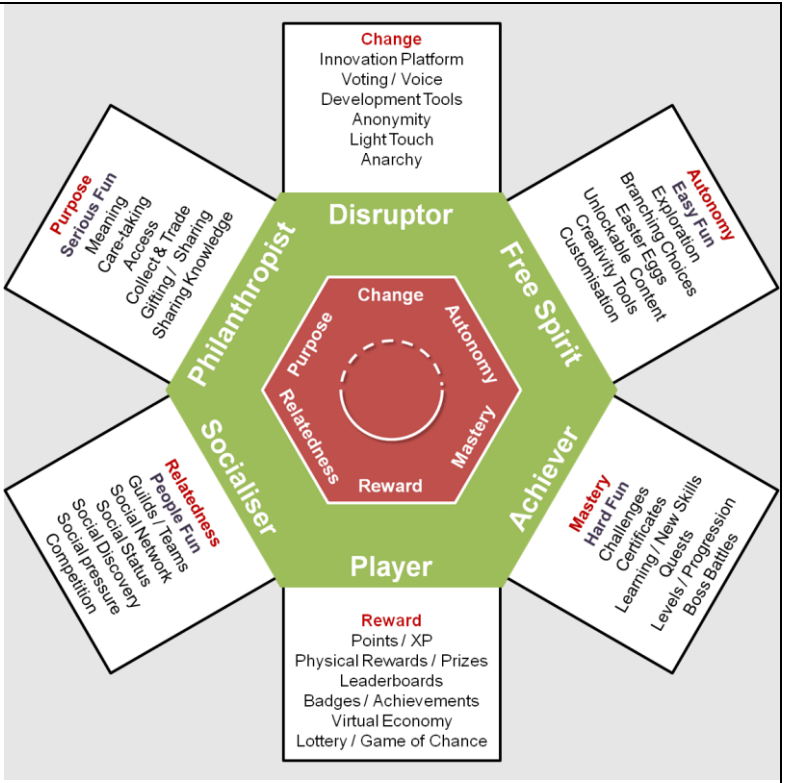
	**Persona**
Description	Persona – is a fictional person with realistic characteristics of the learner. Personas are individual and vividly described representatives of the target group. They are developed based on analyses, tests, observations or existing information. They are used for targeted decisions about functionalities and design.
Importance	Games and game elements have different effects on people. This knowledge helps to understand different motivational characteristics. It helps to answer the questions: "For whom is the teaching-learning arrangement being developed?", "Who is the target group?", "What motivation does the target group have to use the teaching-learning arrangement?", "What requirements does the target group have of the teaching-learning arrangement?" and finally "What design solutions could meet these requirements?".

Use	Use the data you have and start brainstorming. Create fictional learners for whom you want to gamify a teaching-learning arrangement. The following data can help in developing a persona: 1) Gathering the key points & organising data ▪ Characteristics according to socio-demographic criteria (age, gender, etc.) ▪ Goals and tasks according to situational criteria (user tasks, benefits, needs) ▪ Motivation and attitudes according to psychographic criteria (motives, interests, attitudes and values) ▪ Requirements and needs according to behavioural criteria (media use) ▪ Using matrices and clusters, user profile groups can be formed. For example, users could be divided into novice, normal or expert. 2) Preparation of a profile/ short biography
Source	**Journal:** Ewald Judt; Claudia Klausegger (2019). Personas. bank und markt, Heft 8, S. 373. Fritz Knapp Verlag GmbH. URL: https://www-wiso-net de.wwwdb.dbod.de/document/BUMT__017bac157bfe927cd80fa3d5c6f1fd7c8bbaf2fb [17.06.2020].

6.1.9. SHEET PLAYER TYPES

	**Player Types**
Description	There are different types of players, which also play a role in the development of game-based applications. Different models try to classify these player types, e.g. Player Types (Bartle 1996) or User Types (Marczewski 2015).
Importance	Games and game elements have different effects on people. This

	knowledge helps to understand different types of motivation. The analysis of player types supports the target group-oriented design of gamified applications.
Use	Using the example of the 6 User Types (Marczewski 2015): This model differentiates between six types of users, whose motivation is outlined below: ▪ Socialiser are motivated by social relationships and interacting interactions (e.g. social status). ▪ Free Spirit are motivated by freedom, self-development, creation and exploration (e.g. Easter Eggs). ▪ Achiever are motivated by challenges, learning new things and striving for improvement (e.g. quests). ▪ Philanthropist are motivated by the importance of their actions, wanting to give and unselfishly enrich the lives of others (e.g. sharing knowledge). ▪ Player are extrinsically motivated by collecting rewards for themselves (e.g. badges). ▪ Disruptors are motivated by positive or negative change created directly or by other users (e.g. development tools).

	
Example	Test which type of player you are: https://www.gamified.uk/UserTypeTest2016/user-type-test.php?q=l&lang=de
Source	Marczewski, A. (2015). Even Ninja Monkeys Like to Play. Gamification, Game Thinking & Motivational Design. CreateSpace Independent Publishing Platform. https://www.gamified.uk/user-types/

6.1.10. SHEET LEARNING STYLES

	**Learning Styles**
Description	Learning styles are the individual ways in which learners acquire knowledge, skills and abilities. In the context of game-based learning, these different styles should be considered as they have

<table>
<tr><td></td><td>an impact on individual experiences in game settings.</td></tr>
<tr><td>Importance</td><td>The different learning styles of the learners must be taken into account when designing the game-based teaching-learning arrangement, as not all learners acquire knowledge in the same way and there are a variety of learning paths.

The different learning styles result in different types of learners or players.</td></tr>
<tr><td>Use</td><td>The use of game elements and game mechanics is adapted to the different learning styles. Different methods and materials help to address the various styles in order to achieve a high level of learning success.

Example: LEGA

LEGA is a learner-centred gamification framework that aligns the educational world with the gaming world.

It integrates the intended learning outcomes, as well as the different learning styles of the learners, the learning activities and mechanisms, and suggests appropriate game mechanics,

through which the teaching-learning setting can be gamified. At the same time, the game mechanics can in turn be assigned to different player types, e.g. by Andrej Marczewski.

<table>
<tr><th>Teaching/Learning Activities (TLAs)</th><th>Learning Mechanics (LMs)</th><th>Player Types (PTs)</th><th>Gamification Mechanics and Elements (GMs)</th></tr>
<tr><td rowspan="6">- Brainstorming
- Group discussion.</td><td rowspan="6">BT1-REM: Discover, explore.
BT2-UND: Participation, questions and answers.
BT3-APP: Action/Task, cooperation, demonstration.
BT4-ANA: Analyse, feedback, identify, observation, shadowing.
BT5-EVA: Collaboration, hypothesis, incentive, motivation, reflect/discuss.
BT6-CRE: Accountability, ownership, planning, responsibility.</td><td>All types below</td><td>On-boarding/tutorials, signposting, theme, narrative/story, curiosity/mystery box, time pressure, fixed reward schedule.</td></tr>
<tr><td>SOC</td><td>Guilds/teams, social network, social status, social discovery, social pressure.</td></tr>
<tr><td>FR</td><td>Exploration, branching choices, easter eggs, unlockable/rare content, creativity tools, customisation.</td></tr>
<tr><td>PH</td><td>Meaning/purpose, care-taking, access, collect & trade, gifting/sharing, sharing knowledg</td></tr>
<tr><td>PLA</td><td>Points/experience points (XP), physical rewards/prizes, leaderboards/ladders, badges/achievements, virtual economy, lottery/game of chance.</td></tr>
<tr><td>DIS</td><td>Innovation platform, voting/voice, development tools, anonymity, light touch, anarchy.</td></tr>
</table>
</td></tr>
<tr><td>Source</td><td>https://www.researchgate.net/publication/311317334_LEGA_A_LEarner-centered_GAmification_Design_Framework (20.10.2020)</td></tr>
</table>

Level 3 – Define
Explanation: The most important insights from the first two phases “understand” and

"empathize" are merged to derive requirements.
Topics: ▪ Learning Goals ▪ Tools

6.1.11. SHEETS LEARNING GOALS

	**Learning Goals**
Description	Clearly defined objectives facilitate decision-making in GBL design. Each educational intervention or game element must contribute to achieving the defined objectives.
Importance	Objectives define the target state and enable the control of success (evaluation). Objectives of the development of GBL scenarios are learning and game objectives. Learning objectives describe the desired increase in competence of a learner, related to a specific learning object. Play, however, is mainly about emotional, social and motivational aspects (e.g. enjoyment, escape from everyday life, togetherness, etc.). Striking the balance between learning and play objectives is the challenge of GBL design.
Use	**Learning objective** A carefully formulated learning objective comprises three parts, namely the end behaviour, the conditions and the scale. Learning objectives can be assigned to different taxonomy levels. Taxonomies serve to order learning objectives. They help to organise the diversity of learning objectives hierarchically according to logical criteria and are very useful for checking learning objectives. **Game objective** Every game is defined by a (game) goal, which represents the desirable state for the player (e.g. achieving a score, taking on a

	role). These goals are crucial for learning purposes in that they must go hand in hand with the defined learning objectives. The acquisition of a defined skill (learning goal) must lead to the achievement of a goal averted by game mechanics (reaching a higher level). The goal of any game is to motivate the player to perform certain actions and to "keep him in the game". The transfer of game logics to learning processes should therefore stimulate a deeper intrinsically motivated engagement of the learner with the learning object.
Example	https://www.youtube.com/watch?v=OOy3m02uEaE
Source	Taxonomy of Educational Objectives, Allyn and Bacon, Boston 1956, Pearson Education 1984

6.1.12. SHEET TOOLS

	**Tools**
Description	Tools such as Kahoot, LearningApps or H5P support the learning and teaching processes and can be integrated into teaching-learning scenarios as small interactive, multimedia building blocks. The free tools can be used to test knowledge in a creative way.
Importance	▪ Use to increase the motivation of the participants, through the short change of methods. ▪ To determine individual and overall knowledge levels ▪ Challenge and ambition through playful competition among participants ▪ Uncomplicated ~~use~~ due to ease of use by teachers as well as learners

Use	Use as an additional teaching tool to activate knowledge, to test knowledge, to secure acquired knowledge and skills or for discussions and coordination within the teaching-learning scenario, e.g. through: ▪ quizzes ▪ single-choice or multiple-choice ▪ surveys ▪ puzzles ▪ open questions etc.
Examples	*Kahoot* ▪ for creating interactive quizzes ▪ Video: https://www.youtube.com/watch?v=7XzfWHdDS9Q ▪ Link: https://kahoot.com/ *Quizlet* ▪ Knowledge check through various generated flashcards, games and tests ▪ Video: https://www.youtube.com/watch?v=7oJk0IBynoU ▪ Link: https://quizlet.com/ *Learning Apps* ▪ Creation of multimedia interactive learning elements ▪ Video: https://www.youtube.com/watch?v=hNgFXHv6eIs ▪ Link: https://learningapps.org/ *H5P* ▪ Offers 43 different interactive applications (also: interactive videos, presentations ...) ▪ Tutorial: https://h5p.org/documentation/for-authors/tutorials ▪ Link: https://h5p.org/ *More tools:* ▪ Learning Snacks

	▪ Quizizz ▪ Mentimeter ▪ Padlet ▪ Classroomscreen

Level 4 – Ideate
Explanation: The systematic development of ideas is one of the most important phases in the development of gamified learning arrangements.
Topics: ▪ Narration ▪ Game Mechanics ▪ Rewards

6.1.13. SHEET NARRATION

	**Storytelling**
Description	Storytelling is used to convey information, knowledge, values and opinions. Through storytelling, learners become emotionally involved. Therefore, the main characteristics of a story can be described as "engagement" and "emotional immersion". This means that the player is immersed in another world and thus remains engaged from beginning to end.
Importance	Storytelling helps to increase motivation to learn and can support problem-solving learning. The increase in motivation to learn can be achieved on the one hand by the player identifying with characters who have a positive attitude towards learning.

	On the other hand, the narrative can strengthen confidence in one's own ability to learn, for example by NPCs (non-player characters) using affirmative language.
Use	There are several aspects to consider when designing the story: ▪ **Purpose of the story**: What is the learning objective of the story? What message should the story convey? ▪ **Narration:** What narrative form is used? ▪ **Dramatic question:** The question of whether the protagonist will reach his or her goal; usually answered at the end of the story to maintain the suspense. ▪ **Characters in the story:** The characters can be either simple or complex, which in turn influences the plot. ▪ **Language used:** The language should be adapted to the target group of the story. ▪ **Emotional Content:** The emotions experienced by the characters are conveyed to the learners. ▪ **Story content:** the story can be delivered through text, speech, music, video or animation; a combination is also possible.
Example	Games for Change
Source	Smeda, N., Dakich, E., & Sharda, N. (2010). Developing a framework for advancing e-learning through digital storytelling. http://www.iadisportal.org/digital-library/developing-a-framework-for-advancing-e-learning-through-digital-storytelling

6.1.14. SHEET GAME MECHANICS

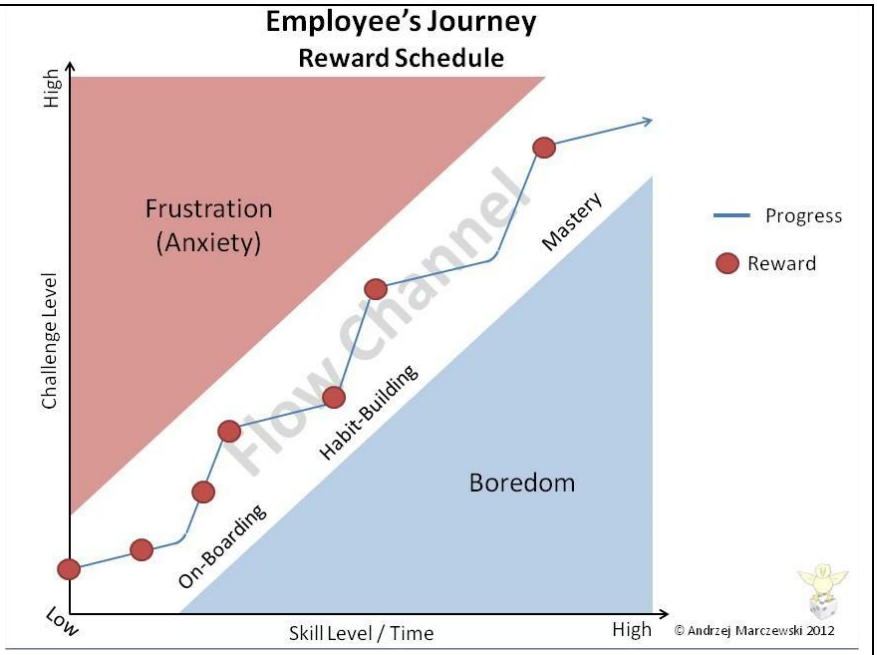
	**Game Mechanics**

Description	Game mechanics are "playful" components such as puzzles, quizzes or memory that serve to trigger interaction. In doing so, they function primarily to enrich learning activities. An interaction in this case means the relation to other players/learners, i.e. it always takes place when several learners compete with or against each other. This can take place in different game modes, e.g. in a competition (individual player competition, several groups compete against each other, etc.) or in the sense of a cooperative game (everyone pursues a common goal and the players support each other).
Importance	Interactive methods are becoming increasingly important for knowledge transfer. Through interactive learning modules, one tries to create incentives and participation structures that "activate" learners, or rather, make them receptive to knowledge.
Use	Game mechanics can be used both analogue and digital. There is a wide range of interactive content that can be used in teaching-learning scenarios: ▪ Quizzes ▪ Drag and drop ▪ Single/Multiple choice tests ▪ Find the mistake ▪ puzzles ▪ Image pairing ▪ Brainstorming ▪ Fill the blanks ▪ Word Grid ▪ Guess ▪ Hangman ▪ Interactive group work (e.g. World Café) ▪ Votings ▪ Simulation games

	▪ Scavenger Hunt
Example	Tools, e.g. H5P and LearningApps
Source	Schell, J. (2015): The Art of Game Design. A book of Lenses (2. Ed.). https://iums.ac.ir/uploads/%5BJesse_Schell%5D_The_Art_of_Game_Design_A_book_of_l(BookFi).pdf

6.1.15. SHEET REWARDS

	**Rewards**
Description	Rewards can be both intrinsic and extrinsically motivating for learners. An intrinsically motivated sense of achievement occurs when a milestone ~~to be reached~~ in the learning arrangement is achieved. If these achievements are linked to external factors (e.g. badges, points, rankings, physical prizes), extrinsic motivational factors are applied. Rewards are to be understood as a recognition of achievement, not the achievement itself.
Importance	Rewards can be used to recognise achievements/milestones (e.g. competences gained or knowledge acquired). They can also be used as reinforcing rewards at important points within the individual learning path (the Learners Journey). Rewards need to be well defined, i.e. learners know what actions have earned them a reward and exactly what success is being expressed. The following illustration of the Employee's Journey can be applied to the Learners Journey in an equivalent way.

	
Use	▪ Fixed Reward Schedule: It is important that (learning) achievements are recognised. A reward schedule defines in advance which milestones/achievements result in which reward (e.g. badges). ▪ Random Rewards: Surprise wins/successes that are not predictable in time. ▪ Time Dependent Rewards: Promoting motivation by announcing a reward that is only available for a defined time. ▪ Easter Eggs: Unannounced rewards serve as recognition for learners who are especially observant (e.g. mystery boxes). ▪ Physical Rewards/ Prizes: Physical prizes can provide additional external motivation for learners (e.g. book voucher). ▪ Lottery: this type of gambling can be rewarded with physical prizes - but does not have to be.
Example	Swisscom/Samsung: https://www.youtube.com/watch?v=CsGlzu2NzX0 Starbucks Rewards: https://www.starbucks.com/rewards/ McDonalds Monopoly: https://www.youtube.com/watch?v=bgmj6oafTeI
Source	A.Marczewski: https://www.gamified.uk/2019/04/10/rewards-

	and-reward-schedules/ Yu-kai Chou: https://yukaichou.com/marketing-gamification/six-context-types-rewards-gamification/

Level 5 – Test
Explanantion: The results of the previous phases in that stage are converted into a tangible product (prototypes) and tested.
Topics: ▪ Learning Experience ▪ Prototyping

6.1.16. SHEET LEARNING EXPERIENCE DESIGN

	**Learning Experience Design (LXD)**
Description	Learning Experience Design is derived from the term User Experience. The term user experience describes all aspects of user satisfaction, accessibility and the pleasure of interacting with a product or learning possibility.
Importance	Goals of the Learning Experience: ▪ To create positive experiences of users with a teaching-learning arrangement so that a comprehensive engaging user experience of the learning offer can be created. ▪ ~~P~~ositive experiences and feelings such as joy or fun during participation lead increased motivation when engaging with the learning offer. ▪ Achieving the WOW effect.

Use	Games or playful elements aim to achieve a positive user experience for the player/learner. In order for the integration of games in a teaching-learning arrangement to produce a positive learning experience, the following factors must be taken into account: ▪ Learner expectations need to be identified at the outset in order to address them to avoid negative experiences. ▪ Expectations include, for example, the usefulness, usability, accessibility and aesthetics of the teaching-learning arrangement. ▪ Participants' goals need to be analysed in different situations. ▪ The teacher should gain an understanding of the context of use.
Source	https://www.youtube.com/watch?v=pt1RC-tKjtM

6.1.17. SHEET PROTOTYPING

	**Prototyping**
Description	Prototyping serves as a test run before the game concept is implemented in the teaching-learning settings. The following questions need to be answered: (Is the goal of the game clear? Are the game elements understandable? Is the story consistent? Is the learning content internalised? Does the technology work, etc.) Subsequently, test players generate feedback on the game (e.g. using the Thinking Aloud method).
Importance	Prototyping is an efficient learner-centred method to test game concepts before implementation. Through the iterative process, the learning and playing experience is tested. It also contributes to the continuous improvement and optimisation of the game through multiple test runs.

Use	Prototyping can be used in general with teachers (experts) and/or learners to develop game runs/play scenarios with different materials such as paper, Lego etc.). The entire game run is simulated prototypically, with facilitators providing support. This can be followed by an interview with individual players or by a group discussion with the players to generate further feedback.
Sources	Olsen, T., Procci, K. & Bowers, C. (2011). Serious games usability testing: How to ensure proper usability, playability, and effectiveness. In: *International Conference of Design, User Experience, and Usability* (pp. 625-634). Springer, Berlin, Heidelberg. Lim, Y. K., Pangam, A., Periyasami, S. & Aneja, S. (2006). Comparative analysis of high-and low-fidelity prototypes for more valid usability evaluations of mobile devices. In: *Proceedings of the 4th Nordic conference on Human-computer interaction: changing roles* (pp. 291-300).

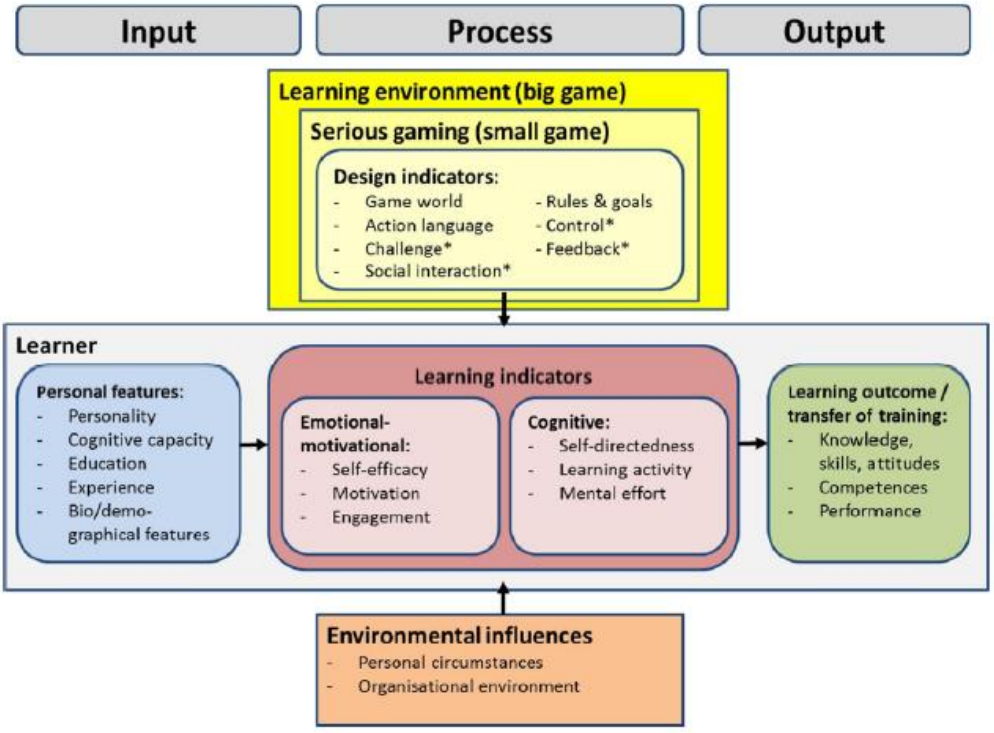
Level 6 – Implement
Explanation: Trying out the gamified learning scenario in practice and getting feedback from learners.
Topics: ▪ Evaluation

6.1.18. SHEET EVALUATION

	**Evaluation**
Description	Evaluations provide information about the efficiency and

	effectiveness, as well as about the achievement of the pre-formulated key performance indicators of a teaching-learning arrangement and can be carried out at different points in time. Each method has advantages and disadvantages depending on the objectives.
Use	The following considerations must be made in advance: 1. What is to be evaluated? – Object of evaluation ➔ Analysis of the game characteristics (game objective, voluntariness, feedback, game motivation, usability, etc.) 2. What is the purpose of the evaluation? – Evaluation objective 3. How should the evaluation be conducted? – Evaluation design ➔ Evaluation forms: Formative or summative evaluation 4. What will be used for the evaluation? – Survey and evaluation instruments ➔ Questionnaire, interviews, observations, comparison groups 5. When is the evaluation carried out? – Evaluation date 6. Who carries out the evaluation? – Evaluator 7. Who will be evaluated? – Actors, participants 8. Under which conditions is the evaluation carried out – Evaluation standards, quality criteria?
Example	

The game-based learning evaluation model (GEM) (see online version for colours)



Source	**Game Based Learning Evaluation Model (GEM)**: https://www.researchgate.net/publication/290648891_The_game-based_learning_evaluation_model_GEM_Measuring_the_effectiveness_of_serious_games_using_a_standardised_metho

6.2. CHECKLIST

You would now like to design your own scenario for teaching? Very good, you have already received some of the most essential information in the Training of Trainers. Here you will find a checklist and a few more tips on how to get started.

Checklist for gamification of a learning activity

Phase	Guiding questions (keywords)

Understand the learning situation.	▪ personal strengths/weaknesses of the teacher (gamification readiness),
	▪ Consider the general conditions:
	  ○ Time resources, premises, number of participants.
	  ○ Does the teacher work on gamification alone or is it possible to compere experiences with others?
	▪ Keep the technical effort as low as possible. Remember: GBL also works non-digitally.
	▪ Start with simple and short methods

Empathize: Find out the needs, fears, perspectives of the people involved in the learning situation.	▪ Which objective is to be pursued with the gamification? ▪ What does the teacher want to achieve with gamification? ▪ What types of players can be involved?

Define: Findings from the phases "Understand" and "Empathize" are combined and requirements are derived.	▪ Plan the integration into the lessons and proceed in a learning goal-oriented way. Games as learning media are not a substitute but part of the lesson. ▪ Who is my target group/player types and with which learning activity do I reach them? ▪ How can the learning activities be "transformed" into game mechanics? Collection of ideas ▪ Which story fits the topic
Ideate: The systematic development of ideas is one of the most important phases in the development of gamified learning scenarios.	▪ Collect things that fit your story. ▪ How exactly do you envisage the player actions/quests? ▪ What are the game rules and restrictions? ▪ Seminar game plan incl. milestones ▪ How/through what will your players receive feedback? ▪ What rewards do you want to use and when?
Test: Testing is at the centre of the creative process. In this phase, the results of the previous phases are transformed into a tangible product.	▪ Test, test, test ▪ Would you like to have the entire lesson evaluated or individual (analogue) game elements? ▪ Can you convince your colleagues to be test subjects?
Implement: Try out the gamified scenario in practice. Incorporate feedback.	▪ Is the teacher gamification-ready? ▪ Trail and Error Principle ▪ Keep a playful attitude, reflect on the experience, revise the GBL method and allow yourself and your students several test runs to get familiar with / familiarize yourselves with this new learning culture