



## Guidelines for MMS Game implementation into different teaching and learning settings



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Guidelines for MMS Game implementation into different teaching and learning settings

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## OBJECTIVE

Games always have been part of the human learning experience either in *formal* or in *informal* settings. The so-called *Serious Games* (SGs) = digital learning games have become both a growing market and a field of academic research e.g. such as psychology, cultural studies, computer science, business studies, sociology and pedagogy. Research has shown that serious games can be effective as an instructional tool and it can assist learning by providing an alternative way of presenting instructions and content.<sup>1</sup> Despite the widespread use of commercial games and the increased attention that the domain of games-based learning has received, strategies for supporting the more efficacious methods of learning with games were uncertain until very recently. Teachers, trainers and tutors (as well as parents) were unsure which games to use, in which context to use games and how they could be evaluated and validated. The aim of this guide is to provide a basic pedagogical background on the implementation of the Money Master Game in formal, non-formal and informal learning, to effectively support pupils and students in getting financial competences.

Note: Although the Money Master game is explicitly designed for learning, the learning may occur as a side effect of playing.

## SCOPE

The Money Master partnership developed a Training Kit which contains three tools:

- (1) Guidelines for implementation into different teaching and learning settings
- (2) Handbook with financial and economical educational contents
- (3) Game User Manual

This guide (1) reflects the different experiences of project partners and their stakeholders in the use of digital games in teaching activities. It addresses several issues of the Money Master (MMS) implementation in different teaching and learning settings: informal, non-formal and formal settings.

Learning context	Specifics	Support by MMS Training Kit
<b>Informal</b>	<p>Learning is not intentional, it is never organized. Learning can take place anywhere and at any time. Rather than being guided by a rigid curriculum, it is often thought of experiential and spontaneous. It is essential to young person`s cognitive development.</p> <p><i>Example:</i> Free Play of the Money Master game by students outside of eg school or university settings</p>	<p><u>Players:</u> Game User Manual – gives technical detail on how the game can be accessed and played</p> <p><u>Parents:</u> This Guide, Chapter I – describes the characteristics of the MMS game</p>

<sup>1</sup> A.Protopsaltis, L.Pannese, D.Pappa, S.Hetzner: **Serious games and formal and informal learning**, eLearning Papers N 25, July 2011 • ISSN: 1887-1542 • www.elearningpapers.eu



<p><b>Non-formal</b></p>	<p>Learning may or may not be intentional or arranged by an institution, but is usually organized in some way, even if it is loosely organized. Learning is more easily adapted to the individual learner’s needs. There are no formal credits granted in non-formal learning situations.</p> <p><i>Example:</i> the play of the MMS Free Game or the missions follow teachers and trainers recommendations (“afternoon voluntary “ activities, leisure activities)</p>	<p><u>Players:</u></p> <p>Game User Manual - gives technical detail on how the game can be accessed and played</p> <p><u>Teachers &amp;Trainers:</u></p> <ul style="list-style-type: none"> <li>- This Guide, Chapter I – describes the characteristics of the MMS game</li> <li>- Handbook – describes the educational contents of the MMS Missions and provides links to additional ressources</li> </ul>
<p><b>Formal</b></p>	<p>Learning is intentional, organized and structured. Formal learning opportunities are usually arranged by schools, universities, training providers etc. Learning activities are guided by a curriculum or other type of formal programme.</p> <p><i>Example:</i> the Money Master Game is implemented in the curriculum of the subject at schools or universities.</p>	<p><u>Players:</u></p> <p>Game User Manual _ gives technical detail on how the game can be accessed and played</p> <p><u>Teachers &amp;Trainers:</u></p> <ul style="list-style-type: none"> <li>- Game User Manual</li> <li>- This Guide, Chapter I describes the characteristics of the MMS game</li> <li>- This Guide, Chapter II describes the MMS impementation in pre-, co- and post-teaching strategies</li> <li>- Handbook – describes the educational contents of the MMS Missions and provides links to additional ressources</li> </ul>

The project partnership hopes that Training Kit will encourage trainers and teachers in using the Money Master Game by adding understanding and practice. The implementation of the Money Master Game into developing financial literacy competences is highly content and context dependend with many possible solutions. So, this guide cannot present one solution as the ONLY ONE RIGHT SOLUTION. It was the intention of the partnership to develop a game which can be used in several learning situations: formal, non-formal and informal learning.

## TARGET GROUPS

This guide is addressed to a wide target groups. Direct target group: teachers and trainers who want to implement financial literacy contents in teaching of their subjects in formal, non-formal and informal settings. The guide is focused towards to those with some experiences in the field of E-Learning, to the „professional allrounders“ and to those with an interest in innovative teaching.



Indirect target groups are finally the beneficiaries of the Money Master game: youngsters from 12-18 years who are in the acquisition process of financial competences.

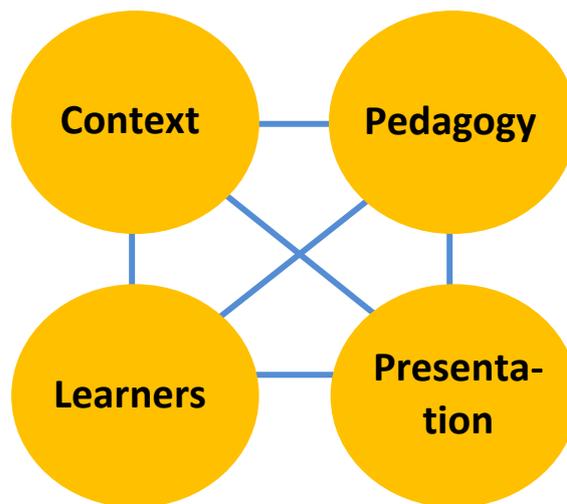
## STRUCTURE OF THE GUIDE

The guide begins in Chapter I with an overview on the four dimensions of the Money Master Game: Content, Pedagogy, the Learners and their Specifics, Presentation. Chapter II looks at issues of Blended Learning arrangements by presenting an overview on basic teaching settings. The authors strongly suggest that you visit the Money Master project website [www.moneyms.eu](http://www.moneyms.eu).

# CHAPTER I: THE FOUR DIMENSIONS OF THE MONEY MASTER GAME

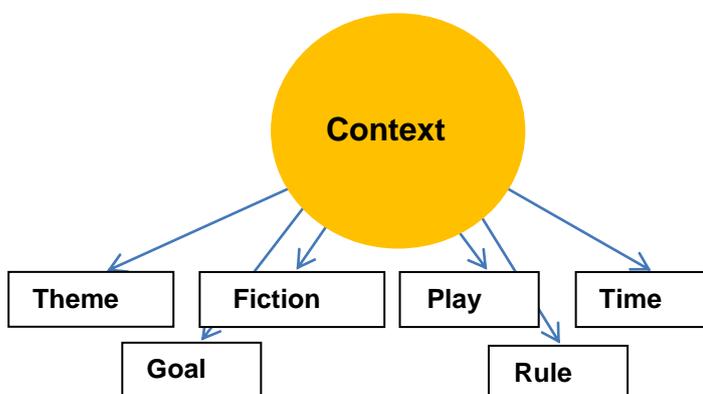
How trainers and teachers at non-formal education providers eg at public prevention consultings, banks, insurance companies, finance clubs etc. and at formal education providers e.g. at schools, colleges, universities can get that information needed to be able to recommend a learning game to youngsters? What makes a game effective for learning?

In relation to the informal learning, the family and household context is one of the most important settings where informal learning takes place. At the same time it is also the primary location where the activity of playing games occurs. On most occasions, the conversations around the games in the household revolve around the time spent on them or the kind of games the youngsters play.<sup>2</sup> Thus, parents want to know too what game they could recommend to acquire eg financial competences.



The Money Master partnership decided to refer to the four dimensional framework proposed by de Freitas and Oliver, (2005). It covers the following areas: Context, Pedagogy, Learners, Presentation. Each of these four dimensions encompasses aspects that are essential for selection & evaluation of a game as well as for effective adoption in educational processes.

## 1.1. Context



<sup>2</sup> Aranda, D., Sanchez-Navarro, J.: How digital gaming enhances Non-formal and informal learning. [www.igi-global.com/chapter/digital-gaming-enhances-non-formal/52505](http://www.igi-global.com/chapter/digital-gaming-enhances-non-formal/52505)



## Theme

The project partners aimed to develop an innovative pedagogy and approach to learning for delivering key financial literacy competences to youngsters. The Money Master Game can be used in regular education settings and other settings (eg blended learning, self-organised learning). The game provides a simulated real life-like environment in which students are faced with key financial concepts and are required to make financial decisions in order to:

- be prepared for financial responsibilities in life. The Money Master Game provides youngsters in the age of 12-18 with the knowledge and skills to ensure a successful transition from financial dependence to independence;
- strengthen their behaviours leading to increased saving, more productive and responsible spending and borrowing for sound reasons.

## Fiction

Fiction refers to the make-believe aspects of the game: environment, scenarios, student`s role etc. The fantasy context of the game is directly related to learning context, as it is an overlay on the skills. The Money Master users are put in the role of an adult with all his/her financial obligations and challenges. The objective is to attain high levels of satisfaction and comfort for life by earning money and making smart decisions regarding spending, savings and investments. Thus, the student will have to finance the daily life, their education and training, leisure activities, vacation and they will have to make decision on savings, loans, current spending, etc.

## Players: Individuals or Group Players

This element refers to the organization of players in the Money Master Game: individual, as a team, multiple individuals (multiplayer), or multiple teams.

## Goals

Goals describe the game's win conditions. They provide motivation for actions within the game.

The Money Master user will have finance daily life, education and training, make decisions on savings, loans, current spending, etc., all of these activities impact on the level of Comfort (CS), Financial Stability (FS) and Amount of Debts (AD). While some spending contributes to CS, it endangers FS, like a new car, allowances, etc. Others, like education expenses, although financially demanding in the short run, can have a very positive impact in the long run on both CS and FS, as they allow for job promotion and bigger pay check. Also some random events can occur to test players' options like car troubles, sudden illness requiring a visit to the hospital, etc. Every situation is used to present and explain important financial concepts, like interest rate, tax, insurances, etc.

The players will progress through three levels giving access to new products and services, till they achieve a status of Money Master. This will allow for a game-like competition, making learning more entertaining and attractive.

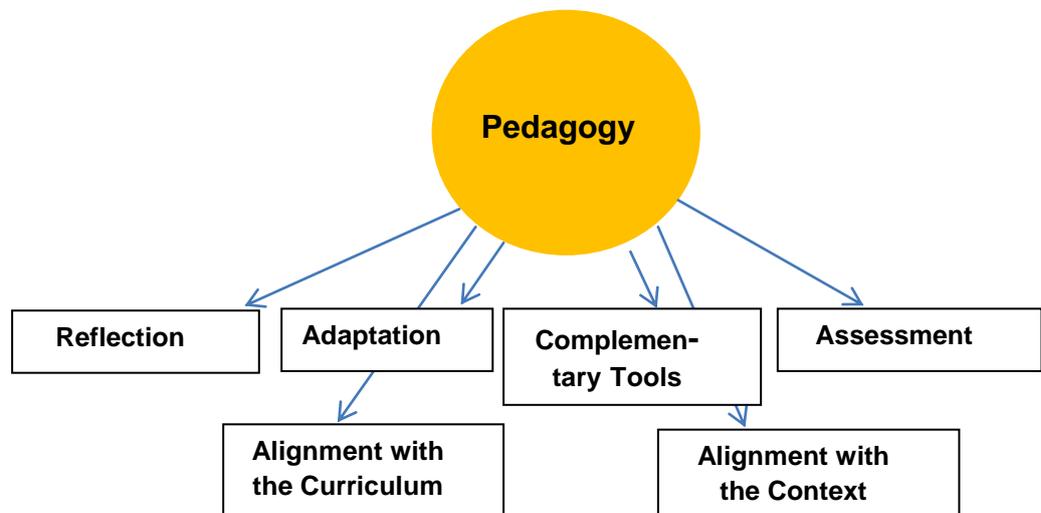
## Time

The playing time varies depending on the mode: Free Play or Missions. Free Play time (=achieving the 3.level) depends on the level of student’s financial competences. As the free play can not be implemented into regular teaching time, so-called missions were developed. The missions represent defined tasks/problematic situations which the student has to solve/manage within 45 – 90 minutes.

## Rules

The game is over when the student comes in the situation of overdebtedness.

## 1.2. Pedagogy



### Reflection

To utilize opportunities for learning, an evaluative session shall be held after the Money Master Game play (free play or missions). In the evaluation, the students and the teacher talk about the experiences and outcomes of the game. The development of a range of competences can be evaluated by applying the so-called Financial Driver Licence.

### Adaptation

The Money Master Game offers two modes: the Free Play and the Play of Missions. For effective learning, the level of difficulty of the Money Master Game increases gradually.

The Money Master Game – the Free Play - offers three levels of difficulty. The Free Play does not recognise any other requisitions.

For a more structured learning the MMS learning area of financial competences has been structured in five sub-areas. The sub-areas are: SAVE; SPEND; BORROW, EARN and INSURE. For each sub-area two Missions were developed: one for the Basic Level and one for the Advanced Level. Thus, the so-called missions offer a time restricted and problem-oriented play depending on learners age: Basic Level for 12-15 aged youngsters and Advanced Level for 16-18 aged youngsters.



## Complementary Tools

The set of complementary tools consists of two helpful guides for teachers and a handbook for teachers and students. This set was developed in order to get teachers as well as students started quickly, to get them out of difficult situations or to get them quickly acquainted with all aspects of the Money Master Game.

## Assessment

Assessment refers to the measurement of the achievement within the game (e.g., scoring). The Money Master Game gives feedback on the outcomes of learners actions immediately. This provides students with opportunities to learn from previous actions.

## Alignment with the Curriculum

The Money Master Game can be embedded in the curricular activities of Schools and Universities as complementary teaching and assessment tools. There are three possible scenarios of the Money Master game within the curriculum:

- the game as pre-instructional strategy for an advance organizer,
- the game as a co-instructional strategy (for examples and practice of learning in a domain),
- a post-instructional strategy (for assessment, re-freshing and synthesis).

The implementation is determined by the curriculum of the given subject and by Money Master Game. A balance between the needs of the curriculum and the structure of the game must be achieved by teachers to avoid either compromising the learning outcomes or forcing the game to work in a way for which it is not suited. The description of the so-called missions inside of the Money Master Game which can be played separately (max 45-90 minutes) indicate suggestions for the use (see the handbook, please).

## Alignment with the Context

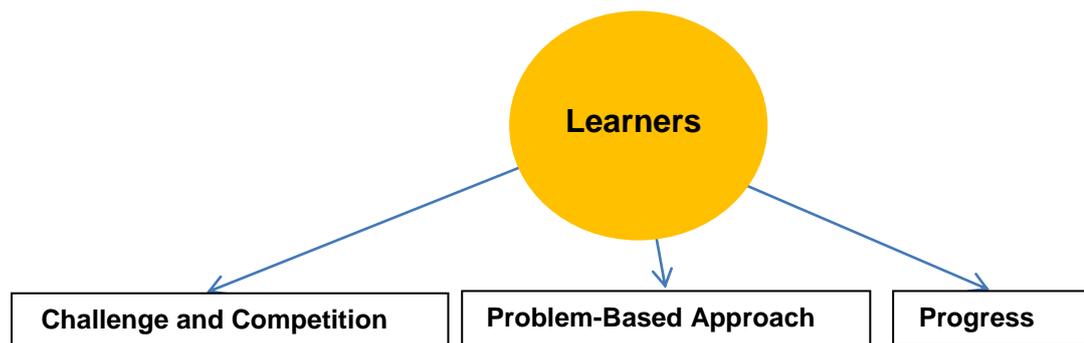
There was an intensive search and discussion between project partners on what issues shall be covered by the Money Master Game and how the topics shall/can be covered. The result is a balanced compromise of needs in project partner countries and technical possibilities within the project.

Some comments to the model behind the simulation game: When simulating technical operations it is commonly easier if you are modelling a cutout of reality to get objective values for the relationship between an intervention of the player and the consequences for the simulation process.

In socio-economical relations assumptions and beliefs are playing an essentially more important role. That could be seen in a number of discussions between some of the members of this project group, for example in the question, what living goals young people usually have or about the detention factor somebody needs longer to overcome a distance when using a bicycle instead of a car.

Your students should know, that the parts of the model behind MMS are not „nature constants“ and if they once try to build up their own MMS-Model, it may look very different but nevertheless acceptable.

### 1.3. The Learners and their Specifics



#### Challenge and Competition

The Challenge of the Money Master Game refers to the amount of difficulty and probability of obtaining goals a learner has within the game. The game possesses multiple specified goals by levels of difficulty, progressive difficulty, and informational ambiguity. The challenge adds fun and competition by creating barriers between current state and goal state. Combined with feedback, the Money Master Game provides a systematic balance of difficulty that changes as the learner progresses.

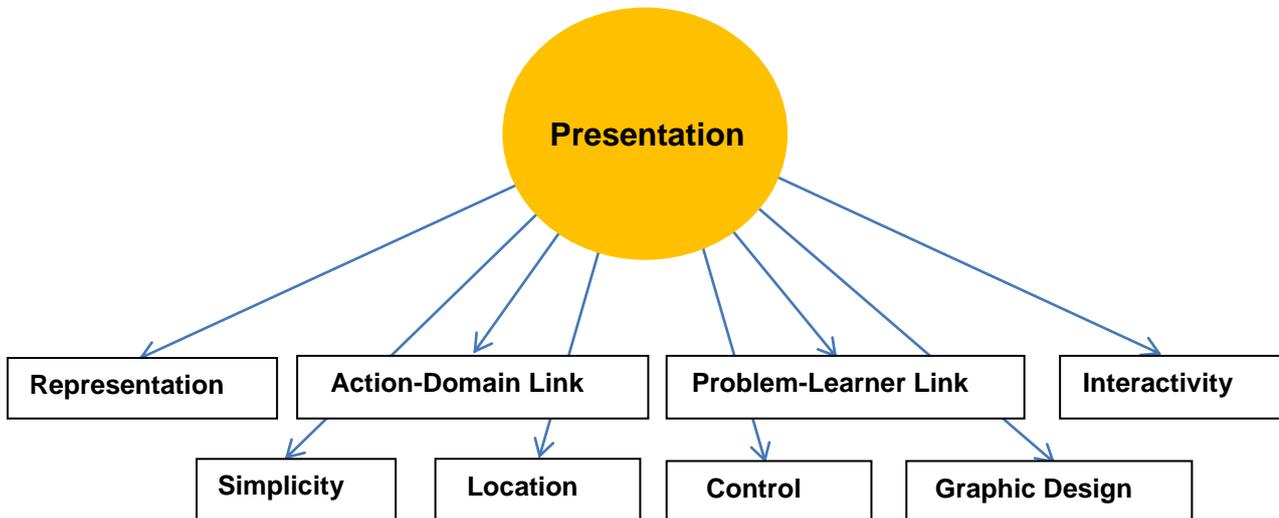
#### Problem-Based Approach

The Money Master Game presents problems that the learner is confronted within the game and that drive the game's plot. The Money Master Game is focused on the development of financial literacy of youngsters. The conflict can be provided here by him/herself or by other players.

#### Progress

The Money Master Game incorporates measures on how the learner progresses in achieving the goals. The rules of the Money Master Game define the achievement of three goals (Comfort Level, Financial Satisfaction, Amount of Debts) for increasing the individual achieved game level.

## 1.4. Presentation



### Representation

Representation is the player’s perception of the game’s reality, as the game allows. The more narrow scope of representation in the Money Master Game provides the students with focus. The partners hope that visual refinement of the Money Master Game can increase motivation and interest of youngsters.

### Action-Domain Link

The story of the Money Master Game consists of situations where the learners need to apply the knowledge they gained or from playing the game or from classroom activities. This includes a close enough link to reality so that youngsters easily see how to apply knowledge to the real world of adults.

### Problem-Learner Link

The Problem-Learner Link of the Money Master Game is the way in which the game’s location, theme and story relate to the learner’s interests. The problems & situations to be solved are related to typical decisions to be made eg the financing of education measures, of a living place, of holiday packages, of a car, of insurances etc. The project partners hope to have developed links which make the game relevant to the students.

### Interactivity

The Money Master Game is based on a mechanism, that means, that the game changes in response to student’s actions. The implemented interaction and relationship between students induces greater involvement of learners as the challenges become meaningful and acknowledged by



others.

## **Simplicity**

The project partners focused on the development of a simple and not oversized game, which offers opportunities for deeper discussions offline in classrooms.

## **Location**

The location of the Money Master Game is a virtual environment like a landscape with eg banks, insurance companies, education institutes, car rentals etc.

## **Control**

The Money Master Game includes pupils and students possibilities for active and direct manipulation of specific aspects of the game. In order to exert control, the learner needs to be active in making financial decisions. Abundant learner control gives the player a sense of unrestricted options.

## **Graphic Design**

The design of the Money Master Game addresses the WCAG 2.0 requirements. The game shall be usable in inclusive education. Requirements of pupils and students with mild *Special Education Need (SEN)* are met.

## CHAPTER II: THE MMS GAME AS PRE-, POST- and CO-INSTRUCTIONAL STRATEGY

This chapter addresses mainly issues of formal learning settings. Schools, as the formal education institution of reference, have long reflected and investigated the possibilities of introducing different digital resources into classroom, including serious games. The aim of these interventions, without going into too much details, is to improve quality and effectiveness of school educational practices and processes.

Facilitating formal educational processes with technology, with serious games, is a multifaceted process, one that often places particularly high demands on teachers and trainers. In order to fully exploit the potential of an educational game, teachers and trainers are called to possess a range of qualities, attitudes and competences, and to assume a variety of roles. Beyond of possessing subject matter and technological expertise, they need to be competent instructional designers, strong team players, critical self-analysts, confident risk-takers, and path-finding innovators pedagogically open to new ways of approaching the curriculum.<sup>3</sup>

The successful adoption of the MMS does entail some planning steps. In general, the Money Master Game can be used in three formal teaching and learning scenarios<sup>4</sup>:

1. the game as pre-instructional strategy for an advance organizer
2. the game as post-instructional strategy (for assessment, re-refreshing and synthesis)
3. the game as a co-instructional strategy (for examples and practice of learning in a domain)

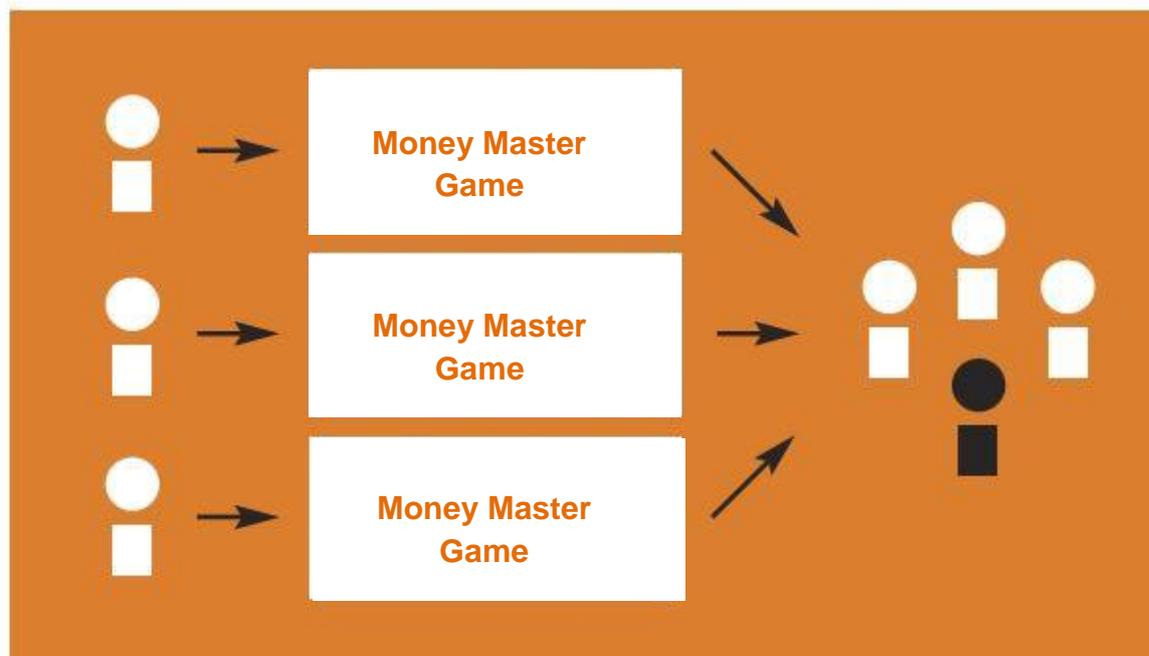
The Money Master Game offer two modes: „Free Play“ and the „Play of Missions“. The following sub-chapters will describe potential implementations of both modes. Below, you will find brief descriptions of the teaching strategies that promote the implementation of the MMS game in formal learning contexts.

### 2.1. The Money Master Game as pre-instructional strategy

The MMS Game as pre-instructional strategy is focused on the exploration of knowledge by students. This strategy works well when paired with extensive supporting activities (group discussions, additional exercises etc) during the following classroom lesson.

<sup>3</sup> Arnab, S. et al: Framing the adoption of serious games in formal education. In: Electronic Journal of e-Learning Volume 10 Issue2, 2012 (PP159-171), available online at [www.ejel.com](http://www.ejel.com)

<sup>4</sup> Each scenario represents a so-called Blended Learning arrangement



## Free Play

### PRO:

- The discussion in the classroom can be organized around the importance of financial competences and the challenges of the financial management. An awareness of the problem can be arised.

### CONTRA:

- The application of the Money Master Game as a pre-constructural strategy for learning of a defined subject or teaching eg the impact of inflation, the credit conditions etc will rather not work due to the complexity of.the game.
- In some schools teachers may be obligated to inform parents about the implementation of the game in teaching activities.
- Consider, that the Free Play can take hours....
- Often pupils and students concentrate all attention on discovering the game mechanism, and not on the content.

## Missions

Pupils and students play a defined mission of the Basic Level or the Advanced Level in one of the subareas (SAVE; EARN; SPEND; INSURE; BORROW).

### PRO:

- The discussion in the classroom can be organized around the specific situation & task which pupils and students had to solve within the mission.
- The teacher can introduce additional excercises (eg work on checklists, group work) in order the strengthen the achievment of learning outcomes.



- The acquisition of financial competences can be assessed e.g. by applying the Financial Driver License.

**CONTRA:**

- The mission may not be focused exactly on that competence which shall be acquired in the given subject. Big part of lesson time may be spent on „outside“ discussions.
- Not all pupils and students might have the required computer equipment at home.

**Scenario:**

Example: Pupils or students played at home the mission EARN/ Basic Level. The teacher plans to support the development of the ability to keep a simple record of money coming in and going out ( Einnahmen-Ausgabenrechnung).

Classroom activities after playing at home

N	App Duration	Activities
1	20 Min	Introduction and short reflection of everybody's experiences with the Mission
2	20 Min	Worksheet: What kinds of earnings are possible?
3	30 Min	Discussion: What are the differences between gross and net? What reductions are made? Why taxes are necessary?
4	10 Min	Introduction of an earning calculator
5	10 Min	Summary /task for homework: search on 3 job advertisements and calculation of the appropriate net income

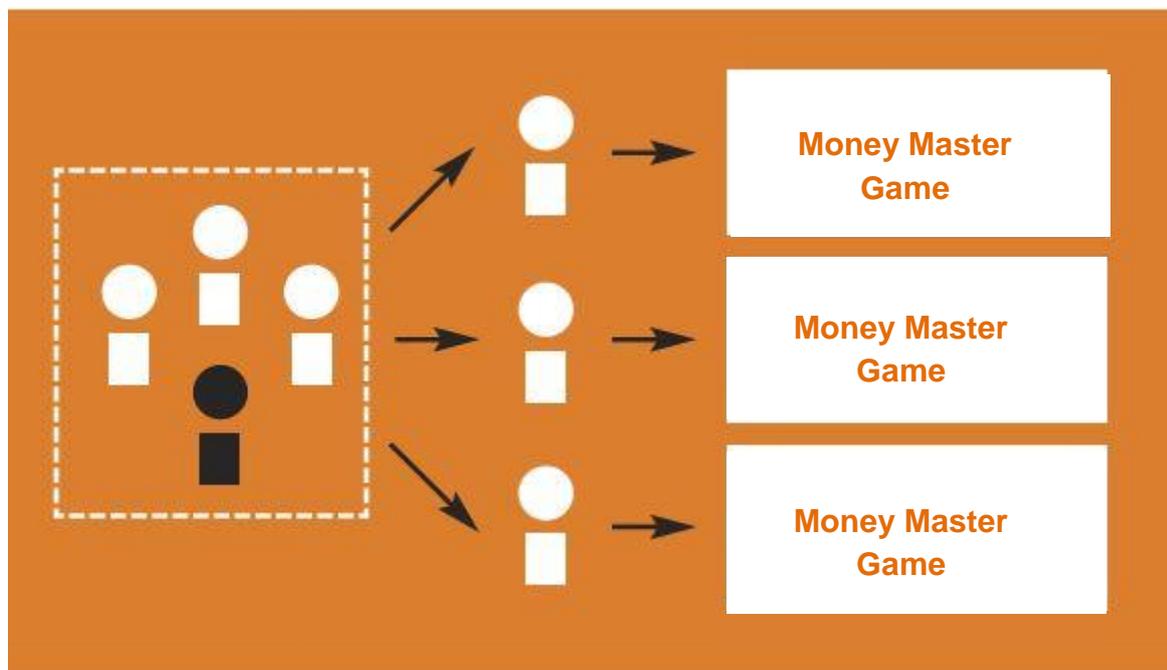
**Summary:**

This strategy is effective because it can demonstrate to the teacher what level of financial competences the students acquired before it is taught (pre- instruction). These same situations of the mission be presented during instruction. Doing this keeps the pupils and students on task and involved. They can not drift away from the problem to be solved. The pupils and students can be given the task to try to play the mission EARN on the Advanced level.

Additionally, playing the game or a mission before the classroom lesson has the effect that students enter the instruction with the knowledge of a defined problem eg planning their budget, financing the vacation etc. Therefore, the lesson may follow a problem-based approach („learn it when you need it“, „solutions as an answer to previous questions not inverted“ etc). This may lead to a more „sustainable“ achievement in comparison to a traditional approach.

**2.2. The Money Master Game as a post-instructional strategy**

The MMS Game as post-instructional strategy means the utilization of prior knowledge. This strategy works well when paired with direct instructions during classroom lessons. Pupils or students might have understood the appropriate financial and/or financial concepts during the lesson before starting to play eg at home. They will apply the information by playing the game/mission and being required to make decisions.



## Free Play

It is recommended to apply the Free Play as a post-instructional strategy. Pupils and students can apply information acquired in classroom lessons. It is also recommended to put this homework task in a structure eg. play two hours – what did you achieve?

In some schools teachers may be obligated to inform parents about the implementation of the game in teaching activities.

## Mission

Pupils or students play a defined mission of the Basic Level or the Advanced Level in one of the subareas (SAVE; EARN; SPEND; INSURE; BORROW) as a homework.

### PRO:

- No classroom time will be spent on technical and instructional matters. Organisational barriers do not occur.
- Teachers can apply traditional methods, tools and exercises in classroom teaching. Pupils apply the acquired knowledge in a defined area by playing a mission.
- The mission may not be focused exactly on that competence which shall be acquired in the given subject.
- The acquisition of financial competences can be partly assessed by playing.

### CONTRA:

- Teachers have to reserve some time for explaining issues and answering on questions after the play, therefore, they have to be familiar with the selected missions and how the game mechanism works.

- Not all pupils may have the appropriate computer equipment at home.

**Scenario:**

Example: Pupils or Students play the mission EARN/ Basic Level in the classroom. The teacher plans to organise a competition between student groups.

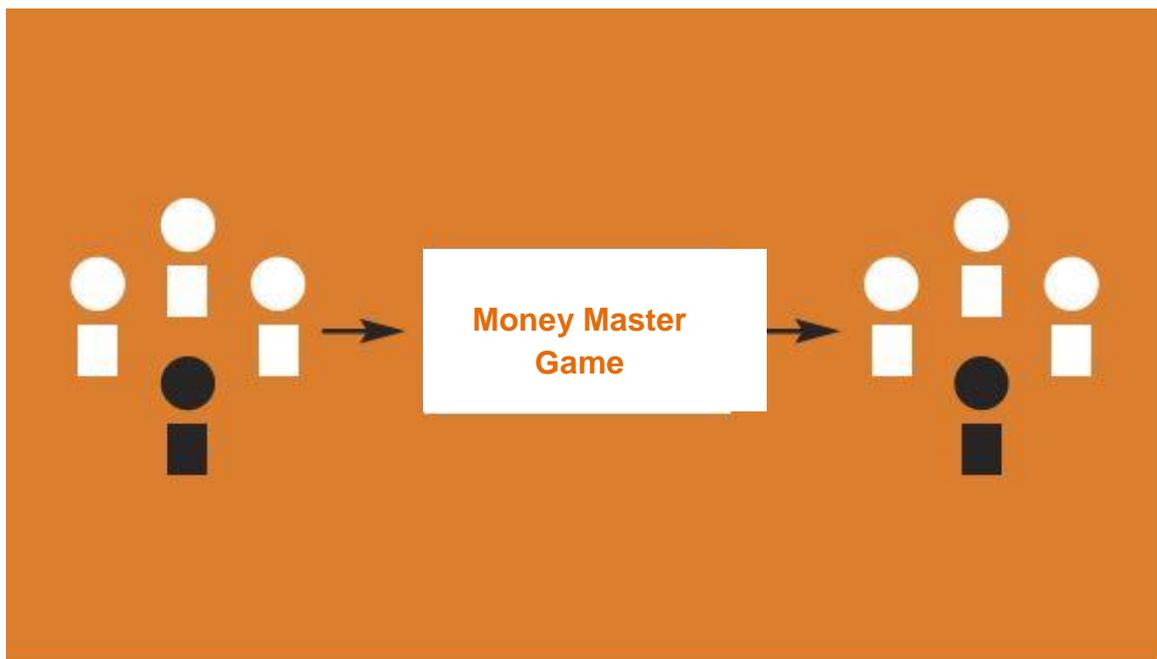
N	App Duration	Activities
1	20 Min	Introduction and discussion on wishes and goals
2	20 Min	Worksheet: What kinds of earnings are possible?
3	30 Min	Discussion:What are the difference between gross and net? What reductions are made? Why taxes are necessary?
4	10 Min	Introduction of an earning calculator
5	10 Min	Summary /task for homework: play the mission EARN

**Summary:**

This strategy is effective because in general students like to play. As the Money Master Game focuses on important financial contents, it may have effect on student achievement by repeating the contents learned at the classroom and by presenting the contents in a simulation. But, the most common error teachers could make when using the Money Master Game is not to be prepared to answer on pupils/ students questions at the following lesson. There must be time in that lesson for discussions and instructions.

**2.3. The Money Master Game as a co-instructional strategy**

A co-instructional strategy can be implemented by implementing following steps: (1) the teacher presents/explains the appropriate educational content eg definition of terms, exercise etc, (2) students play a mission, (3) a discussion, feedback, evaluation will take place at the lesson`s end. The MMS Game is fully embedded in the classroom lesson.





## Free Play

The Free Play will take a considerable play time. It will not possible to implement the Free Play in usual lessons of 45-90 minutes.

## Mission

Pupils and students play a defined mission of the Basic Level or the Advanced Level in one of the subareas (SAVE; EARN; SPEND; INSURE; BORROW) during the classroom session.

### PRO:

- Different settings are possible e.g. step-by-step (pupils and students follow the teacher who are explaining the decisions); pupils and students are playing in groups (the outcomes will be discussed in this lesson).
- The discussion in the classroom can focused on the the mission at the whole or on specific competences.
- The acquisition of financial competences can be assessed by applying the Financial Driver License.

### CONTRA:

- It will be rather not possible to introduce additional exercises in this lesson. The play of game will take too much time.
- The mission may not be focused exactly on that competence which shall be acquired in the given subject. Big part of lesson time may be spent on „outside“ discussions.
- Organisational barriers may occur ( e.g. the avaibility of appropriate equipment in the classroom)
- The teacher must be technically familiar with the Money Master Game and the selected mission.

### Scenario:

Example: Pupils or students played the mission EARN/ Basic Level in the classroom. The teacher plans to organise a competition between student groups.

N	App Duration	Activities
1	15 Min	Introduction: what kinds of earning?
2	15 Min	Discussion: what deductions are made?
3	30 -40 Min	Playing the Mission in groups
4	20-30 Min	Flipcharts: reflections by students, discussion of results
5	10 Min	Summary

### Summary:



This strategy is effective because In general students like to compete as long as the stakes are not high. As the Money Master Game focuses on important financial content, it may have effect on student`s achievement. The play of a mission is not a waste of time. But, the most common error teachers make when using the Money Master game is to add up team points and move on. There must be time in that lesson for discussions and instructions.

One generalization that applies to learning all types of content is that students must have opportunities to revise their understanding of the content as time goes by. When a game has ended and the class has discussed difficult terms and concepts related to the content, the teacher should give students time to revise their notes. A teacher might ask students to look over what they have previously written about this content in their notes and make any necessary changes.



## GLOSSARY

**Formal Learning:** learning is intentional, organized and structured. Formal learning opportunities are usually arranged by institutions, learning activities are guided by a curriculum or other type of formal programme. *Example:* the Money Master Game is implemented in the curriculum of the subject.

**Informal Learning:** learning is not intentional, it is never organized. Rather than being guided by a rigid curriculum, it is often thought of experiential and spontaneous. *Example:* Free Play of the Money Master game by students outside of school settings

**Non-formal Learning:** learning may or may not be intentional or arranged by an institution, but is usually organized in some way, even if it is loosely organized. There are no formal credits granted in non-formal learning situations. *Example:* learning activities follow teachers and trainers (“afternoon voluntary “ learning)

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The guidelines were developed in English and translated and localised for **Portugues, Turkish Lithuanian, Spanish and German speaking users.**