



# DESERVE Handbook for Educators

Entrepreneurial Education in an Experiential and Game-based Learning Scenario

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## 1. Introduction

This handbook has been produced in the DESERVE project. The project's meetings have been supported by a LLP Leonardo Partnership grant in the different partner countries.

The aim of the handbook is to help interested teachers to implement the 4I approach to entrepreneurship education at their school.

In the handbook first the overall approach of the project and its understanding of entrepreneurial mind-set and its approach to learning are described. Second, the four basic dimensions of the approach are explained and the project's process is described. Third the different phases are outlined. The materials to support these phases are included in another set of materials. Fourth an typical agenda for a three-day workshop is provided and alternative possibilities for implementing the approach are discussed. Fifth the special role of educators is described in the different phases. Finally further information for implementation are provided (resources, obstacles and contacts).

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## 2. Fostering the Entrepreneurial Mind-set

In the DESERVE project we want to foster the entrepreneurial mind-set of the students. This contrasts and complements many existing approaches of entrepreneurship education, which require an already developed entrepreneurial mind-set and build on it.

The rationale of focusing on the entrepreneurial mind-set in the DESERVE project is the following. Entrepreneurial mind-set is the most crucial factor in early entrepreneurial education since it is a starting point of the development of entrepreneurial skills as well as entrepreneurial activities by generating interest. Furthermore it is a factor that, from very early on, is shaped by formal and informal educational experiences and becomes a rather stable trait. Consequently, it has to be considered and fostered before entrepreneurial skills and knowledge can be acquired.

Given its importance the entrepreneurial mind-set is not easy to grasp as, firstly, it is a complex construct, defined by individual beliefs, attitudes and metacognitive elements. Secondly, the entrepreneurial mind-set has a latent character working underneath the surface of visible behaviour and actions of a person. Nevertheless it directs our actions and behaviours, which finally result in building successful businesses. So, it cannot be directly observed but it can be assessed using indications from individual behaviour, expressions, work results, or reflections.

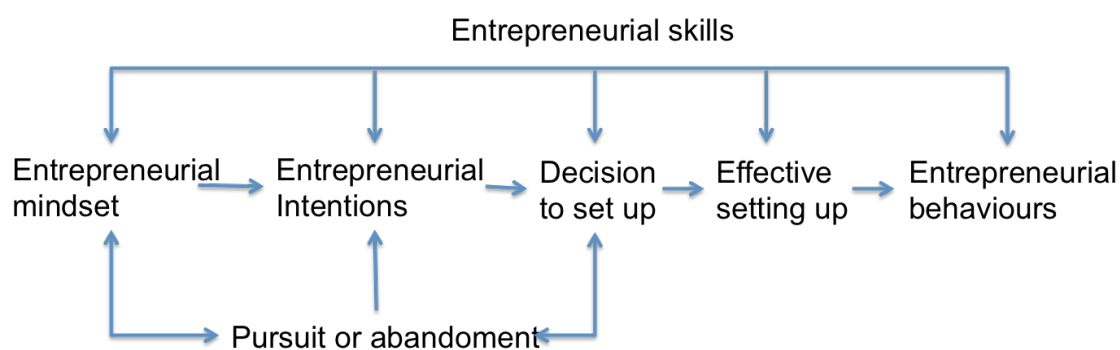


figure 1: The entrepreneurial process by Tounès 2003

In both, the general and vocational educational system the promotion of an entrepreneurial mind-set plays an important role, since it influences the intentions to set up a business, which then have great influence on decisions and finally also the actions.

Fostering the entrepreneurial mind-set broadens the perspective of entrepreneurship education. Taking the complete process of entrepreneurial actions into account entrepreneurship education establishes links to many other subjects and educational activities and requires taking coordinated steps leading to an integrated long-term educational program. In the vision of such an integrated long-term educational program the DESERVE project would address an important starting point in the early phases of entrepreneurship education by focussing on the entrepreneurial mind-set. Looking at the existing approaches, the mind-set is not yet adequately addresses and other programs could benefit greatly from these foundations.

As a result of the complexity and latent character of the construct as well as due to different understandings of entrepreneurship, although the notion of entrepreneurial mind-set is widely used there is no clear consensus on the definition of it.

The entrepreneurial mind-set consists – “for business as well as for all human activities – in identifying opportunities, in gathering resources of various natures, in order to create a wealth that meets a solvable demand” (Albert P. Marion 1997). Attitudes, beliefs and metacognitive aspects

define mind-sets. In trying to define an entrepreneurial mind-set the following typical aspects are discussed in the literature:

- Goal orientation
- Leadership and taking responsibility
- Initiative taking
- Planning / management
- Tolerance of risk / uncertainty
- Creativity / innovation
- Support system
- Motivation
- Autonomy
- Self efficacy
- Internal locus of control

In the DESERVE project and its educational approach we want the learners to have a holistic experience in which all the different aspects of an entrepreneurial mind-set are addressed. In order to do this we developed the Ideas into Action concept.

### 3. Basic Assumptions of the Educational Approach: Action and Reflection in Experiential Learning

The Ideas into Action concept builds on the experiential learning theories described by Kolb among others (Kolb 1984). To foster the development of an entrepreneurial mind-set the learners will first experience a situation in which they act as entrepreneurs by developing a an idea and demo of a computer game as an exemplary product and defining a business plan for producing and marketing the full product.

#### **Reflection on the entrepreneurial mind-set**

To start the work on the entrepreneurial mind-set, we suggest a phase of reflection of the learner's mind-set they have already developed. With the help of guided questionnaires we want to support the self-inquiry of the learners of their attitudes, beliefs and meta-cognitive aspects in regard to an entrepreneurial mind-set. Within the DESERVE project we created a tool in order to give the learners the possibility to reflect on the different aspects. Those statements and the self-assessment can help to identify strength and weaknesses and through this the areas one wants to develop further. Those areas work as points of reference within the following process and a transmission between the own self statements and a specified experience within the setting of the ideas-into-action concept is possible. Throughout the own inquiry in one's own mind-set that is linked to a experience, the mind-sets assessment can get a 'reality check' and on the other side the single experience can make a difference in the self inquiry. This can be seen as one access point to the development of mind-sets.

### 4. The Ideas into Action Concept

The Ideas into Action concept is based on coordinating and integrating four dimensions into the process of teaching and learning an entrepreneurial mindset: the dimension of creative design, the dimension of designing a motivating game, the dimension of an authentic scenario in a game development company and the dimension of community. The link of these four dimensions in one process makes the concept new and unique for entrepreneurship education. Its experiential approach addresses changes in the entrepreneurial mind-set.

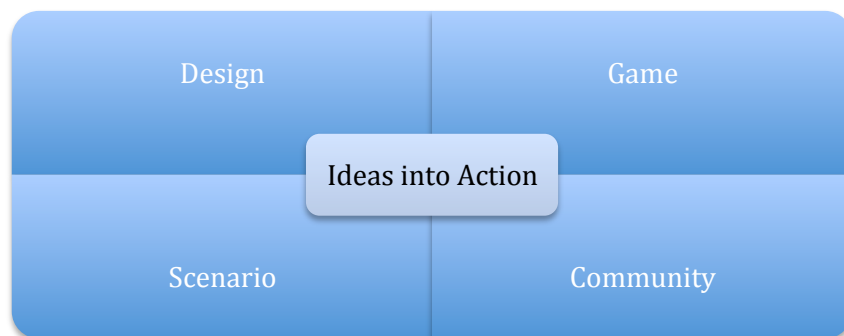


figure 2: Dimensions of the Concept

### 4.1. Design

The creative design of a solution for a problem is the foundation of active and constructive learning and teaching. By going through a development process the learning and teaching processes take on a specific sequence and aim, which ensures alignment of teachers and learners. Furthermore the role of the teachers is changed step by step from initiators to guides and counsellors. The stages of the development process are based on the principals of Design-Thinking<sup>1</sup>. The first key features of this process are framing-reframing of the problem as a synchronization and development of the perspectives of the participants. The second key feature is the prototype as the manifestation of latent meanings and catalyst for the framing-reframing process<sup>2</sup>.

### 4.2. Game

In order to set up the learning and teaching process as a motivating game is based on the assumption, that games are a proven and sophisticated part of our culture to enable anticipative learning. Games can help to solve the inherent problem of anticipative learning, which is motivation. Games are characterized to invoke intrinsic motivation, fantasy and creativity<sup>3</sup>. Game-based learning builds on these principals and uses them for the purposes of formal education. Within the Ideas into Action concept the principals of playful role taking and competition on the one side and designing an own game and therefore digging into the game principals are focused upon.

### 4.3. Scenario

Invoking an authentic scenario situates the learning process for raising motivation, providing a common ground for construction and to prepare the transfer of learning to real life situations. The approach of Goal-based Scenarios<sup>4</sup> underlines the importance of authentic goals for action and the alignment for the motivation and orientation of learning as well as direct and action-oriented feedback. Within the Ideas into Action concept the scenario is set up as an authentic design and development task in a game development company. Feedback is provided within the team, by the experts, and by the community.

<sup>1</sup> <http://dschool.stanford.edu>

<sup>2</sup> Berger, A. & Landmann, W. (2012): Designdenken in Deutschland – Framing und Prototyping in der interdisziplinären Kooperation, In Mensch & Computer 2012, Uni Konstanz.

<sup>3</sup> Huzinga, J. (2004): Homo ludens - Vom Ursprung der Kultur im Spiel, Reinbek.

<sup>4</sup> Schank, R. C.; Fano, A.; Bell, B. & Menachem, J. (1994) The Design of Goal-Based Scenarios. *The Journal of the Learning Sciences*, Vol. 3, No. 4, pp. 305-345.

#### 4.4. Community

Establishing a community of cooperation between the learners and with the experts of the field is a key element of state of the art approaches to design. Cooperative learning fosters involvement in the work, metacognitive elaboration and creative problem solution. Furthermore the ability to cooperate in teams and with communities is seen as a key competence not only for learning but also for future work<sup>5</sup>. It is essential for the successful implementation of cooperative learning to establish individual responsibility as well as positive interdependences. Finally adaptive ways of support and a focused on the development of cooperative skills are necessary for success in this area<sup>6</sup>. Within the Ideas into Action concept work is based on the division of labour and a high level of coordination is necessary in between subgroups. Furthermore the learners are supported by the experts involved and receive feedback and support from the community.

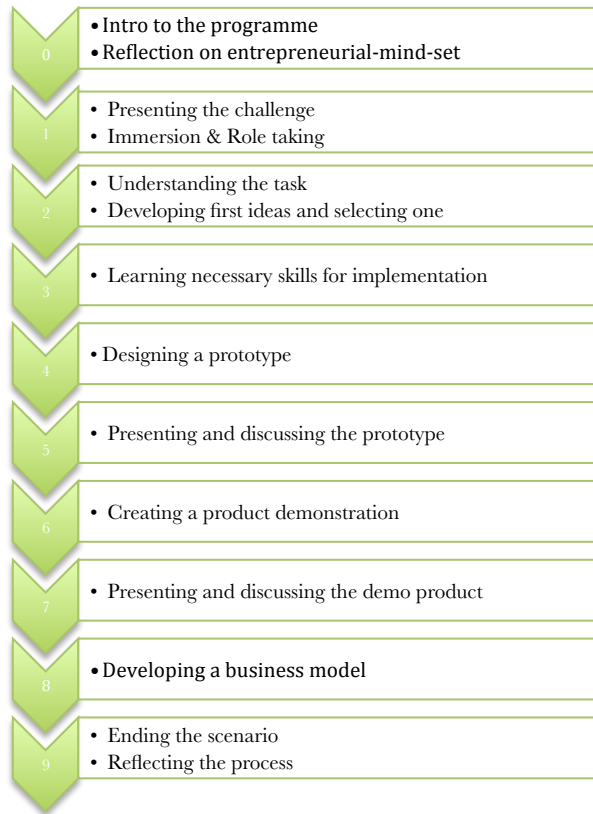
### 5. Ideas-into-Action – The Process

The process starts with a short introduction and a reflection on the entrepreneurial mind-set. After this the first step is introducing the learners to the design challenge of designing a digital serious game. By accepting the challenge the learners also accept the given roles as part of a game development company and start to take over responsibility. In a second step, the junior designers discuss the challenge and begin to understand the dimensions of the design challenge. They will already begin to develop first ideas in this stage. In a third step, subgroups are formed, which start to dig into specific aspects of the challenge and look at the first ideas from these aspects. In a fourth step, the whole group will start to work on a prototype to develop a manifestation and artefact of a possible solution. This early prototype is presented to experts and sponsors of the challenge and receives feedback from the community. Based on the feedback the idea is revised and the process of creating a product demonstration is started. This demonstration will already include key features of the final product and make the path to this product visible. In the seventh step, this product demonstration is presented and discussed with experts, sponsors and community. The eighth step is to create a business model for the product. In the final and ninth step, the scenario is ended and learners and teachers reflect the development processes.

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<sup>5</sup> Slavin, R. E. (1980): Cooperative Learning. *Review of Educational Research*, Summer 1980 vol. 50 no. 2, pp. 315-342.

<sup>6</sup> Felder, R. & Brent, R. (1994): Cooperative Learning in Technical Courses - Procedures, Pitfalls and Payoffs. ERIC Document Reproduction Service Report 377038.

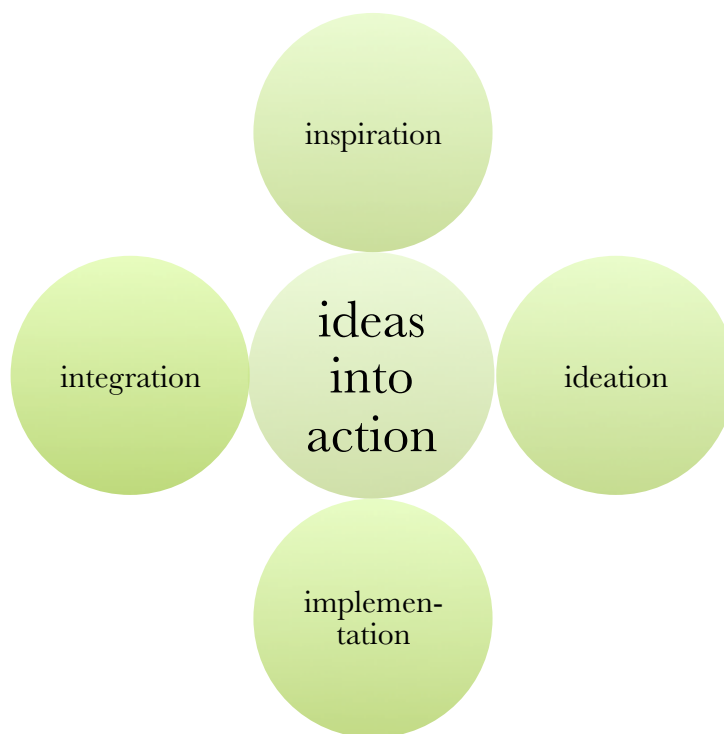


*figure 3: Stages in the concept*

We developed a condensed way of the ideas-into-action approach, following four different stages:<sup>7</sup>

- **INSPIRATION:** Getting the inspiration for the innovation, including the understanding of the design challenge, the phase of being in the mode of empathy and observing the needs of the future users and the better understanding of the demands within the design challenge.
- **IDEATION:** Producing ideas and ideation through creative processes like brainstorming or others and by developing prototypes and testing these prototypes of the digital serious game
- **IMPLEMENTATION:** Implementation as the execution of the ideas and the further design and production of the digital serious game, including the programming of the game, the game design, the graphic and audio design.
- **INTEGRATION:** Integration as a business case, considering the solution as a marketable product and defining the business model behind the idea for integrating the results into existing market structures.

<sup>7</sup> Brown, T. (2008): Design Thinking. In: Harvard Business review June 2008, pp. 85 – 92; Dziersk, M. (2008): Desing thinking ... what is that? Online: [www.fastcompany.com/resources/design/dziersk/desing-thinking-083107.html](http://www.fastcompany.com/resources/design/dziersk/desing-thinking-083107.html).



*figure 4: 4 key phases in the process*

## 6. Overview of the different phases

The 4 phases (also called “4Is”) form the core of the approach and are described in further detail below, including the description of the phase and its aims, the basic functional mechanism of the phase and methods to intervene and support the specific phase. We added further material for each phase in the Appendix. In order to motivate the learners further we set up a role-playing framework in which all phases take place.

### *6.1. Role-Playing Framework*

The role-playing framework puts the learners into their own game of playing the staff members of a game developer that has the task of creating a certain game. The framework allows for additional structure in the phases, such as deadlines, times for presentation, etc. It also allows for varying levels of pressure that influence the working process. For instance, the introduction of an outside stakeholder (usually a client who “pays” for the project) can make the learners focus on getting results and presentations ready quickly. This stakeholder could appear in person or in a video conference and ask for a prototype until a certain deadline. The external introduction of the deadline helps with the immersion of the learners in the scenario and creates a goal and the motivation to reach it.

While the role-playing framework is helpful during all phases, the external influences are most useful in the ideation phase and in the implementation phase.

### *6.2. Inspiration Phase*

In the inspiration phase the learners are going through understanding of the game design challenge. The definition of the problem and the necessary observation of the world in regard to the needs connected with the design challenge is undertaken.



The inspiration phase can foster the following aspects of the entrepreneurial mind-set: Initiative taking, creativity and innovation, leadership / responsibility

### 6.2.1. Aim of the Inspiration Phase

Within the phase the **understanding of the problem** to solve is in focus. It may be the most important question in the overall process, since it defines the 'filters' looking at the needs / problems behind the design challenge and the problem solving. In short this stage aims to ask the right question, which should be solved by the design challenge. In this stage the motivation behind the search for solutions should be outlined or the triggers of the innovation can be captured.

The **human centred** approach of design emphasizes the human behaviour, individuals needs and preferences right from the beginning of the innovation process. Including this perspective from early on, it will lead to innovation, which reflects more consumers needs and what they are willing to use later on

Through different perspectives and the collaboration the understanding and defining phase will benefit from different angles and **multiple perspectives**. Using different starting points for the interdisciplinary analysis of the problem enriches the understanding.

Observation of the people dealing with the problem or having the need will give a deeper understanding of the problem or the need and **empathizing with the** perspective of the user helps to immerse in a user centred way and to look towards the problem from the perspective of the involved user.

### 6.2.2. Conceptual Background of the Inspiration Phase

To design an innovation one has to understand the people for whom the design is for. To enhance the empathy for the users is to better describe the needs the users have and also to define the group of users the innovation is for. By focussing on users behaviour one has the possibility to access emotions behind behaviour that guides behaviours and future decisions. Engage in an experiential view of the need, leads to immersion and a better understanding of the need / problem.

### 6.2.3. Possible Intervention Techniques

The following list shows different kinds of interventions, which could be used in the inspiration phase

- Interview and empathy with the target group / users: prepare the questions, relate to the experience, evoke stories and emotions;
- Engage with heavy users
- Composite profiles of users (typical behaviour, sayings, thoughts, emotions)
- Taking on the mind-set of a beginner: (Question everything, be truly curious, no judgements, find patterns)
- Deepening observation in questioning: what are they doing? How are they doing it? Why are they doing it
- Camera Studies: Catch the perspective of the user with a camera
- Analogues empathy studies

## 6.3. Ideation Phase

In the ideation phase the creating and inventing ideas and first products is fostered. It is the creativity phase within the overall process and tries to develop and construct proactive innovative solutions or first steps towards solutions

The ideation phase can foster the following aspects of the entrepreneurial mind-set: Creativity and innovation, self efficacy, goal orientation, initiative taking

### 6.3.1. Aim of the Ideation Phase

**Generating different ideas** (large number and broad variety) is the overall aim of this phase. With creativity techniques **creative frameworks** can be established, which help to generate more ideas and rule over the existing ‘filters’ and help to make a wide solution spectrum possible. In order to make ideas more palpable the production of **prototypes** makes the ideas obvious and tangible and helps to generate more ideas. Prototyping helps to **apply integrative thinking** and showing the key aspects of the idea in an experiential way. With the prototype the collaborative idea generation gets a point of reference for **common communication and documentation** it is build to think further. The prototype makes the **ideas testable** in an easy and cheap way. Testing can be implemented in a very early stage of the process. It enables to learn through the interaction of the users with the prototype.

### 6.3.2. Conceptual Background of the Ideation Phase

In the ideation phase the step beyond the expected solutions is carried out, through the help of the creative techniques and frameworks. Ideating in a multidisciplinary team helps to broaden the spectrum of possible ideas. Engaging in creative ideas gathering helps to train the ‘out-of-the-box’ thinking and the flexibility of ideation. The prototyping helps to make the ideas experientially accessible and triggers further ideas. It helps to get the ideas from the heads into the worlds.

### 6.3.3. Possible Intervention Techniques

Following list shows different kind of interventions, which could be used in the ideation phase

- Different brainstorming techniques (oral, written, speed brainstorming, always differentiate between ideas collection and evaluation of ideas);
- Ideation under constraints (e.g. morphologic box; 6 hat technique)
- Different prototyping (low-fi – high fi) techniques (e.g. story board, paper theatre, sculptures)

## 6.4. Implementation Phase

In the implementation phase the necessary development steps to create a service or product are conducted.

The implementation phase can foster the following aspects of the entrepreneurial mind-set: Goal orientation, leadership / responsibility, initiative taking, planning / management, motivation, self efficacy, locus of control.

### 6.4.1. Aims of the Implementation Phase

Within the implementation stage the vision is executed by **designing the experience** the users can have with the service / product. In the implementation phase the learners can **learn from the prototype** testing and the solutions applied at production stage. **Iterations of designing and testing** helps to develop the design further on. The overall design is broken down into different work packages, so that different teams can **work on it simultaneously**, the prototype helps to keep the overall view of the design

### 6.4.2. Conceptual Background of the Implementation Phase

The different steps of the implementation phase and its testing helps to **learn more from the users**. Through testing the different stages of the prototypes the human centered design approach is deepened. The production of digital serious game needs the **collaboration** from different parts

(game strategy / game mechanics, programming, graphic design, audio design). The implementation phase depends on the different working groups, interacting together. So the communication between the different subgroups is needed and enhanced within this phase. Within the implementation phase of the digital serious game the components of game development are needed to be re-constructed by the designers, designed in a new way and composed to one solution. This **systemic view** enables the individual to take over the responsibility in an interdisciplinary working set up.

### 6.4.3. Possible Interventions for the Implementation Phase

Following list shows different kind of interventions, which could be used in the implementation phase:

- Depending on the design challenge the overall idea has to be broken down in sub-tasks given to specialized groups. For the case of the development of a digital serious game we see the following groups as necessary: game design / game strategy, programming, graphic design, audio design.
- The nature of the digital serious game needs infrastructure (PCs, laptops, smart-phones audio- / graphic programmes and a basic program structure for the game programming (e.g. stencyl, Game Salad, etc).
- The connections between the different sub-groups have to be structured, through a meeting structure, so that the processes of each groups in line with each other.

## 6.5. Integration Phase

The integration in regard to a business model uses different business model systems to guide the thinking and decision in that phase.

Since a lot of the necessary information are already gathered throughout the design process, the last phase can be considered as a rethinking and restructuring of the already explored information (e.g. in the form of the business canvas model).

The creation of a business model can be supported by given business model structures as guidelines for the necessary information. The form of presentation (e.g. project pitch, business model competition) can help to finalize the business model development.

The integration of different digital services / platforms (e.g. makers faires, kickstarter, etsy, ) can as well support the development of the business model.

Business modelling is the second stage of integration. In this stage the students develop ideas on how the game they started to develop could be turned into a real product in a financially viable way. The overall aim of this stage is to support students in making the decision whether they want to continue to turn their game into a product and become real entrepreneurs. In terms of an entrepreneurial mindset they learn goal orientation, leadership / responsibility, planning and management, tolerance of risk and uncertainty, support system, autonomy.

### 6.5.1. Aims of the Integration Phase

Probably only a very limited number of students will actually continue with this venture in their free time. Still it is important, that this is a real question the students are taking supported by the rational arguments provided by a first draft of a business model. This way the students shall learn to think like entrepreneurs, who follow their passions and their idea, but also need to take an economic and management perspective. The specific aims of the phase are:

- To design the **marketing strategy** by the users information (about the target group, the basic needs, the experience the users can have).

- To reflect on the production stage to **gather information** (e.g. about the necessary resources, costs). Through the prototype and the production phase there is an experiential ground to the business idea.
- To document and **learn from the experience** within the design cycle to enhance future applications.

The main difference of this stage of the Ideas into Action process compared to other approaches of entrepreneurship education dealing with business modelling is, that the students have authentic information about their product and its development, their potential customers and customer needs as a result of the previous stages. Most importantly the product and its production are real and students have gathered authentic experiences in the design process they can now transform into a business model.

E. g. through the human centered approach in the design cycle, the process has up until then gained a lot of knowledge about the target groups, the users needs and expected experiences, which allows a better estimation of the market potential of a product / service. Especially with the prototyping and the testing, the differences in regard to existing services / products should be made visible and the unique proposition of the designed solution can be documented, which also enables a better market research and strategic analysis of the targeted market segment. The prototyping and production phase gives information about what key resources and therefore what kind of suppliers and resource networks is needed for the production.

#### 6.5.2. Conceptual Background of the Integration Phase

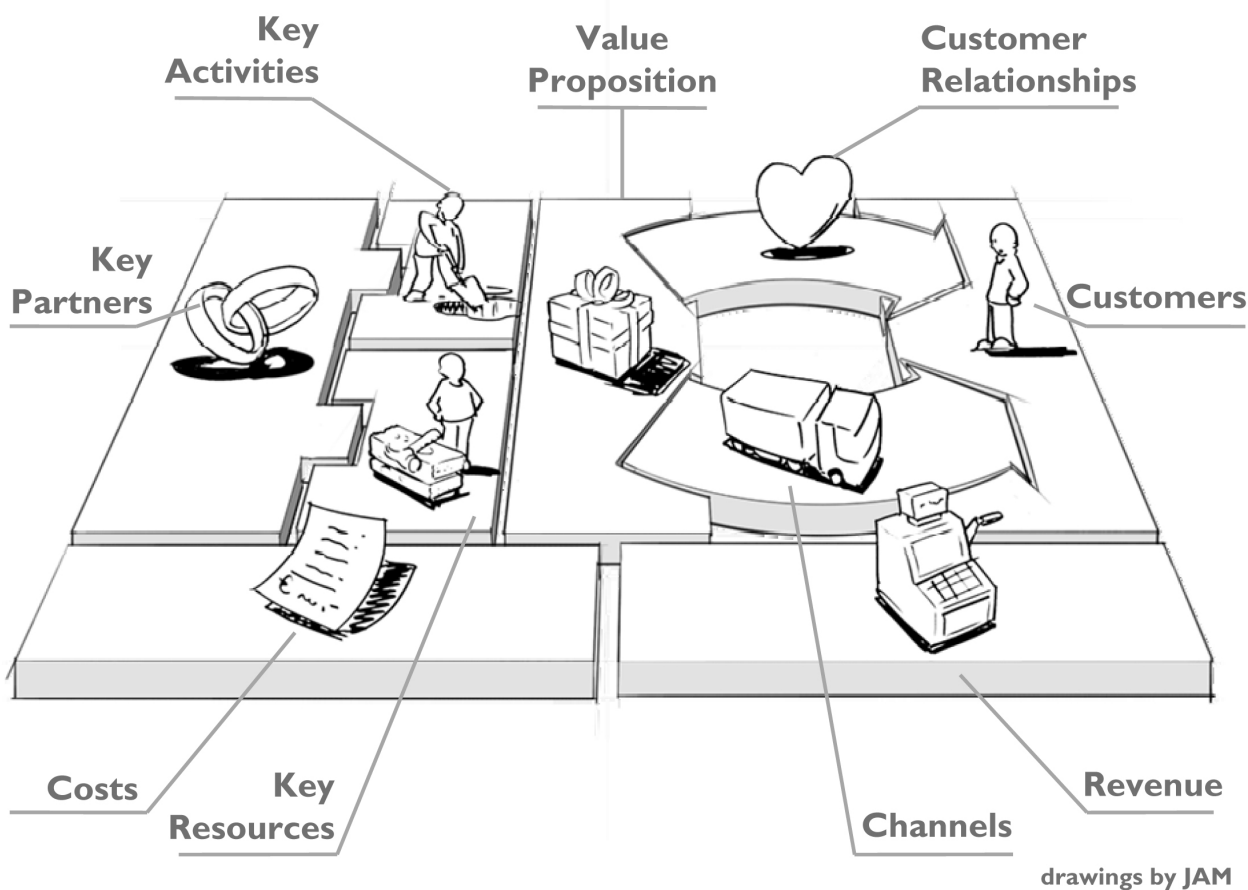
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#### 6.5.3. Possible Intervention Techniques for the Integration Phase

The knowledge needed to construct a business model is transmitted in an inductive teaching approach. Starting from the experiences of the students in the prior stages of the process, the handbook provides questions, which help to transform the experiences made into the different categories of a business model. The theoretical model used in this approach is the business model canvas, which is depicted below.



(see for Osterwalder / Pigneur 2011)

The business model canvas was chosen, because the partners responsible for designing the learning materials of this stage have made good experiences with this model in entrepreneurship education. On a conceptual level the model on the one hand allows to quite intuitively put together a first draft of a business model in a short time. On the other hand the links to state of the art approaches of management science allows to go deeper, where the students are able to follow.

- This stage is framed as a preparation for pitching the product and the business model in front of a critical audience of peers or potential investors. This stage can be linked to the following authentic communities of practice and their tools:
- Business Model Generation community for discussing questions about the model and decisions made by the students,
- Crowd funding platforms like (kickstarter, indiegogo, see for a list of german crowd funders: <http://www.crowdfunding.de/plattformen>) for raising funds, support and gain the attention of potential customers and partners.

Main resource and tool of this stage is the business model canvas (See Annex). For each of the building blocks of the canvas additionally to the general description more specific questions, resources and tools are for supporting the business modelling process for a digital game.

## 7. Typical Agenda of an Ideas-into-Action Camp

The Ideas into Action Programme was initially developed as a three-day offsite Camp. It has been tested within the project as a three-day workshop inside a school and in the next chapter an

alternative way of implementation is described. To provide a concrete idea of how the process can be structured a typical agenda is for a three-day workshop is described next.

<b>First day</b>	
<b>Time</b>	<b>Activity</b>
09.00 a.m. – 09.30 a.m.	Greeting / Introduction
09.30 a.m. – 10.00 a.m.	Reflection on the entrepreneurial mind-set
10.00 a.m. – 10.30 a.m.	Immersion into the role playing scenario
10.30 a.m. – 11.00 a.m.	Inspiration phase (developing first ideas for the game that will be produced)
11.00 a.m. – 11.15 a.m.	Coffee / tea break
11.15 a.m. – 12.30 p.m.	First part of ideation phase (creation of a prototype in different groups)
12.30 p.m. – 01.15 p.m.	Lunch break
01.15 p.m. – 02.00 p.m.	Second part of ideation phase (presentation of prototypes, discussion and decision for one prototype)
02.00 p.m. – 04.00 p.m.	First part of implementation phase: learning (getting used to sound design, graphic design, programming and game design)

<b>Second day</b>	
<b>Time</b>	<b>Activity</b>
09.00 a.m. – 12.00 a.m.	Second phase of implementation: production (in four different teams: game design, sound design, graphic design, programming)
12.00 a.m. – 01.00 p.m.	Lunch break
01.00 p.m. – 03.00 p.m.	Second phase of implementation: production
03.00 p.m. – 03.30 p.m.	Preparation of first presentation
03.30 p.m. – 04.00 p.m.	First presentation in front of an external stakeholder (e.g. a representative of the local chamber of commerce)
04.00 p. m. – 04.15 p. m.	Coffee / tea break



04.15 p. m. – 06.00 p. m.	Second phase of implementation: production
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<b>Third day</b>	
<b>Time</b>	<b>Activity</b>
09.00 a.m. – 10.30 a.m.	Warming up and preparation of presentation
10.30 a.m. – 11.00 a.m.	Second presentation in front of an external stakeholder (e.g. a representative of the local chamber of commerce)
11.00 a.m. – 11.15 a.m.	Coffee / tea break
11.15 a.m. – 01.00 p.m.	Integration (Developing a business model)
01.00 p.m. – 02.00 p.m.	Lunch break
02.00 p.m. – 02.30 p.m.	Preparation for an elevator pitch
02.30 p.m. – 03.00 p.m.	Elevator pitches for the product and its business model
03.00 p.m. – 03.30 p.m.	Coffee / tea break
03.30 p.m. – 05.00 p.m.	Reflection and evaluation

## 8. Ideas into action – alternative approaches for using the model

The Ideas Into Action model was originally conceived as a three day camp for developing digital games and can be delivered in this format (see chapter 6). However, the model is flexible and can be delivered in different ways. This chapter is intended to outline how you can make use of the components of the model in a different format from the original design.

### 8.1. Process

Although a positive experience for students as an intensive two day workshop, it may be that you would like to give students an opportunity to fully develop their thinking and also gain a deeper appreciation of the importance of building productive and effective working relationships with other professionals involved in the process of product development. The condensed format of the three day workshop does not really afford that possibility.

However, taking the “Ideas Into Action” model and delivering that experience across a whole semester would certainly open up the possibility of such experiences as well as offering the opportunity for the model to be embedded into wider curricula.

In taking this semester-long approach we would suggest that the process should be introduced to student via a one day workshop covering the following:

- Introduction to entrepreneurial thinking and approaches
- Outline of the “Ideas Into Action” process

- Brainstorming of product ideas
- Formation of teams of students – into ‘professional groups’ (e.g. audio; graphics; game design etc.) or into groups to develop competing ideas
- Basic team building to give the student teams a sense of shared identity and purpose

The secondary objective of this one-day workshop would be to maximise students’ engagement with the process and hopefully build enthusiasm for the process. The teachers’ role is to facilitate this and to work with the students to maintain this level of enthusiasm for the duration of the semester.

Moving beyond the initial workshop, it would be important to create time and space for the students to meet and work on their product ideas and development for the duration of the semester & we would suggest that it would be important for teachers to take on a mentoring role or the role of ‘critical friend’ to maximise the potential for student to apply related theoretical/academic material to this simulated practice situation. The intention here would be to use the practice they engage in (in relation to their fictitious product) to reinforce their academic learning.

Given the nature of the core idea of the model (i.e. to develop a product and produce a viable plan to take that product to market), it is clear that there are opportunities to begin mirroring the reality of the world of work within the academic environment. Depending on the organisational constraints and enablers in the teaching organisation, it would be feasible (and probably desirable) to involve students and teaching personnel across relevant programmes/disciplines in this semester-long project. This approach will give student an opportunity to experience some of the realities of cross-disciplinary working in the relatively ‘safe’ environment of the academic setting.

Just as we suggest marking the start of the semester-long project with a workshop event, we would also suggest closing the project with a workshop event. In this one-day experience, we would suggest teachers should include the following:

- Each student team pitches their product idea to a panel of potential investors (teachers or others who can be called in to take on that role)
- Each student team to create a display of all of their work on their product idea (including business plan, sale projections etc.)
- De-brief of student teams’ experiences – what worked for them, what aspects could be improved etc.
- Evaluation of student learning from the process
- Identification of further learning for each student

### *8.2. Focus*

Although the “Ideas Into Action” model was developed around the idea of developing a computer game, it could readily be adapted to cover a range of possible products:

- Board games
- Non-digital consumer products (i.e. any physical product of interest to the student group)
- Wearable technology may be an interesting focus for students and could lean more towards the technology aspects or the fashion and design aspects depending on the interests of the students

The key is to enable the students to focus on products and ideas which fire their imagination and capitalise on their interests and desires. Importantly, teachers will want to encourage them to focus on ideas which require interaction between a number of different skills areas (e.g. design, marketing, business planning, finance etc.).



In time, as the cost of the technology falls, it would be interesting to explore the inclusion of 3D printing to the process and incorporate aspects of the 'Maker Labs' approach to this model (see: <http://makerlab.info/sample-page> for more information).

Additional applications of the model

Following on from the above, it may also be possible to take the 'Ideas Into Action' model and apply it in Community Education approaches. Specifically, we are aware of the growth of the Maker Lab approach referred to above and also the growth of 'Code Clubs' (where skilled and/or qualified adults teach coding skills to children and young people - see: <https://www.codeclub.org.uk> for more information). Both of these areas of Community Education could adapt the 'Ideas Into Action' model and apply it their environments to add another dimension to their activity and afford the opportunity to involve a wider range of participants from the business sector in their communities. This may also attract the interest Enterprise companies or other government sponsored development programmes for skills development for young people not in education or employment.

It seems to me (from a teacher's viewpoint) that it would be interesting to see how this process would work over a whole semester - could begin with a more intensive workshop to cover the Inspiration and Ideation phases and then spend the remainder of the semester working on Production and Business Model phases (possibly in teams). The beginning workshop would be designed to get them very engaged and the teacher then would work to keep this enthusiasm up for the remainder of the 'project'. Therefore, we would recommend that we ensure that the handbook has good support materials and advice for teachers in how to manage the process.

### *8.3. Accreditation*

Clearly, when used in the academic environment accreditation of the students' learning is readily available via the overall qualification they are studying for. However, this may not be available in all of the potential environments where this model is applied (i.e. in community education) or an academic institution may wish to highlight students' participation in the 'Ideas Into Action' process. For example, in our own DESERVE project, the student participants received a certificate recognising their participation in the workshop process.

However, it would be possible to provide some recognition for the individuals' learning via the the Open Badge system (see: <http://openbadges.org/about/> for more information). Open Badges provide a straightforward means of recognising student effort and learning and contain links to evidence of the students' effort and achievement. As they were initially developed for the recognition of informal learning, they are the ideal means of accreditation of this programme for community education situations like the Maker Labs and Code Clubs referred to above. We would encourage you to explore the potential of open badges for your learners as they are also beginning to gain recognition in academic institution in the USA and other countries (e.g. the Scottish Qualifications Authority in the UK will accept open badges as evidence of prior experiential learning for some of their national qualifications).

### *8.4. Conclusion*

This chapter of the handbook has tried to provide some alternative/additional ways in which you can apply the 'Ideas Into Action' model. This is only intended to provoke your own thinking and creativity as we are sure you will be able to develop learning experiences based on our model we haven't even dreamt of yet!

We hope this has given you some food for thought, and we look forward to hearing about your innovative and creative uses of the model.

## 9. The role of the educators

In the 4I-approach, educators have to take over the role of employees in leading positions in a game development company, but they empower their employees to take responsibility for making their own decisions and restrict their role to facilitate the overall process. In the different phases of the 4I-approach educators have different focuses in playing their role:

### **Immersion into the role-playing scenario**

In the introduction into the scenario, educators explain that they now act as employees of a digital game company and (perhaps) as experts for sound / graphic / game design and programming.

In this phase, the first appearance / performance is important: In everyday life, students know the person in the front as their teacher. Educators can convince students to 'follow' them into the scenario e.g. by behaving slightly differently or by changing external factors (e.g. changing a jacket). Furthermore, it is also useful to distribute nameplates with the company's logo so that students get the feeling of really being an employee of the company. As explained above, it is valuable to include a person into the scenario who the students do not know. This person could take over the role of an external stakeholder (e.g. a member of the local chamber of commerce) who gives the task to develop the digital game and who sets a deadline for a first presentation. Experience shows that students especially immerse into the game when they are addressed by a stranger and have a fixed deadline – they seem to be confused and might ask themselves whether the scenario is real or not.

### **Inspiration phase**

When introducing into the inspiration phase, teachers have to underline that – in a first step – all ideas are welcome. In a second step, students can discuss and sort out ideas. Moreover, it is important that teachers step back from the process and let students gather creative ideas. If students cannot manage the process themselves, the teacher can objectively moderate the process.

### **Ideation phase**

In the ideation phase, students produce different prototypes. Teachers should withhold their own ideas, but should actively assist students by making concrete for them what the purpose of prototyping is in the overall process and what kind of characteristics it should possess (visual, experiential, reduced to main aspects, ...).

### **Implementation phase**

In the implementation phase, students work in their respective teams on sound design, graphic design, game design and programming.

There are two different possibilities how teachers can act in this phase:

Teachers can either become experts in sound, graphic and game design as well as programming and can as such accompany students in their development process. Or teachers explicitly take the role of 'not-knowing' learning guides who accompany the development process on a social level, but who are not a technical expert. Therefore, students are provided with extensive learning material so that they are able to work on the specialist material on their own.

### **Integration phase**

Students create a business plan in order to bring the developed game into the market. Educators act as 'business angels' or 'critical friends' who discuss and question the business plan (based on the Business Canvas Model) together with students.

## 10. Further Information Regarding Implementation

If you are interested in implementing the 4I approach to Entrepreneurship education at your school we will be happy to support you in the process. In this section you will find information about the resources you need, possible obstacles and the contact addresses in the different project countries.

### 10.1. Resources needed

For implementing the 4I approach to entrepreneurship education you need the following resources:

Time:

- For everybody: three complete days of intense co-working for the Ideas into Action Camp, or
- For everybody: Two hours per week for group meetings and co-working plus two to four hours individual work for the Ideas into Action Semester Program,
- For the teachers: 20-40 hours for getting to know the approach and preparing the Ideas into Action Program

Room:

- A regular meeting room for the Semester Program, if possible with possibilities to store materials and access for students or,
- an offsite location / or free to use school room for the camp,

Hardware and software:

- Computers or laptop with internet access,
- Free / open source graphic and sound software like Paint, Gimp, Audacity, GameSalad,
- Smartphones with camera and microphone or Foto / Video camera

Material

- The Handbook (preferably with at least one printout)
- Pens, Paper, Glue, Scissor, water colors, coloured pens, wire, ...
- if available Flipchart, Marker, ...

### 10.2. Potential obstacles

The main obstacle in implementing the 4I approach is the great difference to the learning and teaching habits at school. Taking on a completely different role as a teacher in guiding the students and motivating them as well as changing your approach to school as a student becoming pro-active and driving the process is very hard first.

Of course there are technical challenges and knowledge challenges as well, but these are part of the learning process and with the right attitude students and teachers can solve these challenges together.

### 10.3. Contact information

<p><i>Main contact (international)</i>          Ingenious Knowledge GmbH          Gottfried-Hagen-Str. 60-62, 51105 Köln          Phone: +49 221 16820019, <a href="http://www.ingeniousknowledge.com">www.ingeniousknowledge.com</a>, <a href="mailto:IIA@ingeniousknowledge.com">IIA@ingeniousknowledge.com</a></p>	
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