Explicit design for real estate education; the management game

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Abstract

In positioning the design school versus the business school, the management game as an educational module in the last semester of the architectural bachelor in Delft is illustrative for the possible synthesis between real estate and architecture. The explicit approach of design, as applied in Delft and many other institutes for architecture, and the implementation in a typical real estate process, reveals the designerly way of thinking.

The paper aligns the design approach (van Dooren, Boshuizen, van Merriënboer, Asselbergs, & van Dorst, 2014) and the policy gaming (Geurts, Duke, & Vermeulen, 2007), and its unification in the management game.

The management game is not only bridging design education and real estate and management education, but also enlightens the advantage of architectural based real estate education; in order to come up with solutions for the genuine challenges of obsolescence and urban redevelopment, a proper understanding of the market as well as buildings is essential.

Keywords: Real estate education, Design education, Policy gaming, Design school

Introduction

In recent years gaming has introduced in education as a novelty of activated learning. However the kernel of design education in architectural universities, based on the master-apprentice system, in a process of learning-by-doing, has always been a game: a role-play in a conditioned environment to experience the design practice. Designing is a complex, personal, creative and open-ended skill. Performing a well-developed ability is mostly an implicit activity. The first section of this paper explains the essentials of making this skill explicit in a learning environment.

Figure 1 Strategy visualised

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Adding the theory of gaming to this educational process draws attention to the way conditions in the play are shaped, the introduction of levels in realism, and how the process is managed and assessed. Section two gives a short overview of gaming, cherry-picking the useful elements for design education.

The bachelor of the Faculty of Architecture and the Built Environment has, in line with the design school it represents, a strong focus on architectural design. The master consist of several tracks, based on this design approach. The MSc-track 'Real Estate and Housing' of the department 'Management in the Built Environment', is making use of design processes too. The processes in management, the organisation of building or the strategy for urban redevelopment all have to be designed. All as unique as a design for any architectural solution (with similar application of references, formats and patterns).

The 'management game' in the last semester of the BSc of Delfts' faculty of Architecture is bridging the two perspectives on design by adding many roles to the previous master-apprentice. Although still in simulation, the complexity of the practice of urban redevelopment is experienced and the significance of additional skills and professions is illustrated. Section three describes this management game in detail along the elements of the first two sections.

In the conclusive section the impact of this curriculum on the skills of our graduates is discussed and compared to students of business schools. These qualities are reflected against current needs in the built environment.

I - Explicit design education

Traditionally the 'designerly way of thinking' (Cross, 2006) is learned in the studio, learned in a kind of master-apprentice system, in a process of learning-by-doing. In general designing is conceived as a complex set of skills. To a certain extent, processes of problem solving are involved, but it is much more. Working in a situation where a lot of the task and context are vague and creating one of all kind of possible futures, it is a personal,

creative and open-ended skill. For experienced designers the process is not split up in separate steps and actions, but an undivided whole with automatic, unconscious steps and actions based on common practice or routine, and moments of reflection and exploration.

The design process is for a part what Polyani (1966) called tacit. He concludes about knowledge: "*I shall consider human knowledge by starting from the fact that we can know more than we can tell. We know a person's face and can recognize it among thousand, indeed among a million. Yet we usually cannot tell how we recognize a face we know. So most of this knowledge cannot be put into words.*" Learning-by-doing is an important way to learn skills like designing. However, being partly tacit, doesn't mean that it isn't possible or desirable to make things – at least partly – explicit. It doesn't release tutors from finding again and again how to make things more clear.

For students learning to design is confusing. The paradoxical character of design education is articulated by Schön. The student "*is expected to plunge into the studio, trying from the very outset to do what he does not yet know how to do, in order to get the sort of experience that will help him learn what designing means*" (1985, p. 57).

According to Dreyfus and Dreyfus (1986) in the process of learning a skill, different steps are to be distinguished, from the novice starting with a kind of rules of thumb 'how to act' to the expert practising the skill fluent and for a large part implicit. Looking at the design studio, the conversation between tutor and student mainly regards the design product, less being said about the design process, the 'how' of designing a product. Knowing the challenge for teachers, being expert designers and (therefore) not used to make their way of working explicit, a conceptual framework is developed to provide in a vocabulary to talk about the design process. (van Dooren et al., 2014).

Framework generic design elements

The conceptual framework (Figure 2) consists of the following elements:

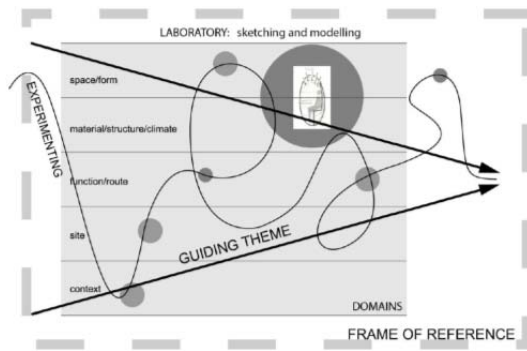1. Experimenting or exploring and deciding

Figure 2 Framework explicit design

2. Laboratory or (visual) language
3. Frame of reference or library
4. Domains or aspects
5. Guiding theme or qualities

Experimenting or exploring and deciding

1. The process of *experimenting or exploring and reflecting* is a dialectical process of being open and alert, analyzing and associating, coming up with alternatives on the one hand and finding criteria, testing and evaluating on the other hand. It is a process of diverging and converging. Or in the words of Goldschmidt, it is a process of 'ideation and evaluation' (2014). For students it is important to know by heart it is a process of experimenting, a process of making mistakes instead of being perfect. And knowing it contains experimenting a lot, being open for alternatives, being open for surprises. Creativity emerges often in a process of steady work.

Laboratory or (visual) language

2. Experimenting is not possible without a *laboratory*. Besides the language of words, for architectural design the laboratory consists of a *visual language of sketching and modeling.* This visual language is the physical counterpart of the mental process and works as an external, extended memory and tool for reflection. For students it is important to experience the force of sketching and modeling of the physical laboratory. Only then a designer comes up with solutions, possibilities and internal logic designs.

Frame of reference or library

3. A designer experiments with known patterns and principles: *a frame of reference or library*. The

design process is inseparably embedded in a broader context of design results and theory, of knowledge and experience, emerged during the years. All knowledge is stored in the environment, in books and, often implicitly, in the designer's mind. The references provide patterns, diagrams, rules of thumb and solutions to be used in the experiments. This frame of reference is dynamic; in the process of experimenting and playing, new patterns and principles will be born. For students it is important to work with patterns and principles, and to internalize them. They have to know and experience that creativity emerges 'within the frame of reference. ' In the words of Kneller (Lawson, 2006): *"One of the paradoxes of creativity is that, in order to think originally, we must familiarize ourselves with the ideas of others… these ideas can then form a springboard from which the creator's ideas can be launched."*

Domains or aspects

4. The knowledge, all principles and patterns, concern a lot of aspects, a designer has to address. All these aspects can be summarized in *domains*. In architectural design the domains are: space, material, site, function and socio- cultural context. A designer experiments in all the domains and has to make statements in all domains. For students it is important to have an overview of a moderate number of domains and to now that designing is experimenting in the domains but much more across the domains. For example, a scheme with the domains may provide a tool to analyze the design when getting stuck: mostly the student discovers that he or she is working in only one or two domains.

Guiding theme or qualities

5. In the process of experimenting, one has to come up with an inspiring direction: *a guiding theme or qualities* as something to hold on to during the design process and to help create a coherent and consistent result. Coming up with a direction is a 'train of thoughts', often from vague and global to concrete. Or from a project transcending theme, often a personal fascination or meaning, to a project related theme, often called a concept or parti, a sketch or diagram, presenting the theme in the design task at hand (van Dooren et al., 2014). The guiding theme is a personal direction to come

up with a design result. It may be functional, spatial, material, concerning the site or socio-cultural driven.
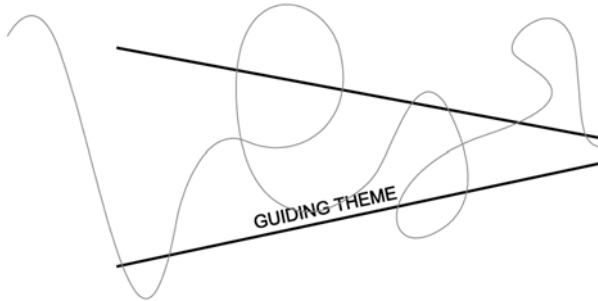

GUIDING THEME

Figure 3 Designing is developing a guiding theme: discovering qualities or imposing an order.(..published..)

For students it is important to learn to work with different guiding themes, to discover what their personal fascination and way of working is. And they have to learn to work with a guiding theme, no matter which one. To understand how to experiment with and within the guiding theme and to translate the guiding them in 'designerly' means.

The framework is developed to have a vocabulary, to talk about the design process. It is used in lectures, text and may be used in tutoring in the design studio. Insight in the main elements of the design process may help students in the process of learning-by-doing. It may help them to become aware of the design process, of what they do or don't do. It may also be helpful in working in groups or in more complex situations like the game project, subject of this paper.

II - Gaming in education

The previous section explained the applied structure of design education, where this section deals with the structure of policy gaming. The management game has many similarities with policy gaming (Geurts et al., 2007). In an earlier description of a predecessor of the game, Bruil and Van der Toorn Vrijthoff (2011) argued the reasons for applying this practice. A game is a controlled playfield. According to Geurts this playfield is structured around 5 controlling contributions in policy gaming: Complexity, Communication, Creativity, Consensus and Commitment to Action.

Complexity

6. Strategic problems are often 'wicked' and ill structured. The contribution of traditional formal models to their solution is limited. In our case the experimental lab of the university is looked-for by practitioners, because practice itself does not have the answers. There is not an ideal outcome (yet). Complex strategic urban redevelopment issues demand that many different sources and types of data, models, frameworks, role-specific insights and tacit knowledge must be integrated. An environment needs to be provided through which strategies can be explored. The problem's complexity requires a holistic approach in which a wide range of perspectives, skills, and information is available (or retrievable). Getting to, and interpreting the information is part of the task. The quality of a decision is directly proportional to the number of systems elements that can be incorporated.

Communication

7. Communication is essential in team work. Policy games can facilitate effective communication across diverse groups, encouraging the exchange of ideas and bridging communication gaps. A good game consists, according to Geurts, of many different symbols that support communication between players. These are visual models or other tangible objects which can be used. Within the context of the management game, traditional designerly elements like drawings and models, the visual language of the designer, are accompanied with role-specific financial models and decision support models. Small assessments can align information (views, strategies) and communication.

Creativity

8. Creativity presumes fun, motivation and effort. Gaming has the power to stimulate creativity by its very nature, and is one of the most engaging and liberating social technologies for making group work productive and gratifying. Winning adds to the challenge. Gaming puts the students in an 'experiential learning' situation, where they discover a concrete, realistic and complex initial

situation. Different phases in the game helps them work through the situation as it unfolds. Policy gaming stimulates 'learning how to learn', as in a game, and learning by doing alternates with reflection and discussion.

Consensus

9. Strategy processes involve consensus building, including harmony and compromises, so that all parties can agree on a certain decision. Dealing with complex problems needs the concerted action and support of many stakeholders. Individual actors engage in all-encompassing discussions in which the pros and cons of various perspectives and possible moves are presented and some kind of agreement on follow-up is developed. This is essential for the successful elaboration of strategy and overall performance, as managers at various levels need to act on a shared set of meanings and beliefs that guide in the desired direction. The gain is in the process: a painful and conflict-ridden collective thought experiment is much more desirable than a conflict-ridden and stalled implementation process.

Commitment

10. While commitment is a vital element, there is always the danger of passivity in group-discussions, 'free rider' behavior. The strict and balanced distribution of tasks and transparent activity of all the participants as planned in the steps of play in a gaming-simulation are safeguards against such non-committing abstention from involvement. Commitment is the result not only of participation in the game, but is also the product of the many different involving and motivating elements.

III - Management game

In their final semester of the Bachelor of Architecture and the Built Environment students enter the course BK6ON5, the management game. Groups of 9-10 students (a total of 100-250 per semester/course) are given the task to develop a strategy for an urban redevelopment.
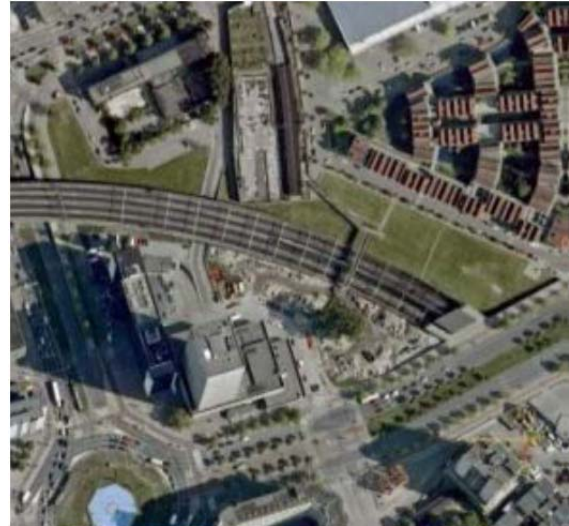

Figure 4 Pompenburg, Rotterdam

The case characteristics are a downgraded area for which the municipality is in need for new ideas. In 2014-2015 it has been Pompenburg[1], a relative small area in the centre of Rotterdam with partial long term vacancy in the offices at the site and hampered by infrastructure. The railway tunnel is reaching ground level at this point and has to bridge almost immediately one of the important roads enclosing the site. The area is directly influenced by a stagnated CBD-development with planned tall buildings (east), a school site and monumental remains of another elevated railway (north), an outdated but still intensively used housing area (west), and the high value city centre (south). As such the case is already very complex as an urban design commission.

Figure 5 Rotterdam as 'City lounge', planning 2008-2020

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[1] In 2013-2014 the case was also in Rotterdam, Blaak, a degenerated office and retail area in between zoning. In 2015-2016 the case is set to generate a new strategy for 'campus Delft'.

Rotterdam is looking back on a severe crisis in which all reserves are gone, lacking for methods to deal with urban redevelopment. The location suggest a high potential but the site is chasing investors and future users away.

The length of the course is 10 weeks, of which the first weeks are the 'study phase'. Based on their preferences of interests (e.g. functional, political or financial) students are assigned a specific role in the game:

   a)   for the municipality 'Economic Affairs' and 'Urban development', supported by '(sub)-national authorities' for policy and 'infrastructure planning',
   b)   an design team: 'advisor sustainability', 'urban designer' and 'landscape designer',
   c)   representatives of 'real estate users' and 'owners/investors/developers'
   d)   a project leader to keep all above together and focussed.[2]

The students need an enhanced knowledgebase to fulfil their role, tutored by an expert in that particular field. Understanding the role and what it takes is the main challenge in this study phase.

The whole first quarter of the semester is dedicated to two courses, the management game and an additional course, BK6MA3 on urban management and (re)development. The latter takes only 5 weeks, forming a perfect match with the game.

Only after completing the theory course and the study phase the students are grouped together, forming a team consisting of all roles. Based on their specialisation students enter their team with an individual strategy, mind-set and/or vision. The first week as a team is for exploring these different visions, followed by two weeks of negotiation and optimisation. During these phases students still are continuously provided with additional role information, from the more theoretical elements in the beginning to more instrumental ammunition in the end. The last week as a group is dedicated to elaborate the presentation means, a poster

explaining the group strategy, a group presentation and a pitch. Finally the students have to write an individual report on their performance in the game: the augmented first personal strategy, contribution to the group and adjustments by the group process, and description and evaluation of the process.

Explicit design in the game

All generic elements of design education, as described in the first section, can be observed in the management game:

1.   A huge advantage of an unexperienced team is the need to make *experimenting or exploring and deciding* explicit. Even if the guided exploration of the field of the role is given in an implicit manner by the experts, the students still have to point out why they bring in elements, and what they want to achieve. The other students are trying to do the same with a different perspective. The negotiation phase is chaotic due to the high number of variants of partial solutions and evaluations. A more knowledgeable team will have a less hectic experience due to the implicit understanding, but with the accompanying pitfalls.

2.   In the study phase, as part of the 'realty check', students are confronted with many policy document of the municipality, framing its ambitions. In the first round of the negotiation phase, in which the team members are introducing their stand, these framed ambitions are strengthened, adjusted or rejected. The process of converging, as shown in Figure 3, is in this phase the result of not easily made compromises. Due to the teamwork, the guiding theme or framed quality of the common ambition becomes very explicit. Almost all posters, illustrating the proposed strategy, are making use of a capture or title, representing the *guiding theme*. Given the common input it is striking these themes differ over all groups, making these products still very distinctive.

3.   The architectural *domains*, as described in the first section, are of course part of the job at hand for the urban and landscape designer. Coming from an architectural background, the other roles are also converting more than wanted, their input in architectural domains. Sometimes the studio does look like 10 designers at a table instead of 10

different roles. However due to the setting of roles, the overall input results in huge number of domains, especially in case the role experts have added a thematic approach, like the establishment of international education on the site. To reduce the amount of input some groups do make a strong division in those team members designing the public domain and those paying for it, in which case it is the real challenge to bring them together again.

4. The management game is new, unlike previous design projects and complex to the students. One of the options to take this hurdle is to provide them generously with examples of earlier editions. Also by the supporting course BK6MA3 and several supporting workshop their *frame of reference* is enhanced. The assessment of 70 reports in the last two years reveal that the open approach of sample reports is very convenient for streamlining the overall level without any indication of misuse of reference. The different cases and peer pressure enforce originality. However some references are obtrusive due to the circumstances. With the earlier mentioned elevated railway (Hofbogen) the positive development of the High Line of New York cannot be missed.

Figure 6 elevated former railway 'Hofbogen'

5. Also the last generic element *laboratory or (visual) language* is evident in the management game. The visual language clearly in the elaboration phase as described in the first section, but also in the negotiation phase, being the language of these students for explaining their ideas and positions. But also the laboratory aspect is perceptible. All phases are done in the same studio but the atmosphere is changing: studying together in role groups in the first phase, sketching and discussing

in the negotiation phase and the complete circus of making booklets, presentations, posters and models in the elaboration phase. Due to the teamwork almost all students are present during the whole day, adding to the pressure cooker feeling towards the end. And after all presentations the individual role report is written at home in splendid isolation.

The repetition of the generic elements is very relevant in bridging between previous design projects and the management game, already being rather different in subject, complexity and scale. The utility of what had become the natural language of the students actually enables to step up in complexity.

Figure 7 The 'laboratory' of the management game

The urban redevelopment as a game is perhaps more related to the Policy Gaming for Strategy as described by Geurts et al. (2007) than to the design project as described by van Dooren et al. (2014), but for these students and aiming on the given results both are necessary. For the holistic overview needed for such complex problems the combination of architectural students with their 'designerly way of thinking' and different specialisations are required.

Policy gaming in the game

Also the controlling contributions in policy gaming, as described in the second section, are seen as crucial elements in the management game:

6. By adding elements, like the number of roles, the given *complexity* and additional ingredients process as well as outcome can be steered. Roos et al illustrates that if the constraints of strategy

processes are changed, the content generated will also change (Roos, Victor, & Statler, 2004).

The first time Pompenburg was used as a case did not result in opportunities for secondary schools in the area, even with an obsolete school present. The second edition included an additional lecture sketching the need for facilities to support international education. And indeed, 10 out of 17 groups included this facility in the strategy.

A game is shaped by the rules. There has been a lot of tuning in order to reach the right conditions and balances, like the proper head start (in time) for role support, causing students to defend their stands instead of immediately working on a suboptimal common strategy.

Kolbe's learning cycle should be repeated several times according to de Caluwé (2002). The first impression is of only one cycle, starting with the study phase. However, role tutors keep on adding additional methods and models during the following phases, and by doing so, enforcing Kolbe's repetition.
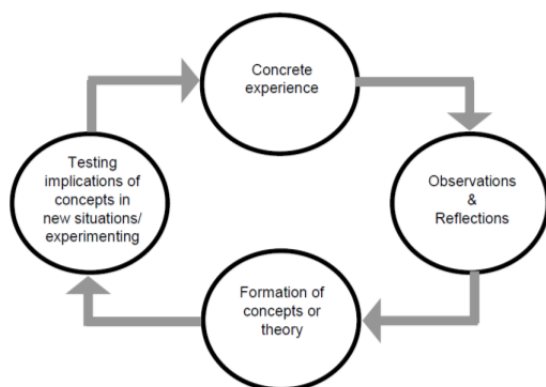

Figure 8 Learning cycle (Kolb, Rubin, & Osland, 1991)

The complexity of the strategic problem, as an element of policy gaming, is well illustrated in the use of the workshop on geo-data (communication of information). Supported by the European project Inspire, the Dutch government very active to bring all geographical information into a system in the public domain (PDOK). Different roles will retrieve different information out of this system, from land registration, building information, statistical economic and social data on the neighbourhood, tax-related data, environmental zoning and other legal issues and so on. This overload on information in many role-specific perspectives causes the 'professional environment experience' needed for the game and for the position of the course in the curriculum.

7. Effective *communication* is extreme important in the management game. Suppressing noise in posts between 100-200 students, 20 or more tutors in the complex environment is almost a full-time job. An attempt to push out frontiers is the workshop on decision support. For professionals is complex projects the importance of a guided course for reaching decisions is understandable. In such case it becomes relevant to put time into structure and decision modelling. For students it is not that clear; expecting to solve all problems by a good design. Only after the game, and the experience of intense negotiation, part of the students are in favour of the techniques as facilitated by the workshop. Communication is about delivery on the right time. The base of real estate knowledge is delivered by the course on urban management and (re)development during the first weeks, with themes like urban development, real estate development, legal implications, economical aspects, urban planning, management strategies, markets and consumers, and sustainability aspects. The role tutors will go in depth on their disciplines, while this gained knowledge is practised and tested in the weeks of elaboration.

8. *Creativity* is a constant factor in working with students of a faculty of architecture – end product are normally of a high standard of visual quality. The management game is building on this given creativity by stimulating different presentation modes. They have to explain their group strategy in a half hour group presentation to their tutors and fellow students, in a 3 minute pitch to the jury and in a single poster to the public, all with appealing results. At the other side of the spectrum the students have to report their performance in a comprehensive role specific report, which is perhaps the most challenging for their creative skills after 3 years of focus on reporting by drawings.

9. Students are eager for good grades. This will normally steer group work in too much of *consensus* in order to produce what is required. Early consensus does not lead to innovative and out-of-the-box solutions. The study phase is not only intended to add some specialisation per role,

but also to provide them with an own agenda. While the students also should report their role specific result and performance at the end, a healthy distance is created before the negotiation phase. However, with a role of 'project leader', team building is resumed quickly. The last week is in most cases a real team performance.

10. *Commitment* is essential. For this reason the 'project leader' is important to keep the group together. Also the third workshop, dealing with team performance (influence styles, change attitude, personality styles) provides elements for team building and commitment. Even more appreciated, especially by students with previous negative experiences with group work, is the early feedback by tutors and peer reviews by students. Having these comments on the right moment in the process enables students to adjust.

Discussion and conclusion

The combination of design qualities and gaming elements does provide insight in the complex situation of urban redevelopment. At the same time the game reveals the relevance of all different specialisations. Our students will be able to have the necessary overview, while still acknowledging the need of (business school) specialists in real estate finance, valuation on one hand and (management school) specialists in team and process performance.

A management game as described is also applicable for a business school. The elements of policy gaming originate from managerial education and usable for a wide range of decision making, from social to financial, from administrative to political. However the designerly way of thinking is less easy to adopt. These elements enables very important ingredients for the game: creativity and fun. The creativity, also in policy gaming a required element, is not only essential for out-of-the-box solutions, resulting in innovative strategies, but also adds to the visual quality of products, supportive for the exchange of ideas and final

communication. Due to the quality of work it is fun to teach and rewarding to study[3].

Figure 9 Heading towards presentations

The current needs in real estate education, illustrated by complex urban regeneration, where for instance blue print plans are out of order, require an holistic approach for strategy development with open communication (Daamen, 2010). The outcome of the game is that complex problems require specialists working together. Financial experts, designers, policy makers with accountability, knowledge, creativity and still an holistic approach; above all specialists and generalists able to communicate with each other. One of the appreciated aspects of the management game is its position in the bachelor curriculum. After the game a choice has to be made for a MSc-track. The game provides clarity. Student are more convinced about their capacities and ambitions. Knowingly choosing for architecture, technology, urbanism or real estate. Such a management game could also be the way to choose between an architectural based real estate education and the business school orientation.

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[3] The fun factor is made explicit by a very good score in the student evaluation from the start, and, in the increase of this score over the last years.

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