

# “Gotta Catch ‘Em All” – Game Design Patterns for Guild Quests in Higher Education

Kathrin Knautz<sup>1</sup>, Julia Göretz<sup>1</sup> and Anja Wintermeyer<sup>1</sup>

<sup>1</sup> Heinrich-Heine-Universität Düsseldorf

## Abstract

The system of modern higher education has gone through many reforms, but still features many deficits in terms of knowledge acquisition and learning methods. The concept of gamification, which means the implementation of game elements in non-game contexts, offers a possible solution and increases motivation and participation among the students. Therefore the project *The Legend of Zyren* was initiated to mediate learning contents via a gamified framework. This part of the study focuses the so called guild quests (group tasks) and their principles of construction regarding the collaborative and the competitive game pattern, which ultimately result in an increase of the learning success. The results of a final evaluation confirm the usefulness of the use of game elements and game patterns with regard to content mastery and learning progress.

**Keywords:** gamification, game pattern, guilds, quests, higher education

**Citation:** Knautz, K., Göretz, J., & Wintermeyer, A. (2014). “Gotta Catch ‘Em All” – Game Design Patterns for Guild Quests in Higher Education. In *iConference 2014 Proceedings* (p. 690–699). doi:10.9776/14319

**Copyright:** Copyright is held by the authors.

**Acknowledgements:** The authors would like to thank the reviewers for their very useful critique, tips and suggested literature!

**Contact:** Kathrin.Knautz@hhu.de, Julia.Göretz@hhu.de, Anja.Wintermeyer@hhu.de

## 1 Introduction – Gamification in Academic Teaching

The landscape of higher education shows many deficits regarding knowledge acquisition and teaching methods. Especially the lack of motivation is one of the major problems that have to be overcome to ensure an optimal learning success (Lee & Hammer, 2011).

A solution for these problems offers the concept of gamification, as games drive motivation and engagement (Prensky, 2003, p.1). Gamification means the use of game elements in non-game contexts which serve to motivate and engage users in certain actions (Deterding et al., 2011). Game elements consider aspects such as story, experience points (XP) and levels, achievements, leaderboards and rankings, and the so called quests, which have to be implemented in the given context (Fecher, 2012). Putting a game in the role of a mediator of learning content also enables users to acquire knowledge in a different way. Knowledge acquisition with the help of game patterns embedded in increasing difficulty levels creates a cycle of expertise and experienced learning that enforces content mastery (Bereiter & Scardamalia, 1993; Gee, 2007). Therefore the project *The Legend of Zyren* was initiated at the department of Information Science at the University of Düsseldorf to implement game elements in the academic teaching context and investigate their influence on the learning success of the students. The project was organized in three parts that were coordinated with each other to teach the content of the subject Knowledge Representation. The basic contents of the subject are conveyed in a classical lecture, whereas the tutorial aims at intensifying and consolidating the knowledge. Additionally a web based platform was designed, where the students can learn on their own in form of a text-based learning adventure. The ultimate goal of the adventure is to achieve a reward in terms of a better degree in the final exam with the help of experience points (XP). All of the parts were embedded in the framework of the epic fantasy adventure *The Legend of Zyren* in which the students go on a mission through the realm of Zyren to find the mysterious book of knowledge. On their journey the students have to face a lot of dangers and challenges in forms of quests. Besides the virtual quests that the students encounter in the text-based adventure on the platform, there are also real-life quests, which are played in the tutorial to deepen the learning content. These quests have to be played in

groups, the so called guilds, to progress in the adventure and to gain more experience points to achieve the epic reward at the end of the semester. These guild quests, their construction principles and their actual implementation are the topic of this note.

## 2 Guild Quests – Learning Success through Clever Implementation of Game Patterns

As already mentioned quests are game elements and represent a part of the framework of gamification. Quests are obstacles in the linear flow of the story that a player has to overcome to advance in the game. They can be regarded as exercises which can either be solved alone or in a group. A quest is composed of different components. It has to feature a clearly defined goal and the quest, or the game, itself with its rules and principles. Furthermore there has to be an impulse of the story that initiates the quest and causes the need for the player to solve it. The last component of a quest is the reward the player will gain after the accomplishment of it and that motivates players and promotes their engagement. Therefore a quest is always linked to the obtainment of achievements or experience points, which are directly correlated to the player's progress in a given game (Fecher, 2012, p.2).

Special forms of groups the players may have to form to solve a quest are the so called guilds. Guilds are constructs derived from Massively Multiplayer Online Roleplaying Games (MMORPGs) and can be regarded as a special type of team formation. A guild is an "association of players who chose to come together to achieve a common goal" (Riegle & Matejka, 2006, p.1). They are considered to function as a "ready-made pool of players who have already established a relationship with each other and who will group together to accomplish quests" (Riegle & Matejka, 2006, p.1). It is composed of members such as guild leader, guild officers or guild members who perform different functions in the team. A guild is formed by its members themselves so that they are solely responsible for the guild's construction and performance (Riegle & Matejka, 2006).

However, using guild quests to achieve learning success require a clever implementation of game patterns that correlate with each other. Sebastian Kelle (2012) defines two important patterns that contribute to the learning success: The cooperative pattern and the competitive pattern (Figure 1). The implementation of these patterns aims at achieving a balance between knowledge acquisition through teamwork and engagement through competition, so that "learners should be motivated and "drawn" into the game, but not overly distracted from the learning goal" (Kelle, 2012, p.14).

The collaborative pattern considers the intragroup relationships and focuses on the interaction of the members in a given group (Figure 1). It aims at sharing, constructing and expanding collective knowledge and understanding (Romero et al., 2012). Despite the aspect of knowledge acquisition, the collaborative aspect evokes the development of interpersonal competencies "such as negotiation, collaborative decision-making and creative problem resolution" (Romero et al., 2012, p.4) and the positive interdependence in terms of socializing or team spirit (Romero et al., 2012, p.6). As groups are often arranged in a competition to each other, the competitive pattern regards the intergroup relationships between the several teams. This patterns aims at providing motivation and promoting engagement to avoid boredom and keep the players drawn to the game. Important factors that contribute to a successful implementation of the competitive pattern are conflict, challenge, opposition and conversation (Prensky, 2001).

The learning content is embedded and mediated in various stages of a game that have to be accomplished to win certain challenges, achieve points and reach a higher level. The content is therefore bound to an interactive context that enables the students to "regard themselves as capable of meaningfully applying disciplinary content" (Barab et al., 2012, p.520). This form of knowledge acquisition opens a new dimension of possible understanding and self-reflective creative learning strategies that the students have to develop autonomously. As thinking and learning are connected to actual experiences, memorability and content mastery are supported by this use of playful interactive elements (Gee, 2007, p.9). The knowledge

which is acquired at one stage of a game has to be applied and intensified to accomplish the next one. Feedback loops (Salen et al., 2011, p.12) between the levels and the visual manifestation of the learning progress in form of points, levels and rankings (Fecher, 2012, p.2) ensure a process of knowledge acquisition that is critically reflected and controlled by the players. They are able to identify their deficits and improve their skills, motivated by the aspect of competition, to accomplish the next challenge. This cyclic implementation and the constant upward movement of the difficulty levels of a game create a cycle of expertise and support content mastery and consolidation (Bereiter & Scardamalia, 1989). Both patterns in combination with an innovative way of knowledge acquisition and content consolidation serve to achieve learning success and contribute to the successful implementation of gamification in academic teaching.

A project that made use of game elements for higher education can be found at the Indiana University near Chicago. In his work *The Multiplayer Classroom* game designer Lee Sheldon (2012) organized whole seminars according to the principles of a multiplayer game in which were rewarded with experience points (XP) for every solved quest. Unlike in a classical lecture, where the student's lose points in case of a wrong answer, the achievement of XP is solely bound to the positive notion of a benefit, as they can only be gained but not loosed. Another related project was initiated at the Institute of Play of a New York public school. The researchers of the project *Quest to learn* set up a modularized game based system in which the students had to solve quests as subunits of a larger unit of study that equipped them with necessary data and knowledge to solve the larger mission. A special focus was set on the aspect of system thinking and dynamic and interactive learning (Salen et al., 2011). A similar approach can be found in the project *Quest Atlantis* that represents a story based curriculum to teach persuasive writing. The learning content of the subject is embedded in an interactive narrative context to create a learning experience in which the user practices the meaningful application of the disciplinary content (Barab et al., 2012).

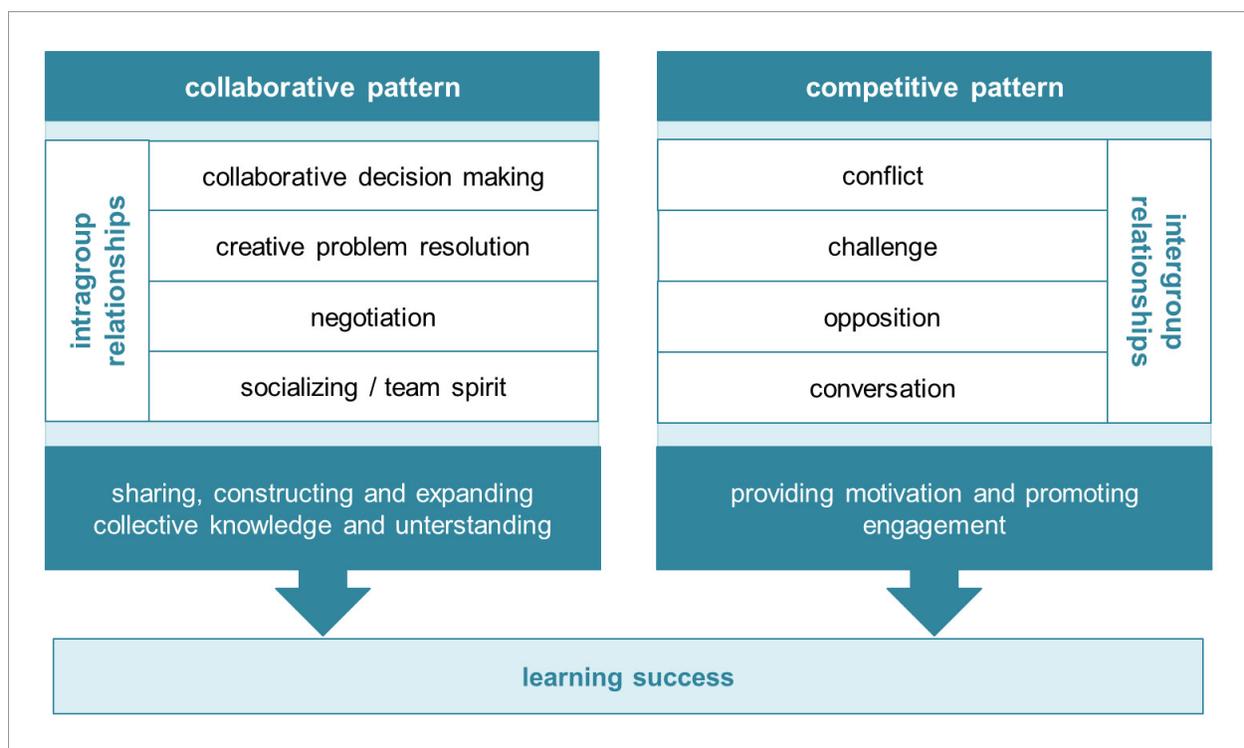


Figure 1: Function of Game Patterns (derived and modified from Kelle (2012) and Romero et al. (2012))

### 3 Implementation of Guild Quests

The conception of the guild quests began as early as half a year before the actual start of the project in form of a master course. The students of this course developed initial ideas for the realization of the quests, which their fellow students of the bachelor course Knowledge Representation had to solve in their guilds later on. Every guild quest targets a mediation of the contents of Knowledge Representation in a scientific and playful way and is constructed according to the principles of a quest with a special regard to the collaborative and competitive pattern. The concept resulted in the realization of 13 guild quests, one for each session of the tutorial during the semester.

To ensure an optimal implementation of the guild quests, the students were organized in 3 tutorials, each of them containing a similar amount of 50-60 participants. The tutorials were supervised by 13 tutors, who were responsible for the realization of the several guild quests. The students had to form guilds and define their roles in the team themselves. Furthermore, they had to invent a name for their guild and a challenge claim to introduce them when they were confronted with the other guilds with which they had to compete. This can be regarded as a first step towards socializing and team spirit in terms of the intragroup relationships of the collaborative pattern and additionally introduces the competitive component regarding the challenge claim and the opposition with the other guilds.

Regarding the structure of the guild quests, it can be differentiated between three different types. Either they are designed similar to popular parlor games or they are set up as treasure hunts, in which the guilds have to find several stations at which they have to prove their knowledge, or quizzes, which focus the question-and-answer principle. The learning content mediated in the lecture prepared the students for the competition in the tutorial that integrated the acquired content in form of questions of which the difficulty level increased through the course of the semester. To establish a cycle of expertise and ensure content mastery and consolidation every quest was dependent on the former quest regarding the tested learning content. Feedback loops and the visualized ranking of the guilds on the online platform depict the current state of knowledge and indicate possible deficits of the learning progress.

Week	Title	Game Principle	Content
Week 1	<b>It's not Easy to be a Hero</b> (orig. Ein Held zu sein ist nicht leicht)	<b>Game:</b> Card game in which the guilds compete against each other. <b>Goal:</b> Putting as many cards as possible in the right chronological order. <b>Story:</b> The orc Omgha has to be convinced that the guild is ready to embark on the adventure to find the book of knowledge. <b>Reward:</b> 1 XP.	History of Knowledge Representation
Week 2	<b>Plopp means Stop</b> (orig. Denn Plopp heißt Stopp)	<b>Game:</b> Quiz in which the guilds compete against each other and have to jump onto the right field on the floor. <b>Goal:</b> Achieve as many right answers/jumps as possible. <b>Story:</b> Two dwarfs challenge the guilds. <b>Reward:</b> 1 XP.	Basic terms of Knowledge Representation, Terms and their definitions
Week 3	<b>War of Terms</b> (orig. Schlacht der Begriffe)	<b>Game:</b> Board game in which the guilds have to gain streets through the explanation of terms and can demand rent from other guilds. <b>Goal:</b> Gaining as many streets as possible. <b>Story:</b> The guild is partying in a pub and plays a board game against other guilds. <b>Reward:</b> 2 XP	Term orders
Week 4	<b>The Golden Tower</b> (orig. Der Turm aus Gold)	<b>Game:</b> Game of skill in which the guilds have to pull a stone out of an unstable tower, if they give a wrong answer. <b>Goal:</b> Achieve as many right answers as possible so that the tower remains. <b>Story:</b> The guilds have to save a golden tower from tumbling and therefore save their lives. <b>Reward:</b> 2 XP.	Hermeneutics of information, Bibliographical meta data
Week 5	<b>The Terrible Jabberdy</b> (orig. Der gefürchtete Jabberdy)	<b>Game:</b> Quiz in which the guilds have to find the right question for a given answer. <b>Goal:</b> Achieve as many right questions as possible. <b>Story:</b> The guilds have to fight against the monster Jabberdy. <b>Reward:</b> 3 XP.	Repetition

<b>Week 6</b>	<b>Stroke of Fate</b> (orig. Schicksalsschlag)	<b>Game:</b> Quiz in which the guilds have to guess whether a given statement is right or wrong. <b>Goal:</b> Make as many right assumptions as possible. <b>Story:</b> The guilds have to prove their knowledge of fortunetelling at the house of a fortuneteller. <b>Reward:</b> 4 XP.	Meta Data Non-thematical filters of information
<b>Week7</b>	<b>Gotta Catch ‘Em All</b> (orig. Komm schnapp sie dir)	<b>Game:</b> Treasure hunt, in which the guilds have to challenge the tutors to collect 8 medals. <b>Goal:</b> Collect as many medals as possible. <b>Story:</b> The guilds have to collect the 8 medals by challenging the smartest creatures in a forest to cross a river with a ferry. <b>Reward:</b> 6 XP.	Collaborative content indexing, Processing of tags, Nomenclature
<b>Week 8</b>	<b>Tabuta</b> (orig. Tabuta)	<b>Game:</b> Game in which a member of a guild has to explain or draw a term, while the others have to guess its meaning. <b>Goal:</b> Guessing as many meanings as possible. <b>Story:</b> The guilds have to help the tribe of the Tabuta to figure out which words are permitted for usage in the forest. <b>Reward:</b> 6-8 XP.	Repetition
<b>Week 9</b>	<b>En garde! Touché!</b> (orig. En garde! Touché)	<b>Game:</b> Quiz in which 2-3 guilds have to duel each other. <b>Goal:</b> Achieve more right answers than the opponent. <b>Story:</b> The guilds have to duel with hostile pirates. <b>Reward:</b> 3-8 XP.	Classification, Thesaurus
<b>Week 10</b>	<b>The Facets of Murder</b> (orig. Mord in all seinen Facetten)	<b>Game:</b> Treasure hunt in which the guilds have to find clues of the murder, crime scene and weapon at several stations by solving riddles. <b>Goal:</b> Collect as many clues as possible to solve the murder case. <b>Story:</b> The guilds have to solve a murder case and find out the right murder, crime scene and weapon. <b>Reward:</b> 4-13 XP.	Ontology, Facetted KOS, Crosswalks between KOS
<b>Week 11</b>	<b>Zyren goes Hollywood</b> (orig. Zyren goes Hollywood)	<b>Game:</b> Quiz in which the guilds have to give the right answer to a question. <b>Goal:</b> Achieve as many right answers as possible. <b>Story:</b> The guilds are captured in a mine and have to struggle for food through gaming. <b>Reward:</b> 8-14 XP.	Citation Analysis
<b>Week 12</b>	<b>Dragon Wars</b> (orig. Dragon Wars)	<b>Game:</b> Treasure hunt in which the guilds have to fight against dragons at several stations to expand their skills for the fight against the final enemy. <b>Goal:</b> Defeat as many dragons as possible to collect many skills for the final fight. <b>Story:</b> The guilds have to defeat dragons to save an area of Zyren. <b>Reward:</b> 0-16 XP.	Intellectual indexing, Automatic indexing
<b>Week 13</b>	<b>The End of a Long Journey</b> (orig. Das Ende einer langen Reise)	<b>Game:</b> Quiz in which the guilds have to give a right answer to a question. <b>Goal:</b> Achieve as many right answers as possible. <b>Story:</b> After the guilds drank a magical drink they experience their whole journey through the realm of Zyren again and travel places at which they have to solve riddles. <b>Reward:</b> 10-19 XP.	Abstracts, Automatic extraction of information, Repetition

Table 1: Structure of the Guild Quests

A guild quest starts with the creation of an epic and mystical atmosphere in terms of animations, videos and music and the narration of the story that gives the impulse for the students to solve the quest with the help of their guild. Afterwards the rules of the quest were explained and the goal and rewards of the mission clearly defined.

As the students had to work in teams inside their guilds, but still had to fight against the other guilds, collaborative and competitive pattern were both integrated in the concept. The collaborative aspect was supported by the fact that every guild member actively participated in the quest and negotiated the possible solution with his or her team members, which enforced collaborative decision making and creative problem resolution, as well as the team spirit. The result of this form of collaboration was a process of collective knowledge sharing and expanding that also supported the individual learning progress of the students. The competitive pattern with its aspects challenge, opposition, conflict and conversation, which can be regarded as an additional incentive for the guilds to win the quest, was supported by 4 factors

correlated to the general construction principles of a quest: the game itself with its rules, the clearly defined goal, the impulse of the story and the reward afterwards. As the most successful guilds achieve a reward in form of XP that they need for the successful passing of the course, the aspect of reward is obviously the strongest support for competition. This is also enforced by the ranking of the guilds, since they are motivated to overcome other guilds and achieve a higher ranking. Furthermore the XP that can be gained through the guild quests are an additional bonus for every member of the guild, as they contribute to the possibility of improving their grades in the final exam at the end of the semester.

To achieve new impulses for the guild quests game, goal, story and reward had to be re-developed every week (Table 1) to keep the students' interest and motivation and ensure a constant and effective learning progress.

#### 4 Evaluation and Results

At the end of the semester the whole project *The Legend of Zyren* was evaluated regarding various factors. The section of tutorial and guild quests was analyzed with a special regard to the implemented game patterns and their influence on the learning success.

As Figure 2 and 3 suggest, both patterns had a positive influence on the students. 89,2% of the students experienced a positive effect of the collaborative aspects on their learning behaviour and 72, 9% perceived the competition between the guilds as a motivating factor.

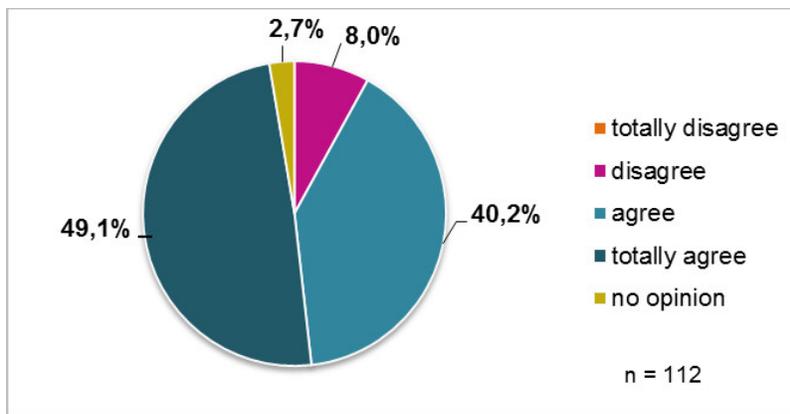


Figure 2: Evaluation of Collaborative Pattern (“The aspect of collaboration in the guild had a positive influence on me and my learning progress.”)

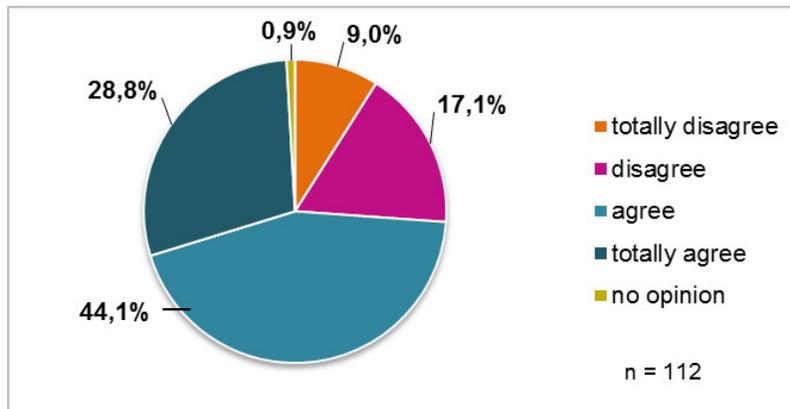


Figure 3: Evaluation of Competitive Pattern (“The competition with the other guilds motivated me.”)

Ranking	Guild	Ranking in total (max points: 97)	Act 1 (achieved points in act 1)	Act 2 (achieved points in act 2)	Act 3 (achieved points in act 3)	Act 4 (achieved points in act 4)
1	Nightmare on Elfstrect	80	5	12	21	42
2	n-1	71	6	10	13	42
3	Wächter des Wissens	66	5	18	4	39
4	Nedlig	65	0	11	18	36
4	Stardust	65	2	6	18	39
6	Yojung	62	2	5	16	39
7	Brave Vesperia	61	5	10	16	30
8	Die drei dreisten zwei	59	0	0	21	38
9	The amazing knights of knowledge	58	3	8	8	39
9	InfoPro	58	2	8	13	35
11	Nordzyrea	53	3	12	8	30
11	Super wilde Arbeits Gruppe [SWAG]	53	0	6	13	34
11	5 <sup>th</sup> Row	53	4	12	9	28
14	Guards of the Information	51	0	8	13	30
15	Die Knechte von Zyren	49	1	4	16	28
16	Willi und die Majas	46	5	0	15	26
16	Warmduscher	46	1	8	16	21
18	Gilde Gildo	45	0	6	7	32
19	Die Elfen Helfen	44	0	6	13	25
19	Red Army	44	0	0	18	26
21	Die Zyranier	42	0	8	4	30
22	Guild Whores 5+1	37	0	0	16	21
23	Heinrichs Armee	30	0	0	8	22
24	Die Minions	22	0	0	8	14

Table 2: Guild Ranking

Table 2 illustrates the visualized ranking of the guilds, which was accessible via the platform. It shows the amount of XP that the guilds managed to achieve and furthermore depicts the correlation between the increasing distribution of XP and the rising difficulty level of the quests. The learning progress is directly mirrored in the amount of XP the guilds could achieve in various quests of a certain act. Members of a guild can directly trace in which act they achieved only few points and which parts of content they may have to repeat to gain a higher status in the ranking.

As this visualization was also implemented to connect the report of the current state of knowledge to the aspect of competition this aspect was evaluated as well (Figure 4). This item was also analyzed because of the possible motivating function that the ranking had on the content mastery, as it provides information about possible deficits of the individual state of knowledge.

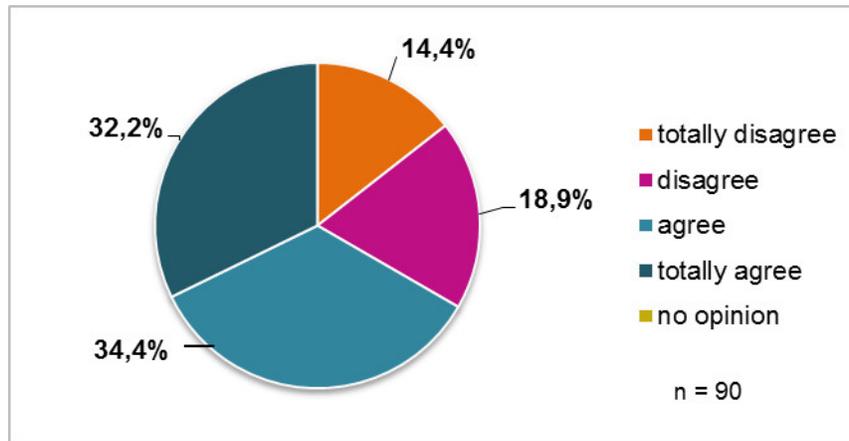


Figure 4: The Aspect of Competition Attached to the Ranking (“The visualized ranking raised my competitive spirit.”)

66,6 % of the students perceived a notion competition with regard to the ranking. This indicates a clear motivating function of this form of visualized learning progress and a supporting function of competition in terms of knowledge acquisition and content mastery.

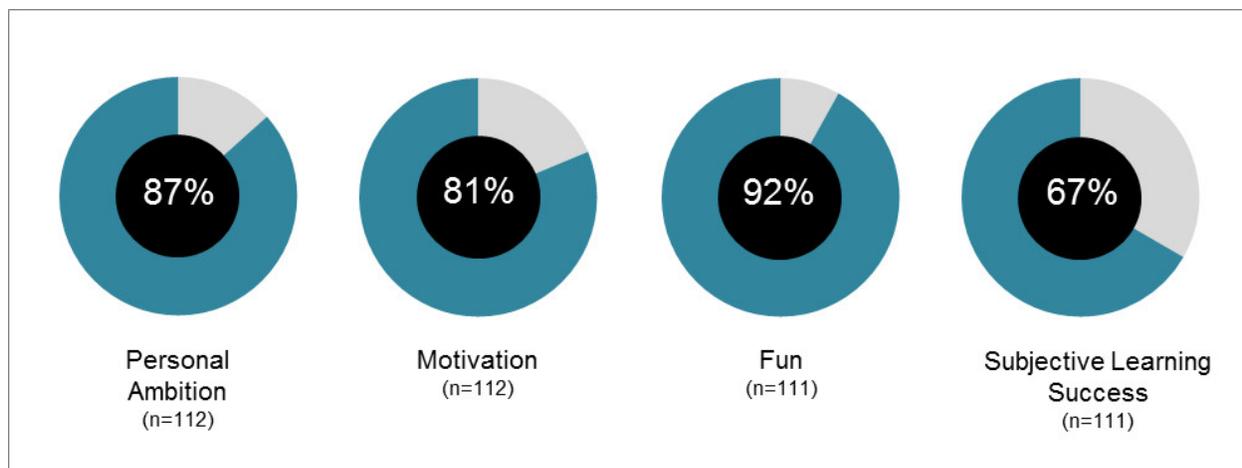


Figure 5: Positive Effects of the Guild Quests

Additionally the students were asked whether they experienced certain positive aspects in the sessions of the tutorial (Figure 5). The results were very positive as well, since 81% experienced the aspect “Motivation”, 92% the aspect “Fun” and 87% the aspect “Personal Ambition” as enforced by the guild quests of the tutorial. Another interrogated factor was the perception of a subjective learning success, which 67% strongly confirmed. The positive outcome of this particular result indicates that the guild quests and their construction according to the game patterns support the subjective learning success as suggested by the theoretical model.

To measure the concrete success of the whole concept besides the subjective perceptions of the students the new gamified concept was directly compared to the old concept (teacher-centered-teaching) in terms of the student’s grade in the final exam (Table 3). The amount of the grades “very good” and “good” achieved a higher percentage of 10,4 compared to the old concept, whereas the failure rate decreased with a percentage of 17, 5. The average grade in general of the new concept was 0,7 % better than the one of the old concept. As already indicated by the student’s perceptions these results support the usefulness of the gamified concept regarding learning success also from an objective perspective.

Semester	Students (n)	Average grade (including fails)	Passed (in total)	Passed with a „very good“ (1,0 / 1,3)	Passed with a „good“ (1,7 / 2,0 / 2,3)	Passed with a „satisfactory“ (2,7 / 3,0 / 3,3)	Passed with an „adequate“ (3,7 / 4,0)	Failed with an „inadequate“ (5,0)
Summer semester 2012 (old concept)	84	3,54	55,95%	16,67%	11,90%	17,86%	9,52%	44,05%
Summer semester 2013 (new concept)	94	2,80	73,40%	27,66%	22,34%	18,09%	5,32%	26,60%
Difference	-	+0,74	+17,45 %	+10,99%	+10,44%	+0,23%	-4,2%	-17,45%

Table 3: Results of the Final Exam (Summer 2012 and Summer 2013)

## 5 Discussion

There have been many negative opinions on gamification in the past claiming it to be a primitive marketing concept derived from bored business consultancies to increase their sales (e.g. Bogost, 2011; Robertson, 2011).

However as the results of the illustrated evaluation confirm, gamification is more than a marketing concept. Its positive effect on the non-game context of higher education is indisputably traceable. The implementation of game elements and game patterns enforces many positive aspects regarding the learning process. As suggested by the theoretical model the collaborative pattern drives positive interdependences and results in a positive influence on the student's behavior regarding the aspect of collective knowledge sharing and expanding. Apart from that the competitive pattern clearly increases motivation and engagement which shows that all aspects of the pattern are successfully implemented in the guild quests. In combination with an innovative and dynamic way of knowledge acquisition and content mastery and consolidation via cyclic development of expertise the presented game patterns had a traceable positive influence on the learning success of the students. This initial assumption is clearly confirmed by the positive outcome of the evaluation regarding the various factors from a subjective perspective of a student as well as from a clearly statistical comparison of the different concepts. Therefore it can be said that the guild quests represent an effective form of the implementation of game elements in the academic context and form an ideal supplement to the other parts of the project *The Legend of Zyren*.

## 6 References

- Barab, S., Pettyjohn, P., Gresalfi, M., Volk, C., & Solomou, M. (2012). Game-Based Curriculum and Transformational Play: Designing to Meaningfully Positioning Person, Content, and Context. *Computers & Education*, 58 (1), 518-533.
- Bereiter, C., & Scardamalia, M. (1993). *Surpassing Ourselves: An Inquiry into the Nature and Implications of Expertise*. Chicago: Open Court.
- Bogost, I. (2011). *Gamification is Bullshit*. Retrieved August 5, 2013, from [http://www.bogost.com/blog/gamification\\_is\\_bullshit.shtml](http://www.bogost.com/blog/gamification_is_bullshit.shtml)
- Deterding, S., Dixon, D., Khaled, R., & Nacke, L. (2011). From Game Design Elements to Gamefulness: Defining “Gamification”. In *Proceedings of the 15th International Academic MindTrek Conference: Envisioning Future Media Environments* (pp. 9-15). New York: ACM.
- Fecher, M. (2012). *Gamification in der Softwareentwicklung: Chancen und Möglichkeiten*. Retrieved August 5, 2013, from <http://conference.ieee>

- passau.org/fileadmin/templateConf2012/images/papers/11\_Gamification\_in\_der\_Softwareentwicklung\_Chancen\_und\_Moeglichkeiten.pdf
- Gee, J. (2007). *What Video Games Have to Teach Us About Learning and Literacy*. New York: Palgrave Macmillan.
- Kelle, S. (2012). *Game Design Patterns for Learning*. Aachen: Shaker Verlag.
- Lee, J., & Hammer, J. (2011). Gamification in Education: What, How, Why Bother? *Academic Exchange Quarterly*, 15(2).
- Prensky, M. (2001). *Digital Game-based Learning*. New York: McGraw-Hill.
- Prensky, M. (2003). Digital Game-Based Learning. *ACM Computers in Entertainment*, 1(1), 21.
- Riegler, R., & Matejka, W. (2006). The Learning Guild: MMORPGs as Educational Environments. In *Proceedings of the 22nd Annual Conference on Distance Teaching and Learning* (pp. 1-5).
- Robertson, M. (2011). *Can't Play, Won't Play*. Retrieved August 5, 2013, from Hide&Seek: <http://www.hideandseek.net/2010/10/06/cant-play-wont-play/>
- Romero, M., Usart, M., Ott, M., Earp, J., de Freitas, S., & Arnab, S. (2012). Learning Through Playing for or Against Each Other? Promoting Collaborative Learning in Digital Game Based Learning. In *Proceedings of the 20th European Conference on Information Systems*.
- Salen, K., Torres, R., Wolozin, L., Rufo-Tepper, R., & Shapiro, A. (2011). *Quest to Learn – Developing the School for Digital Kids*. Cambridge: The MIT Press
- Sheldon, L. (2012). *The Multiplayer Classroom: Designing Coursework as a Game*. Boston: Cengage Learning.

## 7 Table of Figures

Figure 1: Function of Game Patterns (derived and modified from Kelle (2012) and Romero et al. (2012))	692
Figure 2: Evaluation of Collaborative Pattern (“The aspect of collaboration in the guild had a positive influence on me and my learning progress.”)	695
Figure 3: Evaluation of Competitive Pattern (“The competition with the other guilds motivated me.”)	695
Figure 4: The Aspect of Competition Attached to the Ranking (“The visualized ranking raised my competitive spirit.”)	697
Figure 5: Positive Effects of the Guild Quests	697

## 8 Table of Tables

Table 1: Structure of the Guild Quests	694
Table 2: Guild Ranking	696
Table 3: Results of the Final Exam (Summer 2012 and Summer 2013)	698